

Sibanye WRTRP EIA

Initial Implementation

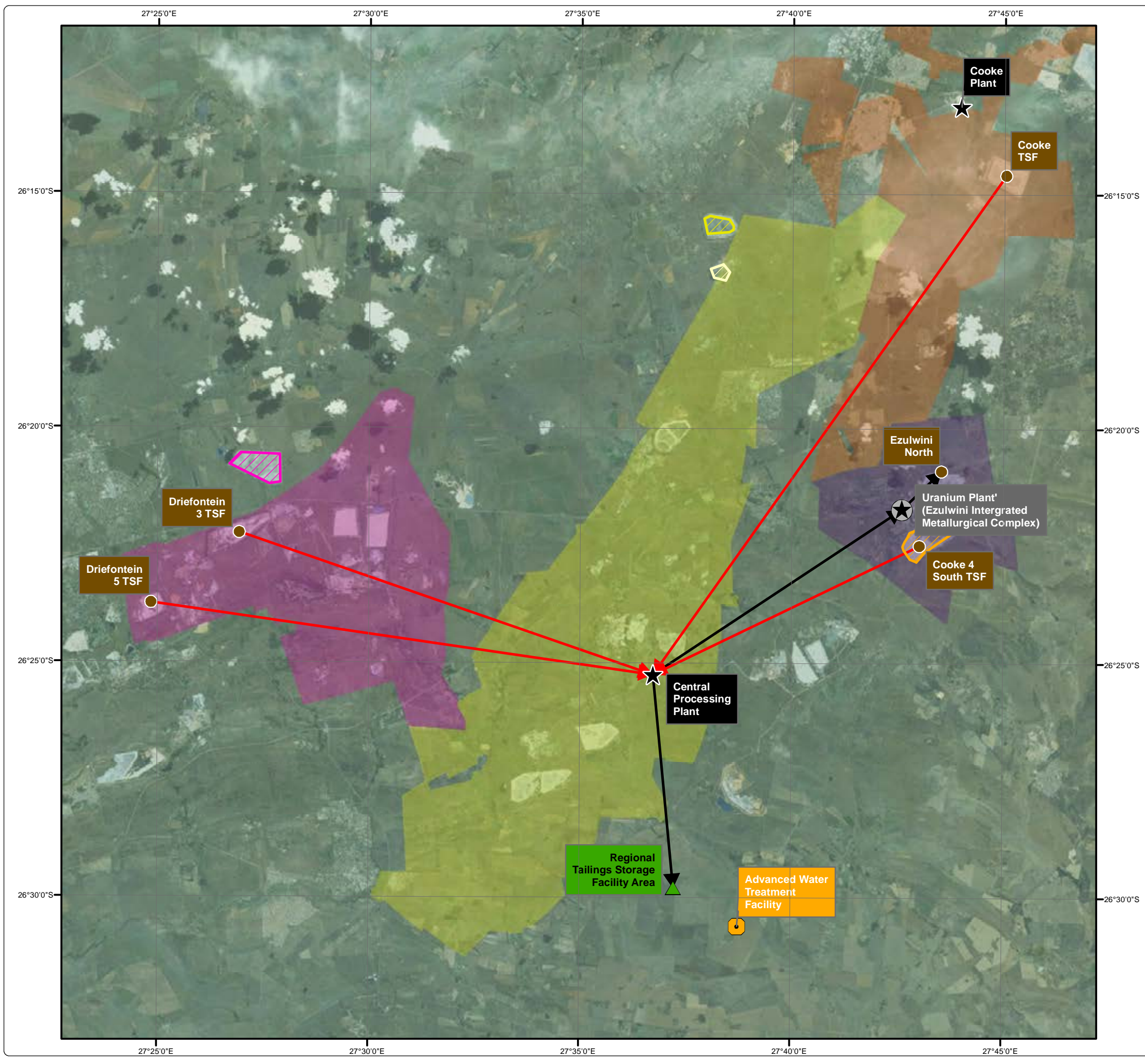
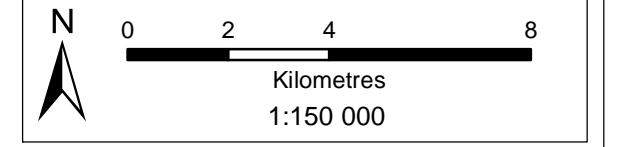
Legend

Infrastructure

- Advanced Water Treatment Facility
- Historical Tailings
- Regional Tailings Storage Facility
- Surface Plant
- Uranium Plant
- Driefontein 4 TSF (To be included in Driefontein MRA)
- Ezulwini South TSF (To be included in the Cooke MRA)
- Venterspost North TSF (To be included in the Kloof MRA)
- Venterspost South TSF (To be included in the Kloof MRA)
- Deposition Line
- Reclamation Line
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right



Projection: Transverse Mercator Ref #: sdp.GOL2376.201508.196
Datum: WGS 1984 Revision Number: 1
Central Meridian: 27°E Date: 26/08/2015



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Kloof MRA

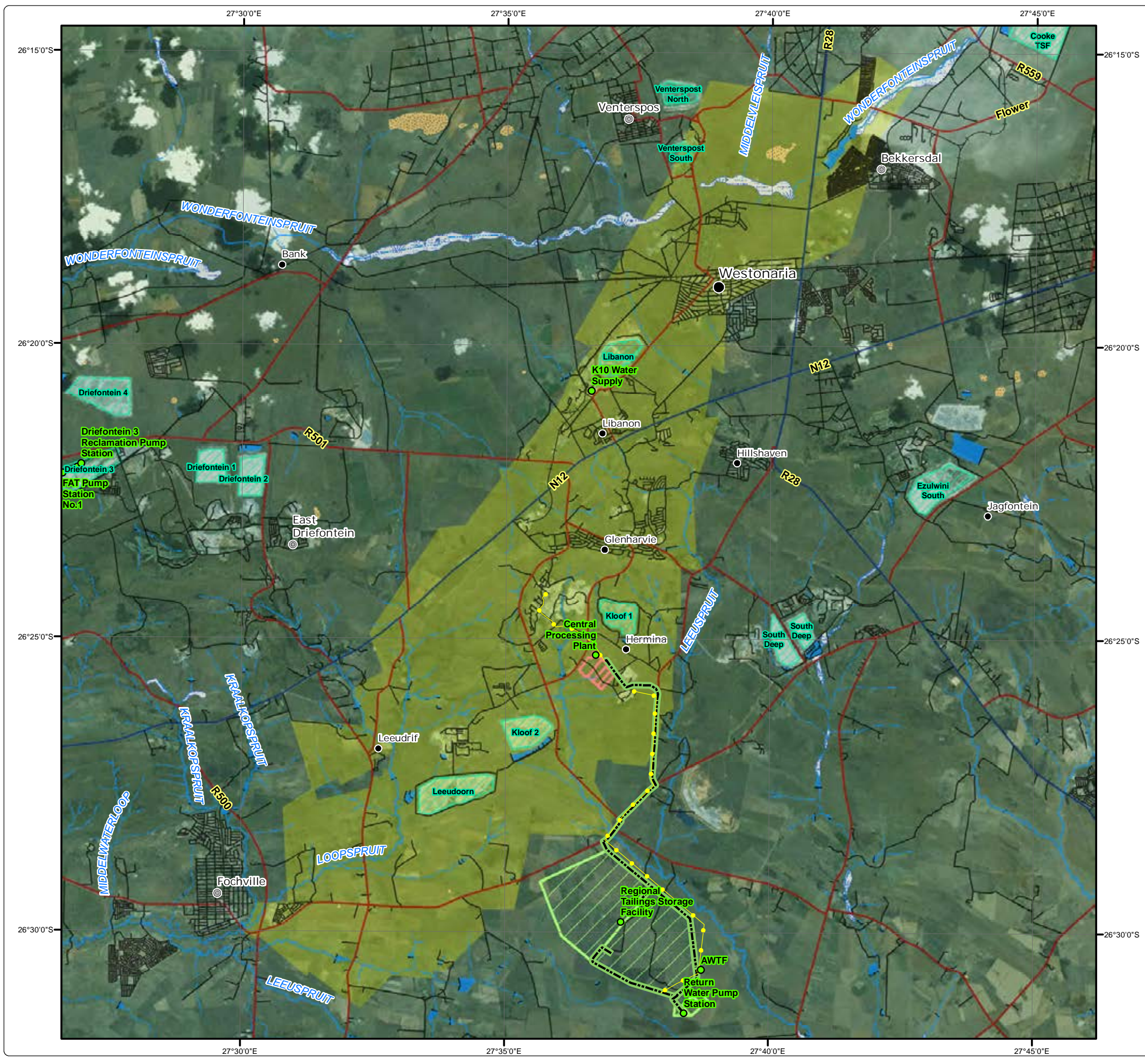
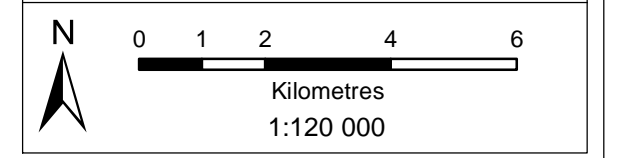
Legend

- Major Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- +— Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Infrastructure**
- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF Infrastructure
- Kloof Mining Right



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Projection: Transverse Mercator Datum: WGS 1984 Central Meridian: 27°E Ref #: sdp.GOL2376.201508.192 Revision Number: 1 Date: 26/08/2015



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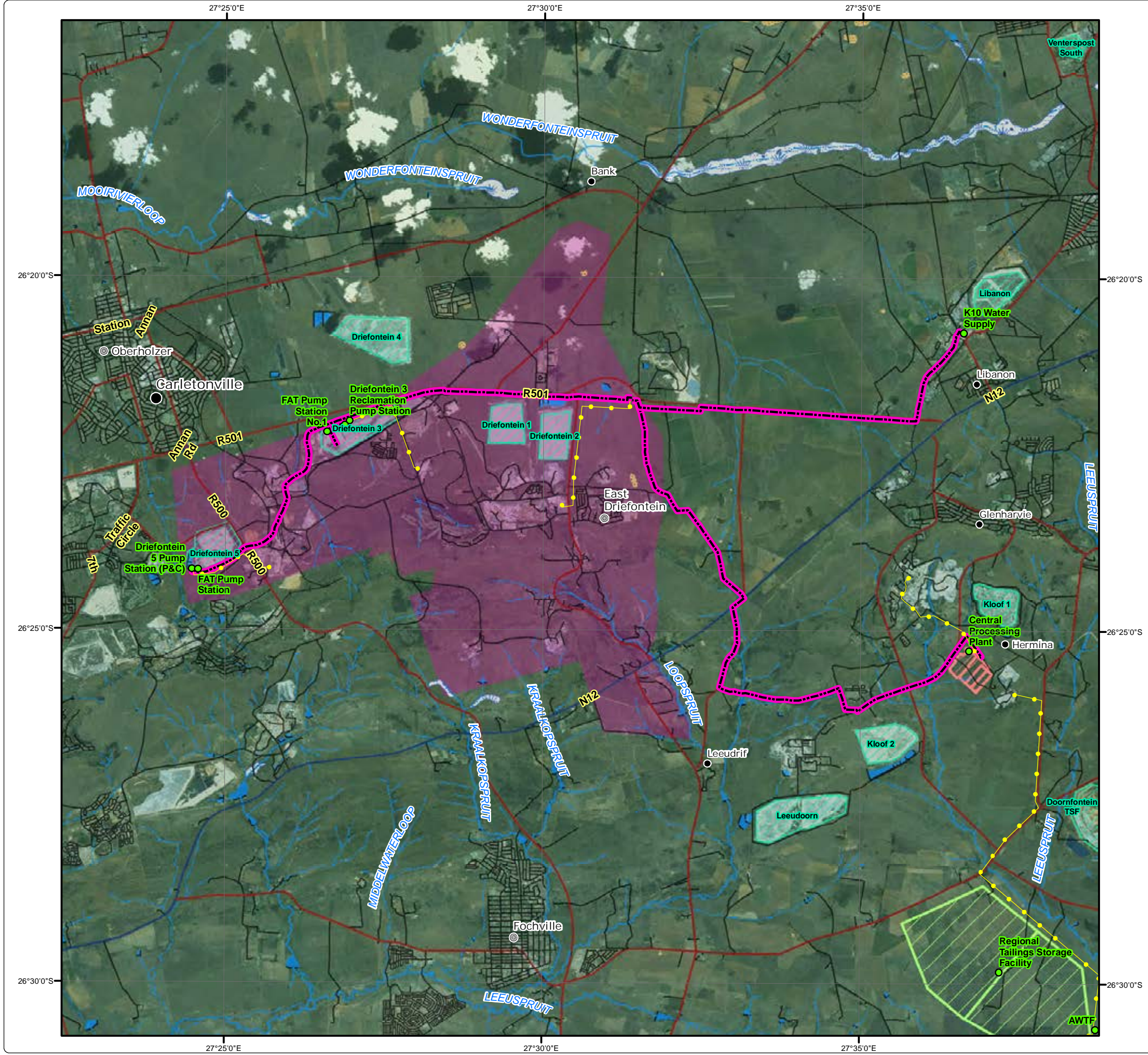
Driefontein MRA

Legend

- Major Town
- ⊙ Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

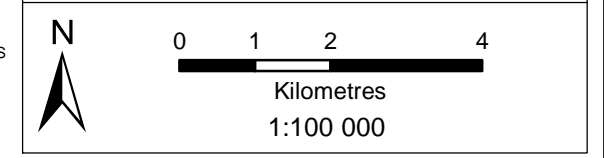
Infrastructure

- Infrastructure Points
- Powerlines
- Pipelines: Driefontein Mining Right
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF Infrastructure
- Driefontein Mining Right



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Cooke MRA

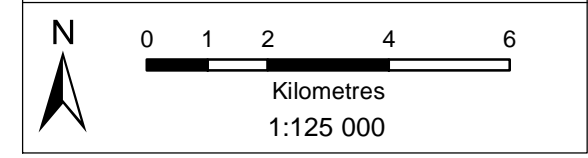
Legend

- Major Town
- ⊙ Secondary Town
- ⦿ Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- +— Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Infrastructure**
- Infrastructure Points
- Pipelines: Cooke Mining Right
- TSF Infrastructure
- Cooke Mining Right



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Projection: Transverse Mercator Ref #: sdp.GOL2376.201508.194
 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 27°E Date: 25/08/2015

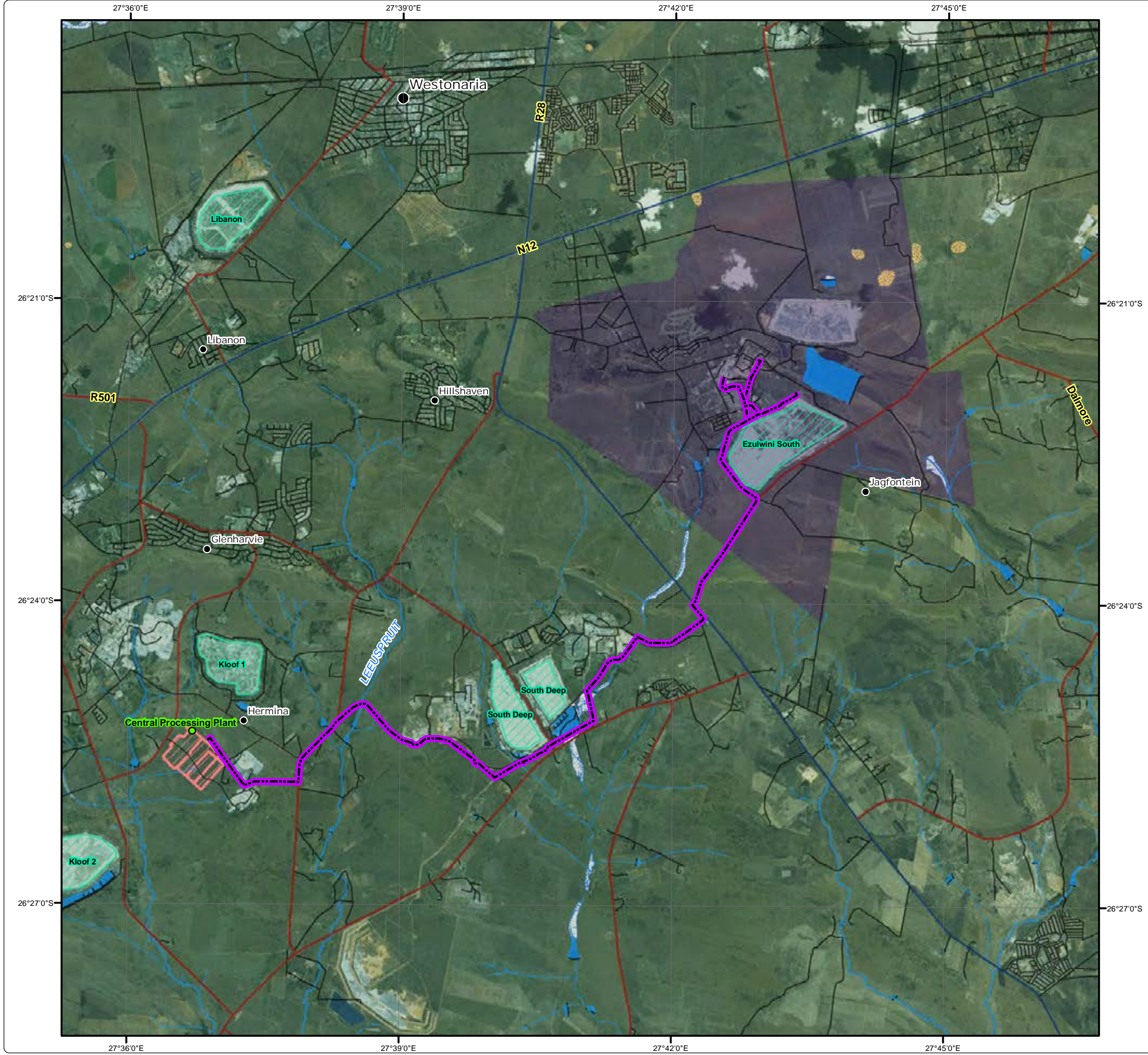


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Ezulwini MRA

Legend

- Major Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- +— Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Infrastructure**
- Infrastructure Points
- Pipelines: Ezulwini Mining Right
- CPP and Future Uranium Plant
- TSF Infrastructure
- Ezulwini Mining Right



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CPP Plant Locality

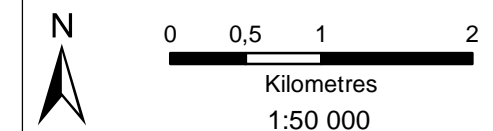
Legend

- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- +— Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Infrastructure**
- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF Infrastructure
- Kloof Mining Right



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Projection: Transverse Mercator Ref #: sdp.GOL2376.201508.198
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CPP Block Drawing

Legend

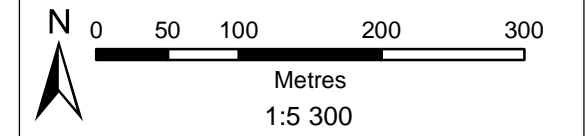
-  Main Road
-  Minor Road
-  CPP Infrastructure Lines
-  CPP Infrastructure Polygons

Infrastructure	Label	Infrastructure	Label
Sulphide Flotation Feed (Plant Feed)	1	Cooke Rougher Flotation/pH Adjustment	47
Sulphate Flotation	2	Cooke Uranium Rip Effluent	48
Oxide Flotation	3	Elution Wash Clarifier Effluent	49
Ultra Fine Grinding (Milling)	4	Cooke Uranium Tailings Thickener	50
Sulphide	5	Cooke Uranium SX	51
Oxide Concentrate Thickener	6	Central Uranium Leach Plant - 1	52
Carbon in Leach (Oil)	7	Central Uranium pH Adjust - 1	53
Cyanide Detox	8	Central Uranium Rip - 1	54
Cl Dewatering	9	Central Uranium Leach Plant - 2	55
Acid Wash, Elution and Regeneration	10	Central Uranium pH Adjust - 2	56
Tailings Thickener	11	Central Uranium Rip - 2	57
Water Services	12	Central Uranium Rip Elution - 2	58
Plant Run-Off	13	Central Uranium SX	59
Process Water Run-Off Dam	14	Central Uranium Adu Plant	60
Air Services	15	Adu Calcining Plant	61
Gold Room	16	Roaster Plant	62
Med, Eng Offices and Lab	17	Sulphuric Acid Storage Tanks	63
Sulphide Flotation Run-Off Dam	18	SX Fire Water	64
Oxide Flotation Run-Off Dam	19	U Raw/Potable Water Storage Tanks	65
MCC and Control Room	20	Cooke Flotation Blowers	66
AU Workshop	21	Air Services U Plant	67
Main Stores	22	Boiler	68
Floculant Plant	23	Diesel Storage Area (U-Plant)	69
Diesel Off Loading and Storage	24	Xanthate and Frother Plant	70
Cyanide Off Loading and Storage	25	Depressant Make-Up System	71
Caustic Off Loading and Storage	26	Ammonia Storage	72
Hydrochloric Acid Off Loading and Storage	27	Security and Change House - U	73
Copper Sulphide Off Loading and Storage	28	Workshop - U	74
Lime Off Loading and Storage	29	Chop House - U	75
SMBS Storage and Make-Up	30	Control Room - U	76
Flotation Regents	31	Met and Engineering Offices - U	77
Weigh Bridge	32	Lab - U	78
Security and Change House	33	Central U Plant Sub	79
Admin Building and Parking	34	Cooke U Plant Sub	80
Equipment Off Loading (Airlock)	35	Medical Station U Plant	81
Heli Pad	36	Acid Storage Weighbridge	82
Temporary Parking	37	Acid Plant	83
MCC	38	Pyrite Dam	84
Plant Entrance	39	U Event Dam	85
Sewerage Plant	40	Converter Maintenance Area	86
Emergency Power Generators	41	Cooling Water Plant	87
Reagents Run-Off Pond	42	Pyrite Feed Preparation	88
Cooke Tailings Feed Plant	43	Gas Cleaning Plant	89
Cooke Uranium Leach	44	Coal Stockpile	90
Cooke Rip Pre-Screening and pH Adjustment	45	Attenuation Dam	91
Cooke Rip Screening and Rip Section 1 and 2	46	Boiler Feed Water Plant	92



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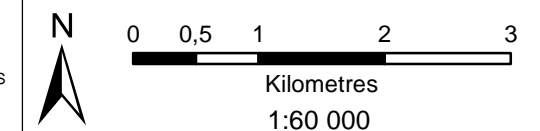
Legend

- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- +— Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Infrastructure**
- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- CPP and Future Uranium Plant
- Regional Tailings Storage Facility
- TSF Infrastructure
- Kloof Mining Right



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Projection: Transverse Mercator Ref #: sdp.GOL2376.201508.200
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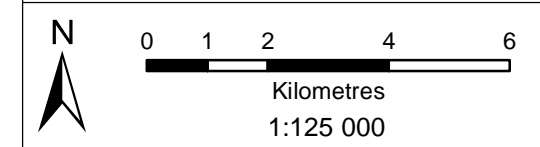
Legend

- Major Town
- ⊙ Secondary Town
- ⊙ Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Directly Affected Farms
- Farm Boundary
- Infrastructure**
- Infrastructure Points
- Pipelines: Cooke Mining Right
- TSF Infrastructure
- Cooke Mining Right



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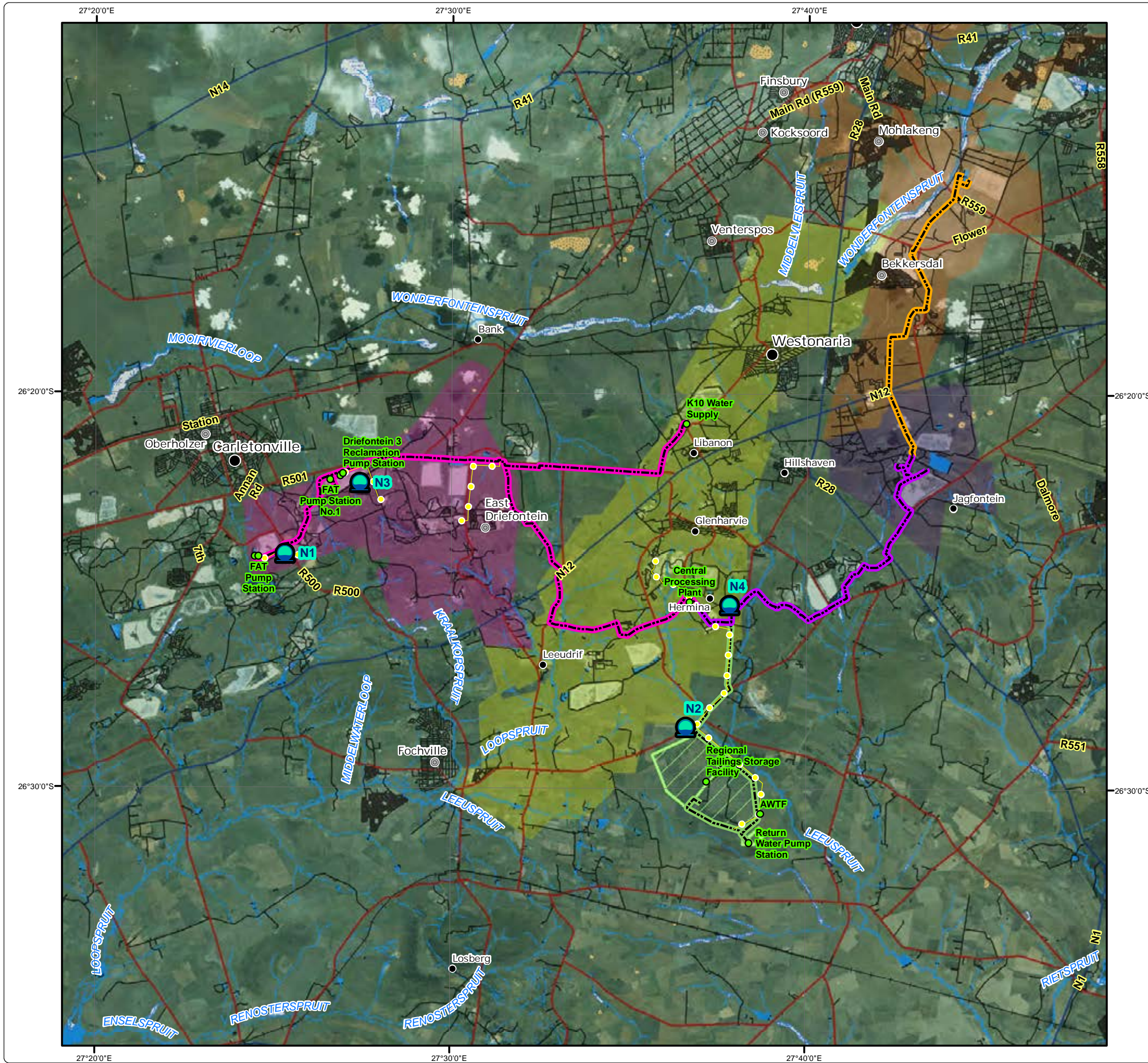


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Noise Monitoring Locations

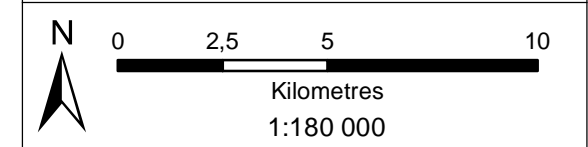
Legend

- Noise Monitoring Locations
- Major Town
- Secondary Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Infrastructure**
- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- Pipelines: Driefontein Mining Right
- Pipelines: Cooke Mining Right
- Pipelines: Ezulwini Mining Right
- Regional Tailings Storage Facility
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right



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Projection: Transverse Mercator Ref #: sdp.GOL2376.201508.203
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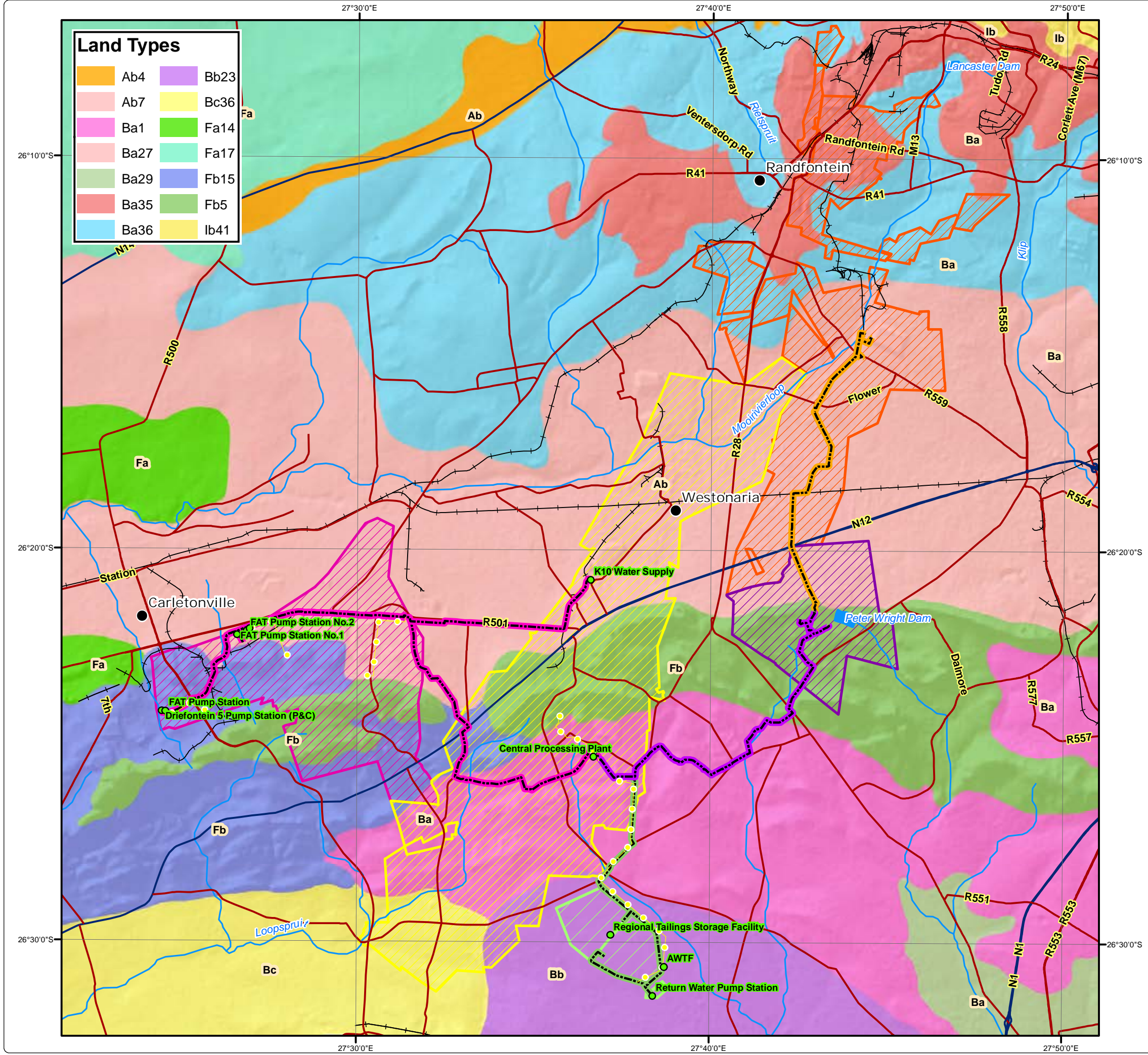
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Land Types

Land Types			
Ab4	Bb23		
Ab7	Bc36		
Ba1	Fa14		
Ba27	Fa17		
Ba29	Fb15		
Ba35	Fb5		
Ba36	Ib41		

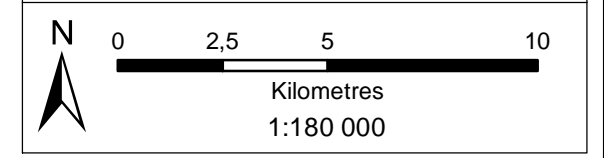
Legend

- Major Town
 - Main Roads
 - National Roads
 - River
 - Railway Line
 - Dam
- ### Infrastructure
- Infrastructure Points
 - Powerlines
 - Pipelines: Kloof Mining Right
 - Pipelines: Driefontein Mining Right
 - Pipelines: Cooke Mining Right
 - Pipelines: Ezulwini Mining Right
 - ▨ Regional Tailings Storage Facility
 - ▨ Kloof Mining Right
 - ▨ Driefontein Mining Right
 - ▨ Cooke Mining Right
 - ▨ Ezulwini Mining Right



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Land Use

Land Use
SANBI, 2013

- Cultivated
- Degraded
- Mines
- Natural
- Plantations
- Urban Built-Up
- Waterbodies

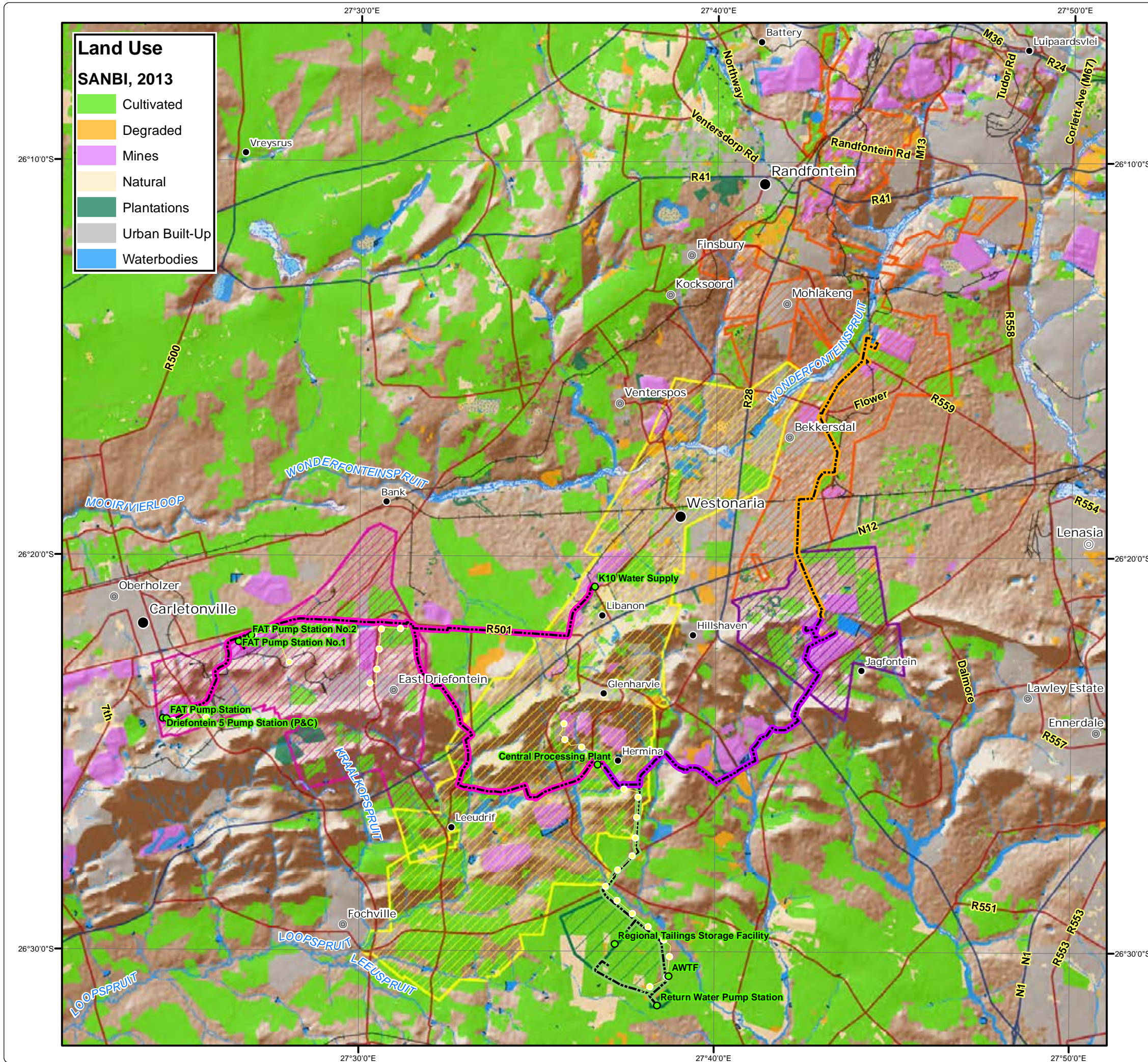
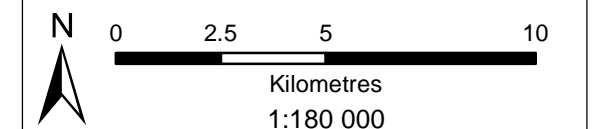
Legend

- Major Town
- Secondary Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland
- Infrastructure**
- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- Pipelines: Driefontein Mining Right
- Pipelines: Cooke Mining Right
- Pipelines: Ezulwini Mining Right
- Regional Tailings Storage Facility
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right



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Land Capability

Land Capability
Klingebeiel, A., & Montgomery, P. (1961)

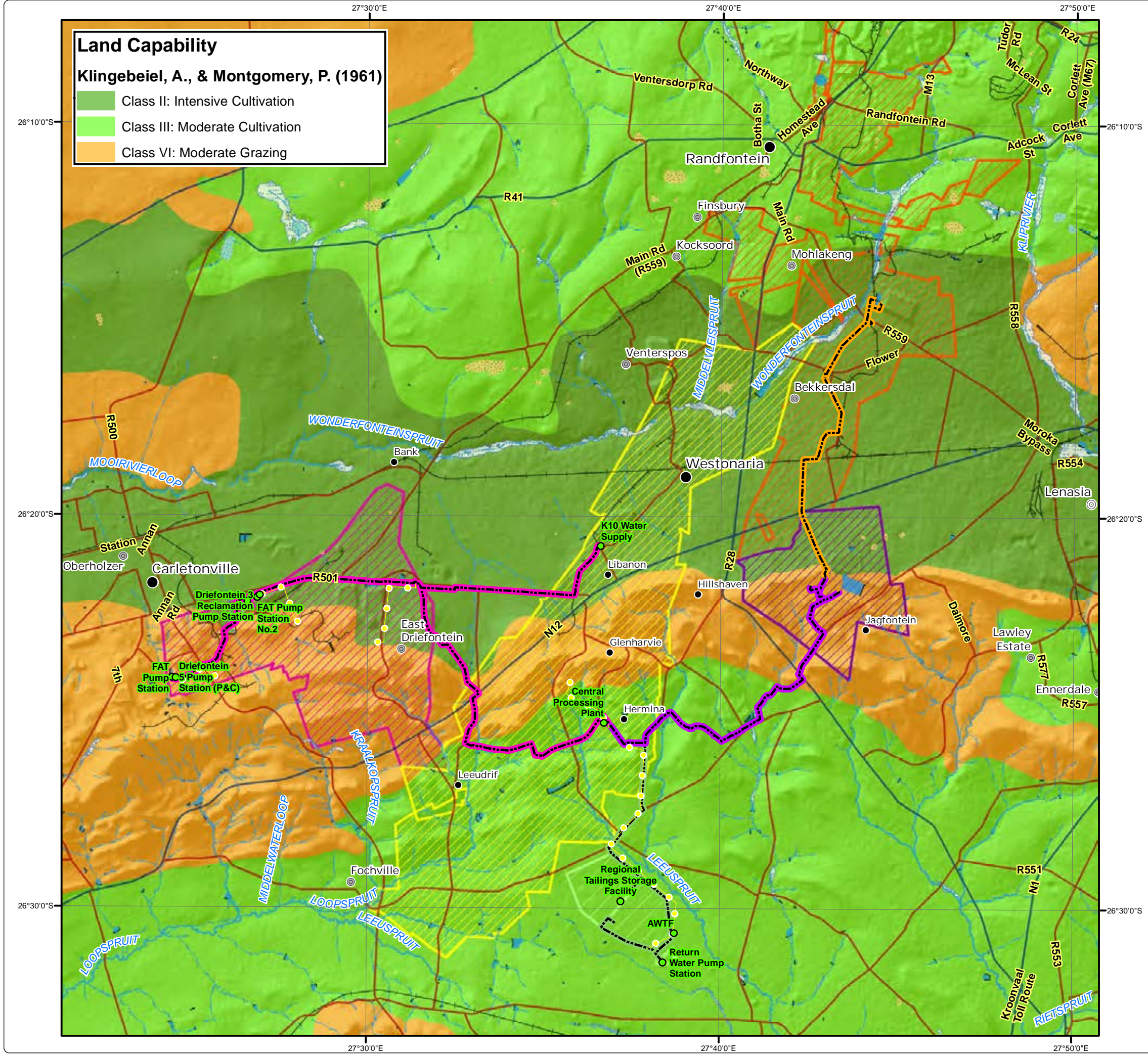
- Class II: Intensive Cultivation
- Class III: Moderate Cultivation
- Class VI: Moderate Grazing

Legend

- Major Town
- Secondary Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Perennial Pan
- Non-Perennial Pan
- Wetland

Infrastructure

- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- Pipelines: Driefontein Mining Right
- Pipelines: Cooke Mining Right
- Pipelines: Ezulwini Mining Right
- Regional Tailings Storage Facility
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right



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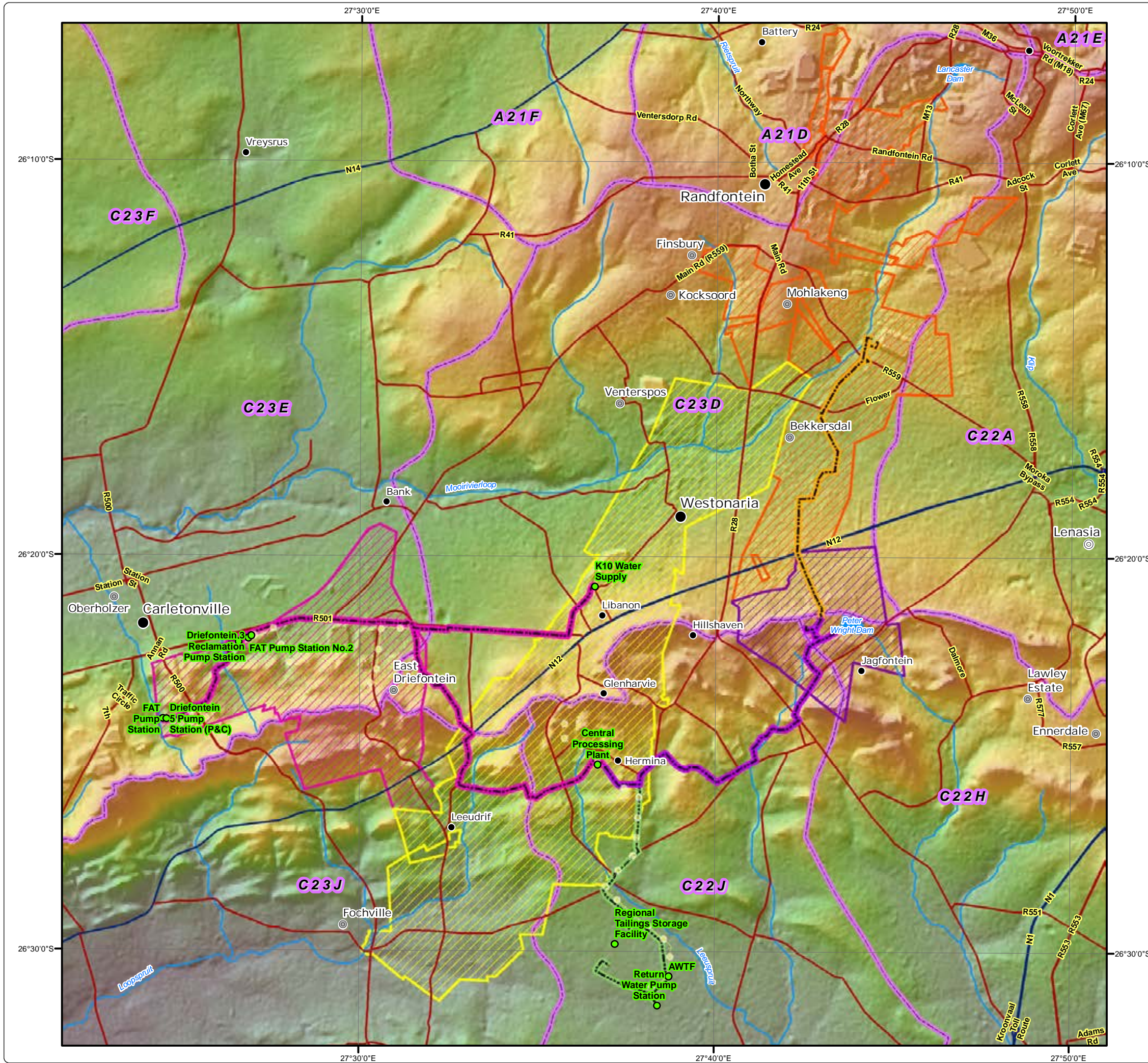
Projection: Transverse Mercator Ref #: sdp.GOL2376.201508.206
Datum: WGS 1984 Revision Number: 1
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0 2,5 5 10
Kilometres
1:180 000

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Quaternary Catchments



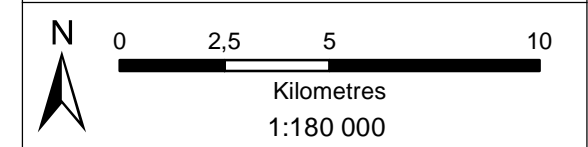
Legend

- Major Town
- Secondary Town
- ⊙ Other Town
- Settlement
- Main Roads
- National Roads
- River
- Dam
- Quaternary Catchment Boundary
- Infrastructure**
- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- Pipelines: Driefontein Mining Right
- Pipelines: Cooke Mining Right
- Pipelines: Ezulwini Mining Right
- ▨ Kloof Mining Right
- ▨ Driefontein Mining Right
- ▨ Cooke Mining Right
- ▨ Ezulwini Mining Right
- Digital Elevation Model (DEM)**
- Elevation (m.am.s.l.)**
- High : 1838
- Low : 1396



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Vegetation Types

Vegetation Types
Mucina & Rutherford, 2006

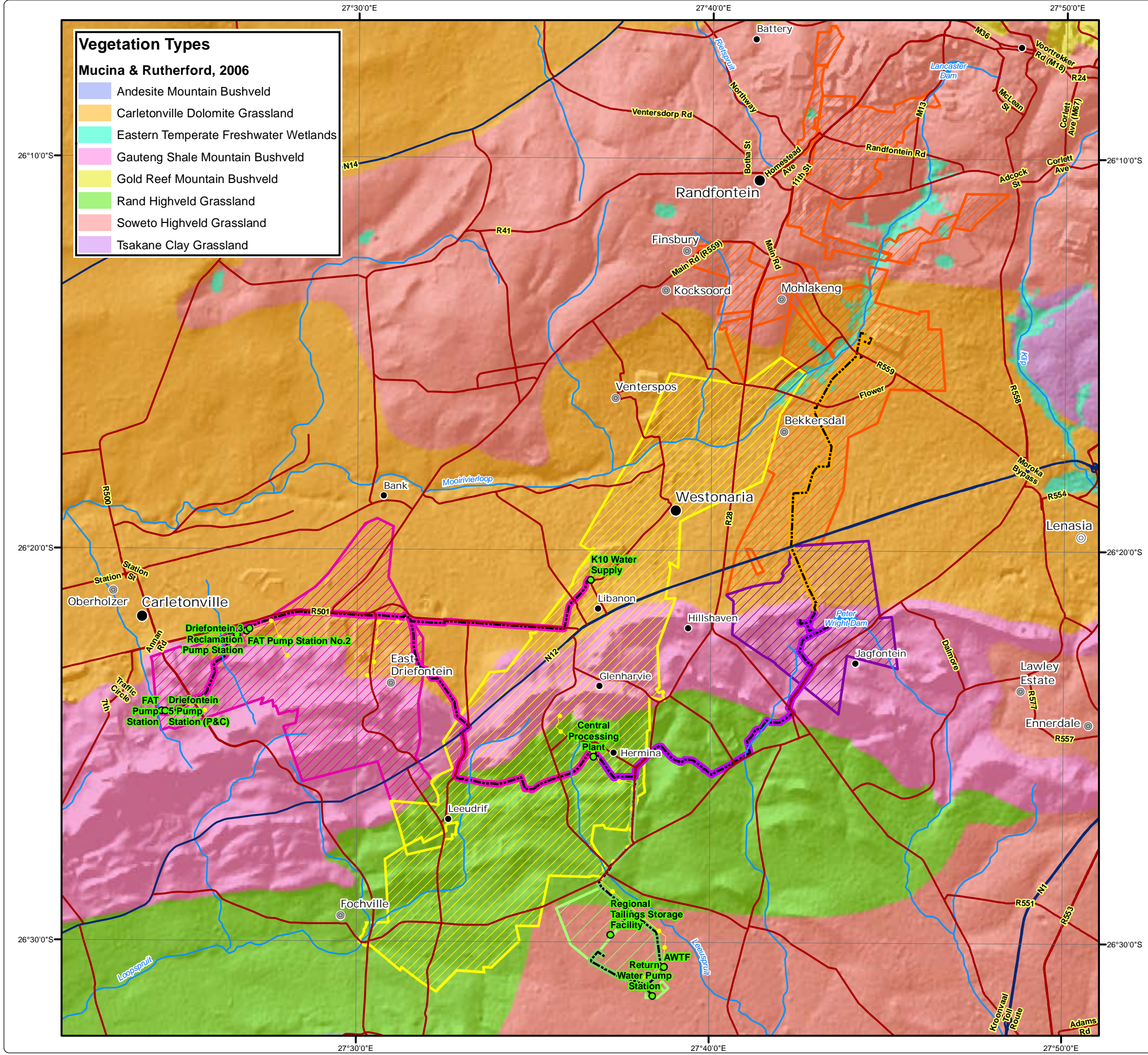
- Andesite Mountain Bushveld
- Carletonville Dolomite Grassland
- Eastern Temperate Freshwater Wetlands
- Gauteng Shale Mountain Bushveld
- Gold Reef Mountain Bushveld
- Rand Highveld Grassland
- Soweto Highveld Grassland
- Tsakane Clay Grassland

Legend

- Major Town
- Secondary Town
- Other Town
- Settlement
- Main Roads
- National Roads
- River
- Dam

Infrastructure

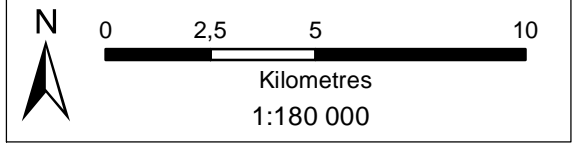
- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- Pipelines: Driefontein Mining Right
- Pipelines: Cooke Mining Right
- Pipelines: Ezulwini Mining Right
- Regional Tailings Storage Facility
- Kloof Mining Right
- Driefontein Mining Right
- Ezulwini Mining Right
- Cooke Mining Right



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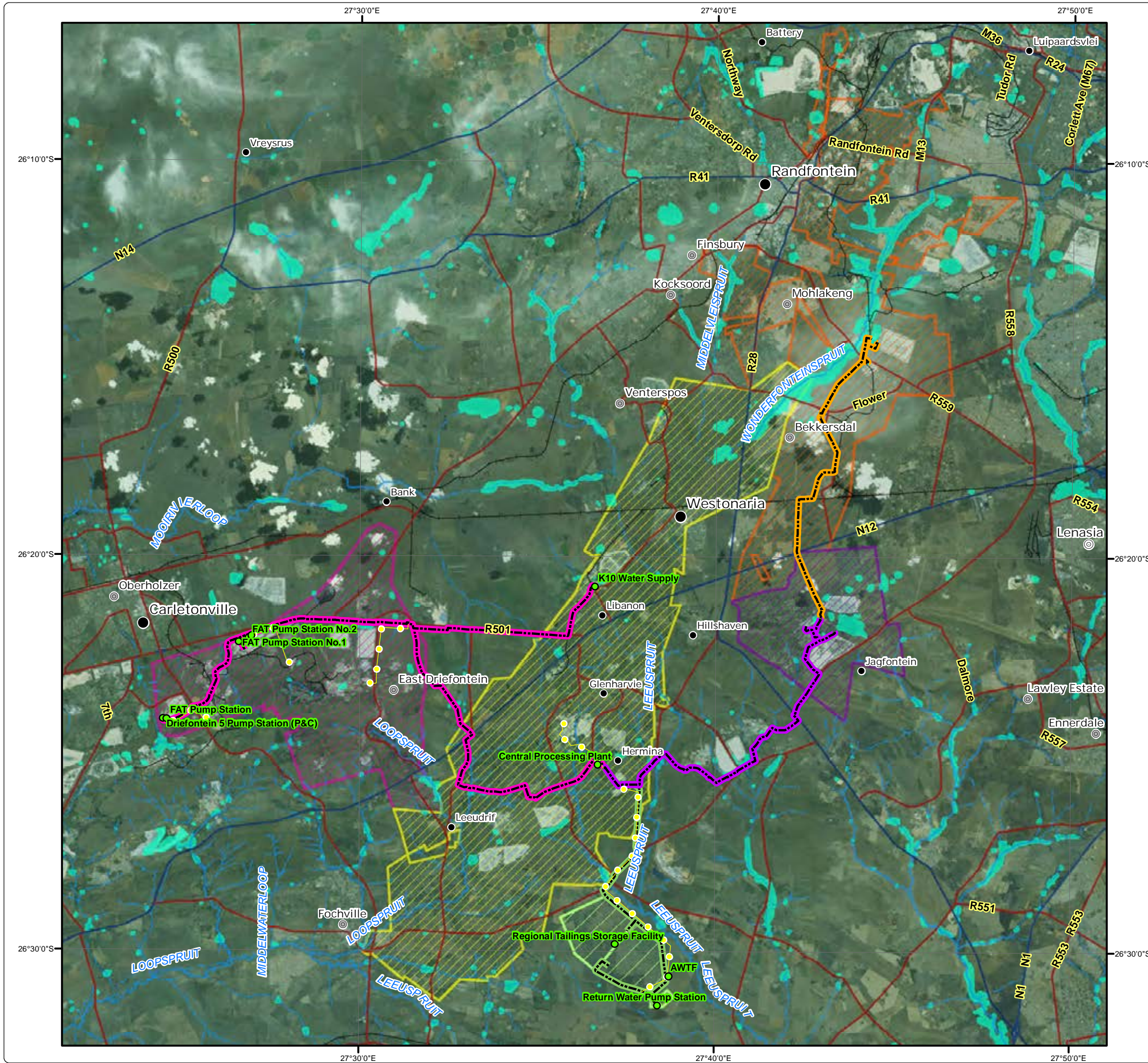


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NFEPA Wetlands

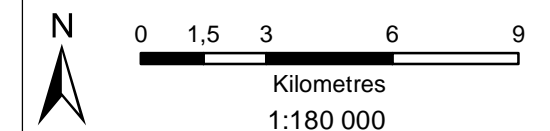
Legend

- Major Town
- Secondary Town
- ⊙ Other Town
- Settlement
- Arterial / National Route
- Main Road
- +— Railway Line
- Non-Perennial Stream
- Perennial Stream
- NFEPA Wetlands
- Infrastructure**
- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- Pipelines: Driefontein Mining Right
- Pipelines: Cooke Mining Right
- Pipelines: Ezulwini Mining Right
- Regional Tailings Storage Facility
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right



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RTSF Wetlands

Legend

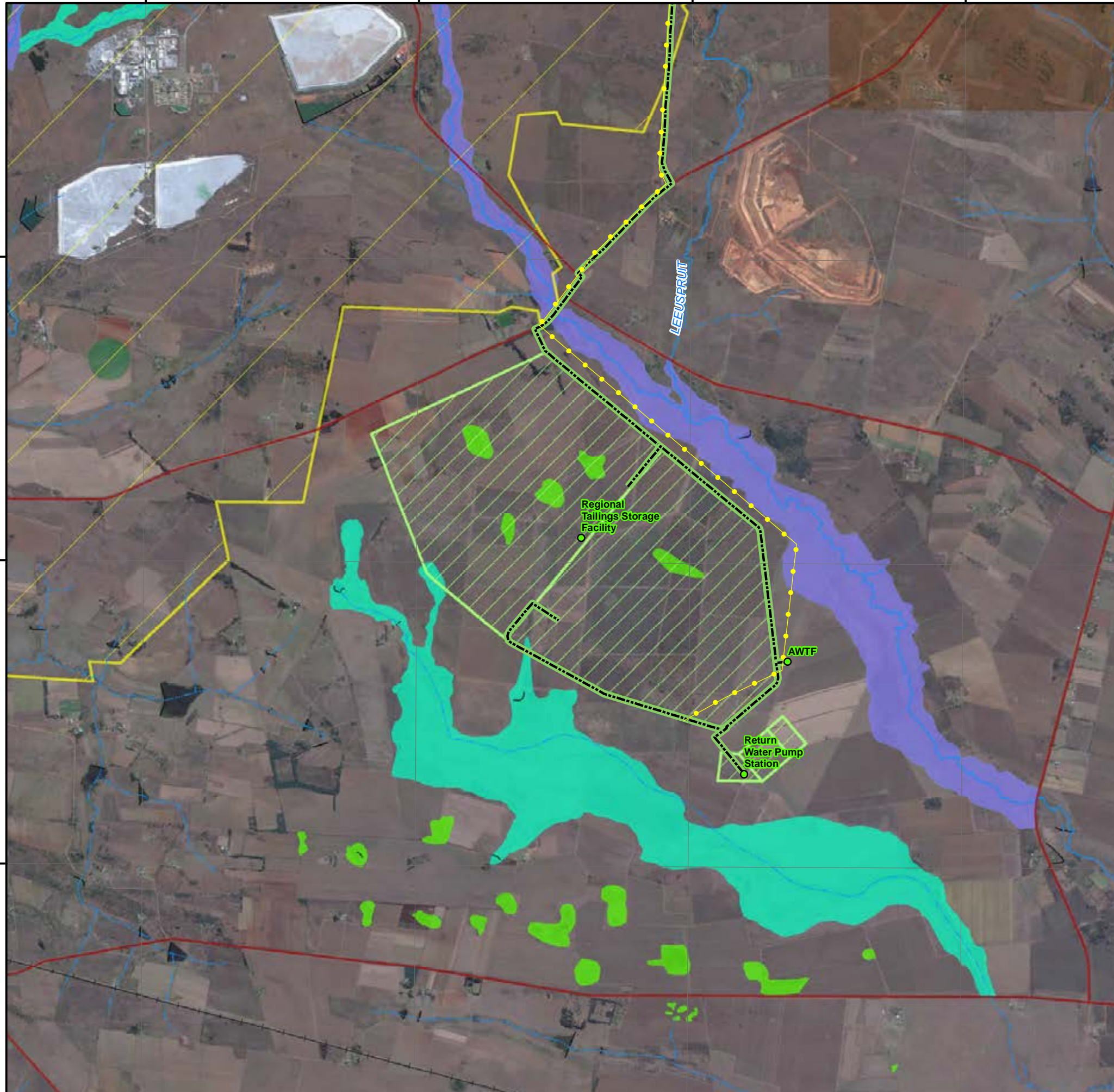
- Major Town
- ⊙ Secondary Town
- ⊙ Other Town
- Settlement
- Arterial / National Route
- Main Road
- + Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall

Infrastructure

- Infrastructure Points
- Powerlines
- Pipelines: Kloof Mining Right
- Regional Tailings Storage Facility
- Kloof Mining Right

Wetland Delineation

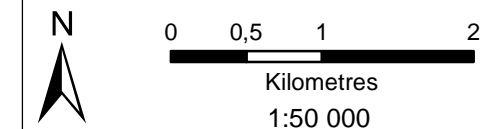
- Channelled Valley Bottom
- Pan
- Valley Bottom



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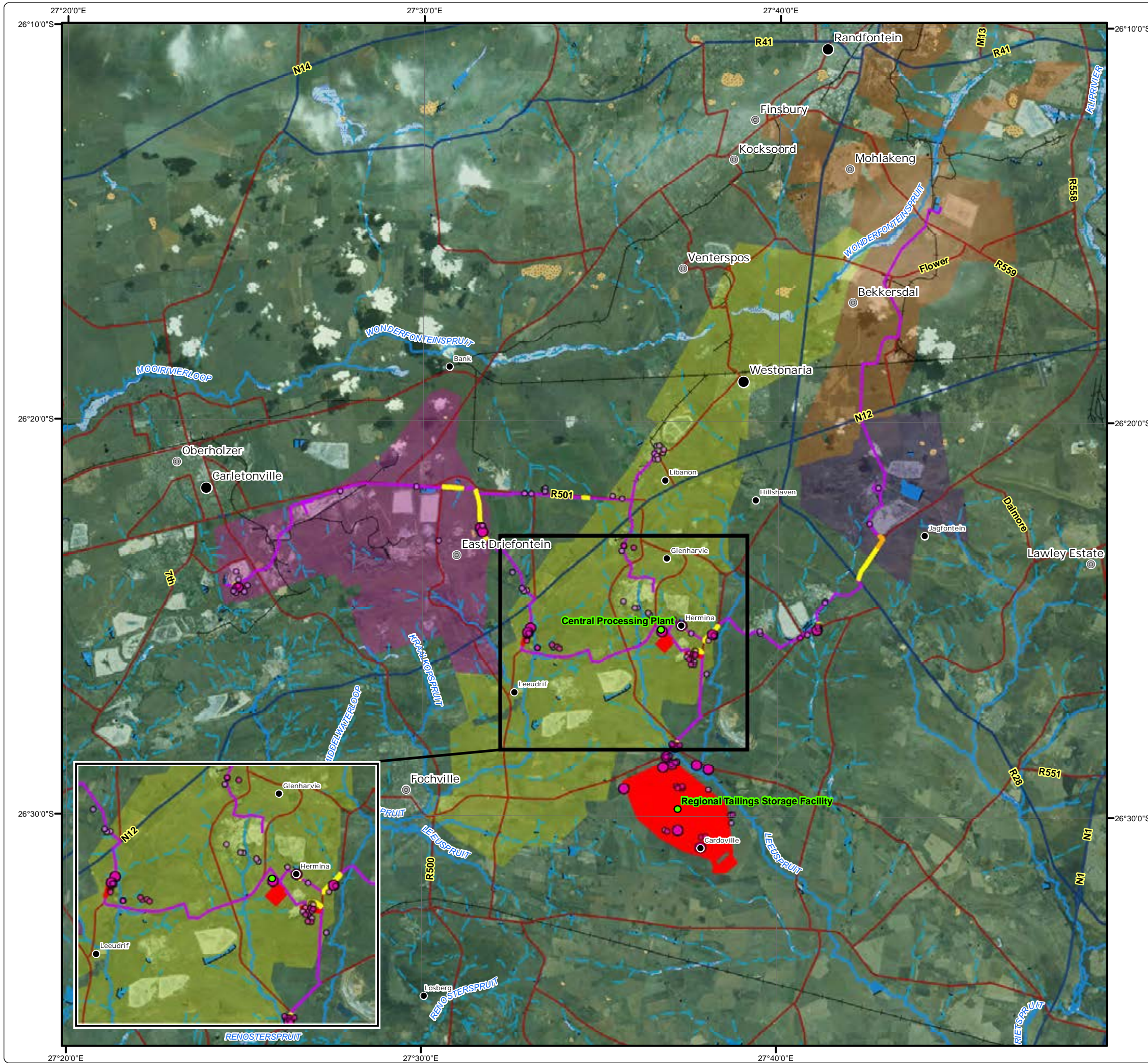
Heritage Sensitivity

Legend

- Infrastructure Points
- Identified Heritage Sites
- Historical Layering Points (1938)
- Historical Layering Points (1952)
- Major Town
- Other Town
- Settlement
- Pipeline Routing
- National / Arterial Route
- Main Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Non-Perennial Pan
- Wetland
- Kloof Mining Right
- Driefontein Mining Right
- Cooke Mining Right
- Ezulwini Mining Right

Heritage Sensitivity

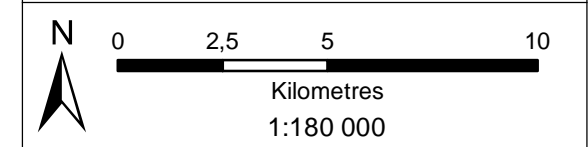
- High
- Medium - High
- Medium



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 Datum: WGS 1984 Revision Number: 1
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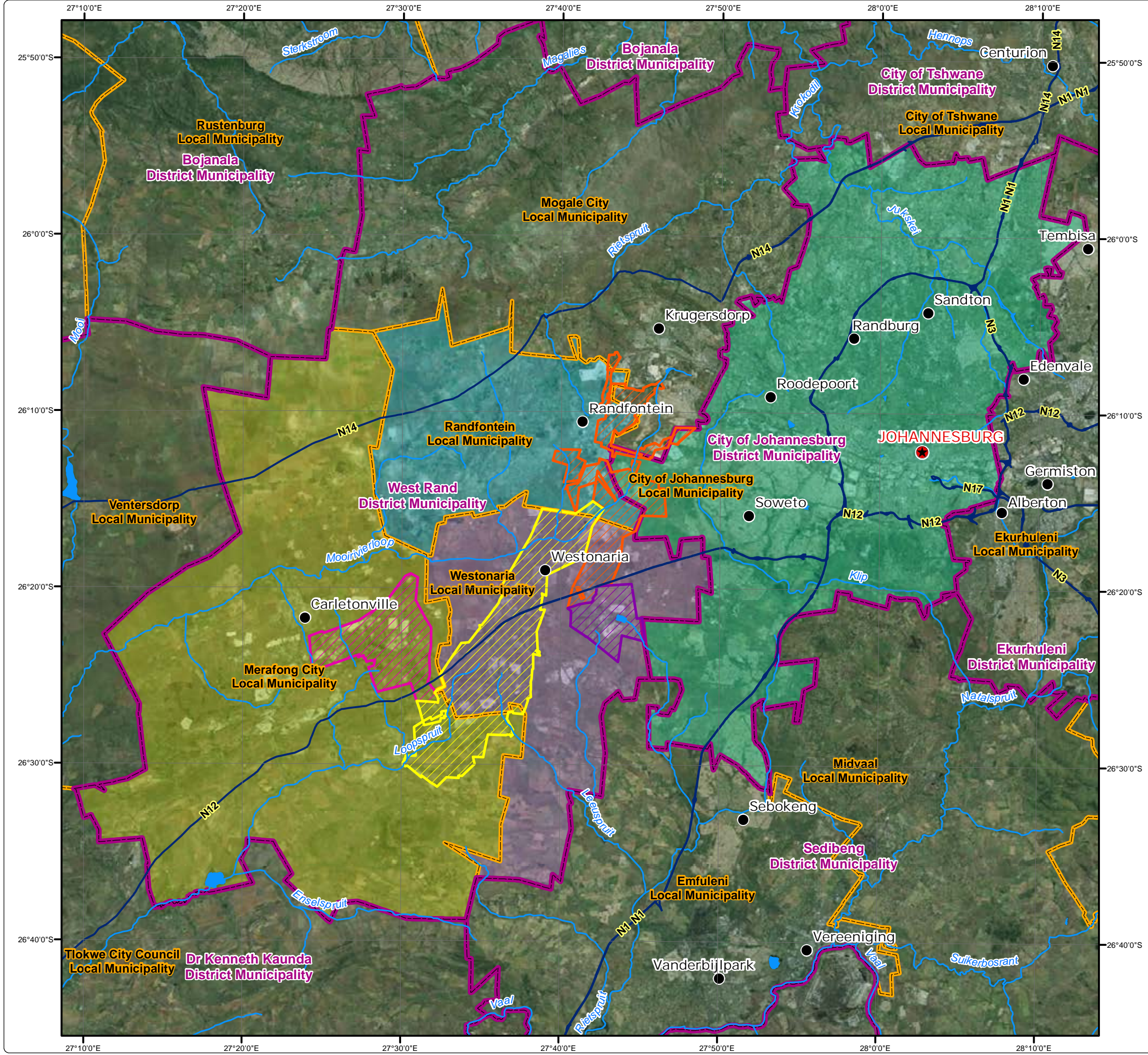


Sibanye WRTRP EIA

Municipalities

Legend

- City
 - Major Town
 - National Roads
 - River
 - Dam
 - Local Municipal Boundary
 - District Municipal Boundary
- #### Mining Right Boundaries
- Kloof Mining Right
 - Driefontein Mining Right
 - Cooke Mining Right
 - Ezulwini Mining Right
- #### Affected Municipalities
- City of Johannesburg Metropolitan Municipality
 - Merafong City Local Municipality
 - Randfontein Local Municipality
 - Westonaria Local Municipality



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ENVIRONMENTAL

• Sustainability • Service • Positive Change • Professionalism • Future Focused • Integrity

Projection: Transverse Mercator	Ref #: sdp.GOL2376.201508.212
Datum: WGS 1984	Revision Number: 1
Central Meridian: 27°E	Date: 25/08/2015

0 5 10 20
Kilometres
1:400 000

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