






















# Palmietkuilen Project EIA

## Project Locality Map

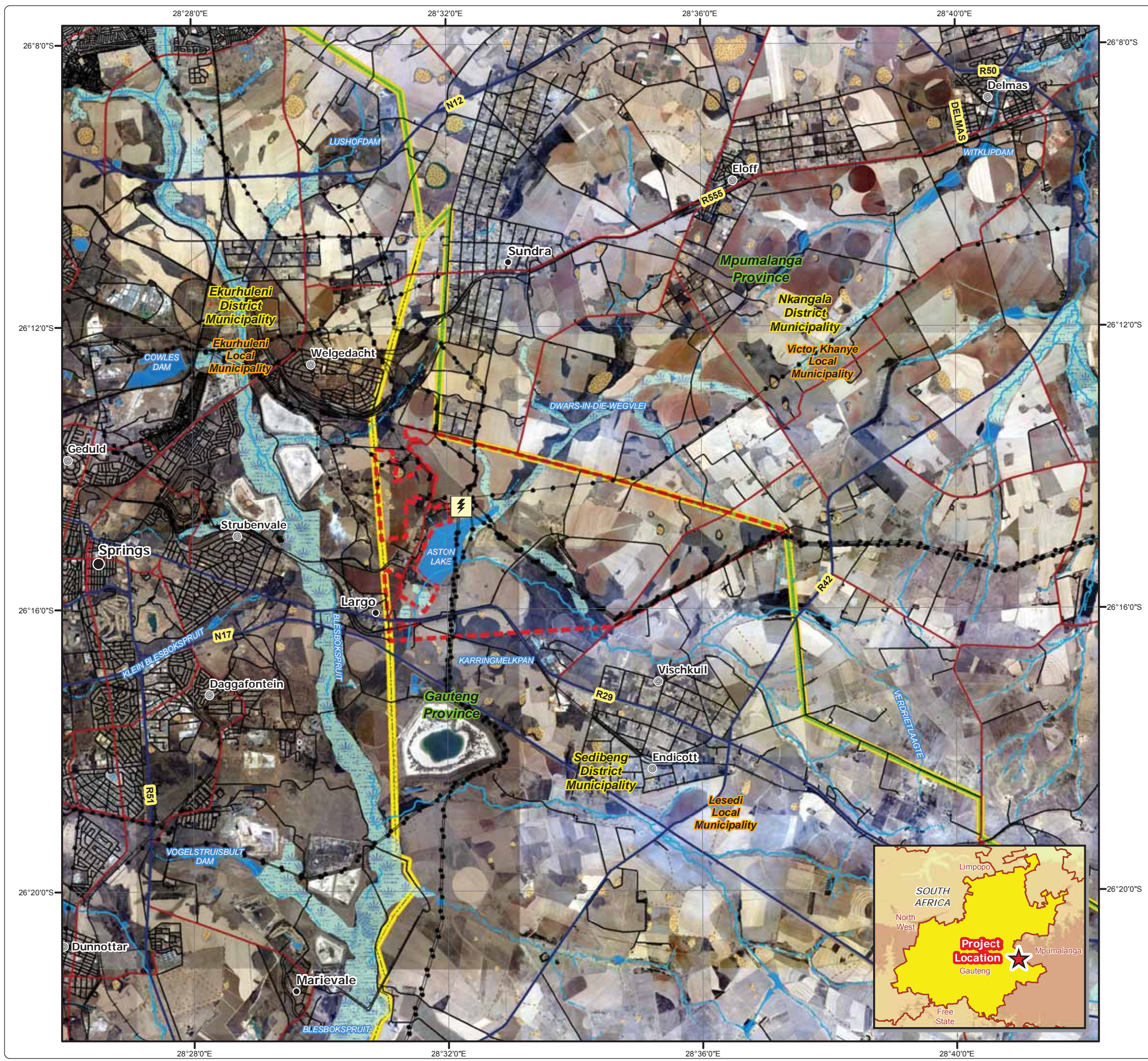
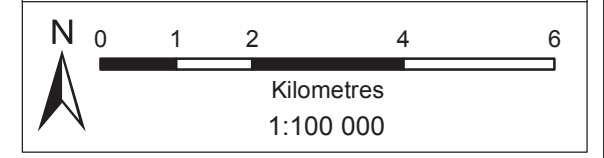
### Legend

-  Mining Right Boundary
-  Major Town
-  Other Town
-  Settlement
-  Sub-Station
-  Power Line
-  Arterial / National Route
-  Main Road
-  Minor Road
-  Track
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream
-  Dam Wall
-  Dam / Lake
-  Wetland
-  Perennial Pan
-  Non-Perennial Pan / Stream
-  Provincial Boundary (2016)
-  District Municipal Boundary (2016)
-  Local Municipal Boundary (2016)



  
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 Projection: Transverse Mercator      Ref #: meg.CNC4065.201606.092  
 Datum: WGS 1984                              Revision Number: 4  
 Central Meridian: 29°E                        Date: 19/01/2017





# Palmietkuilen Project EIA

## Proposed Infrastructure

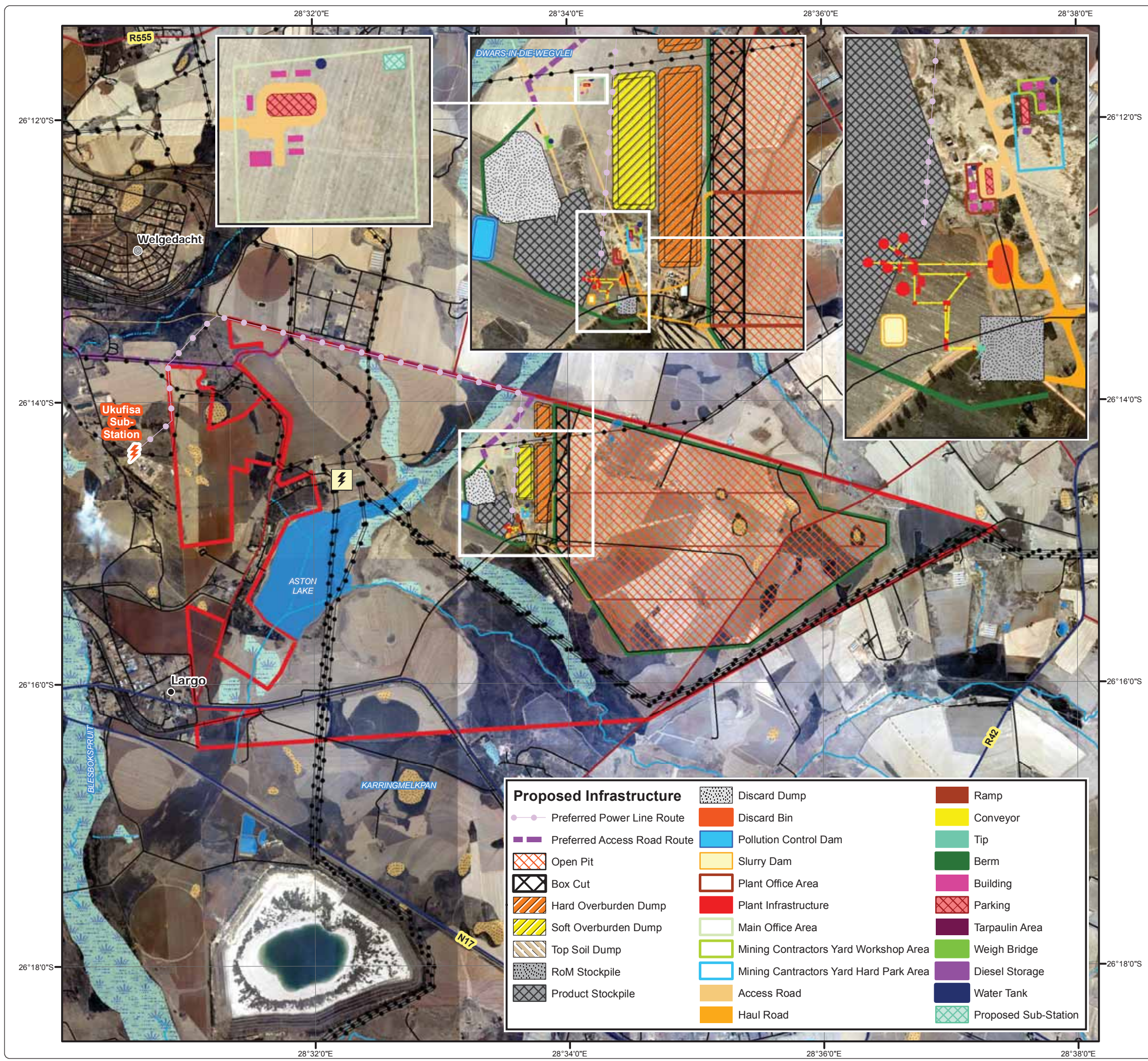
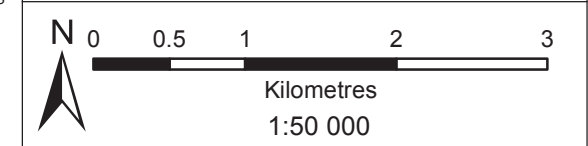
### Legend

- Mining Right Boundary
- Other Town
- Settlement
- Sub-Station
- Ukufisa Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream

- ### Proposed Infrastructure
- |                             |  |                      |
|-----------------------------|--|----------------------|
| Preferred Power Line Route  | Discard Dump                           | Ramp                 |
| Preferred Access Road Route | Discard Bin                            | Conveyor             |
| Open Pit                    | Pollution Control Dam                  | Tip                  |
| Box Cut                     | Slurry Dam                             | Berm                 |
| Hard Overburden Dump        | Plant Office Area                      | Building             |
| Soft Overburden Dump        | Plant Infrastructure                   | Parking              |
| Top Soil Dump               | Main Office Area                       | Tarpaulin Area       |
| RoM Stockpile               | Mining Contractors Yard Workshop Area  | Weigh Bridge         |
| Product Stockpile           | Mining Contractors Yard Hard Park Area | Diesel Storage       |
|                             | Access Road                            | Water Tank           |
|                             | Haul Road                              | Proposed Sub-Station |

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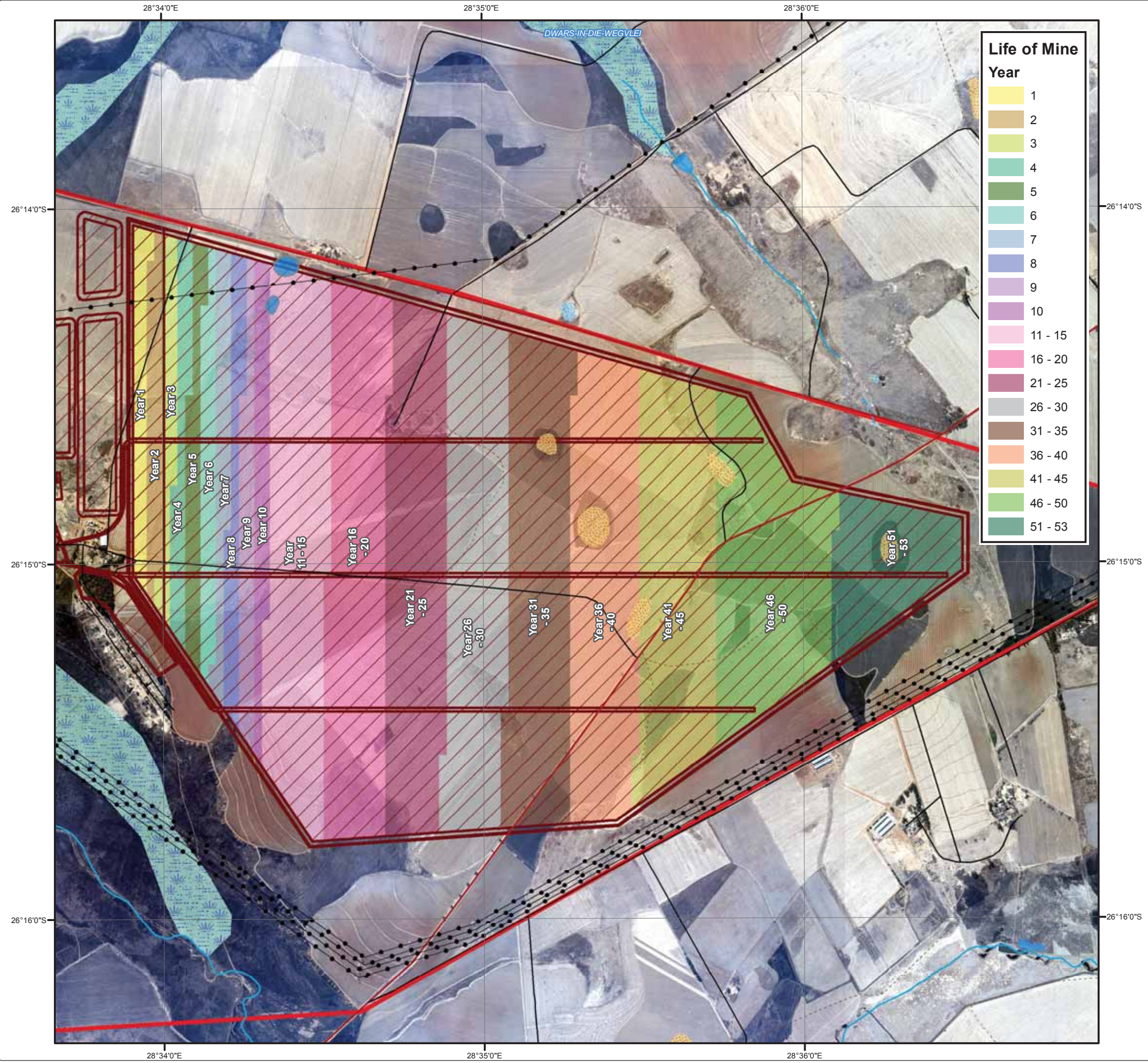
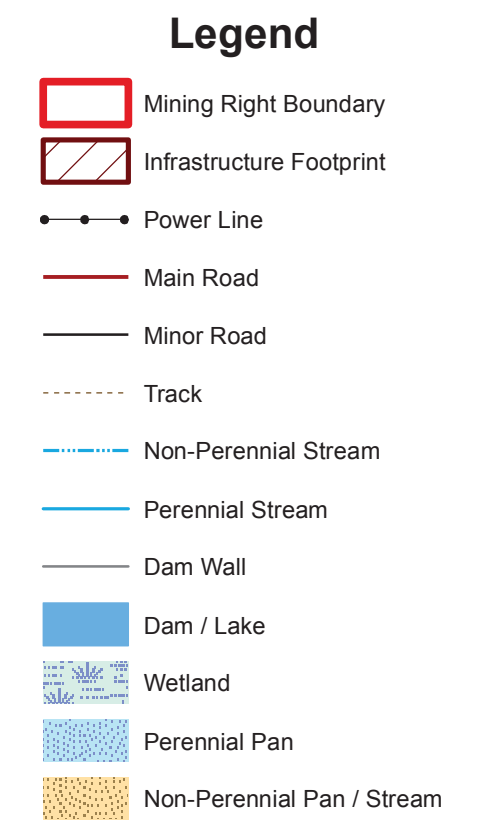
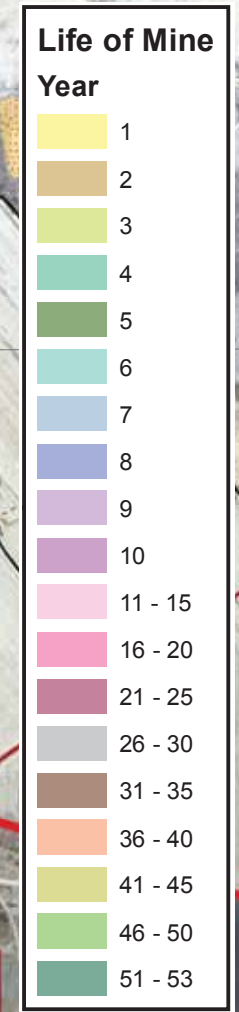
Projection: Transverse Mercator      Ref #: meg.CNC4065.201607.107  
 Datum: WGS 1984      Revision Number: 5  
 Central Meridian: 29°E      Date: 24/03/2017





# Palmietkuilen Project EIA

## Life of Mine Plan



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Projection: Transverse Mercator Ref #: meg.CNC4065.201610.129  
 Datum: WGS 1984 Revision Number: 1  
 Central Meridian: 29°E Date: 19/01/2017

0 0.25 0.5 1  
 Kilometres  
 1:20 000

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# Palmietkuilen Project EIA Routing Alternatives Considered

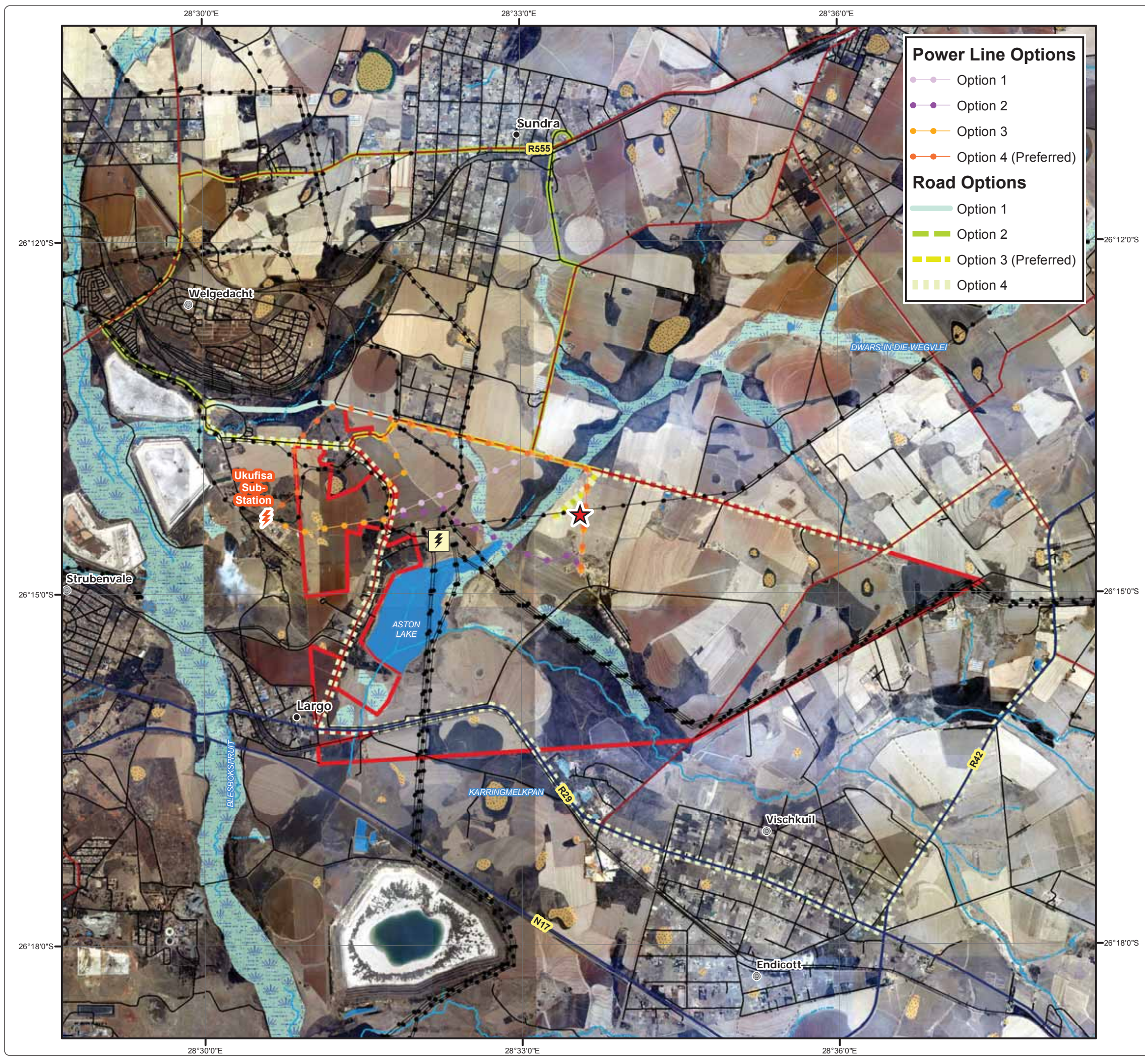
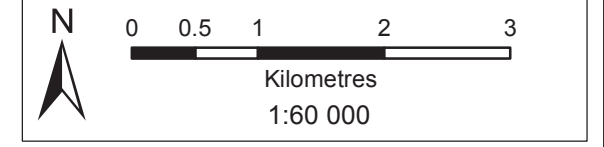
- Power Line Options**
- Option 1
  - Option 2
  - Option 3
  - Option 4 (Preferred)
- Road Options**
- Option 1
  - Option 2
  - Option 3 (Preferred)
  - Option 4

- Legend**
- Mining Right Boundary
  - Other Town
  - Settlement
  - Sub-Station
  - Ukufisa Sub-Station
  - Proposed Sub-Station
  - Power Line
  - Arterial / National Route
  - Main Road
  - Minor Road
  - Track
  - Railway Line
  - Non-Perennial Stream
  - Perennial Stream
  - Dam Wall
  - Dam / Lake
  - Wetland
  - Perennial Pan
  - Non-Perennial Pan / Stream

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Projection: Transverse Mercator Datum: WGS 1984 Central Meridian: 29°E Ref #: meg.CNC4065.201701.068 Revision Number: 3 Date: 28/03/2017





# Palmietkuilen Project EIA


## Land Type

### Legend

- Mining Right Boundary
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream

Land Type	
	Ba1
	Ba2
	Bb3
	Bb19
	Ea15
	Ea20

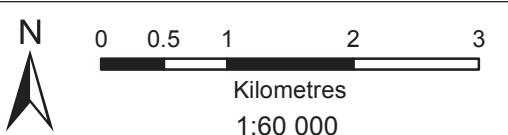
Land Type	Description
Ba1	PLINTHIC CATENA: UPLAND DUPLEX AND MARGALITIC SOILS RARE; Dystrophic and/or mesotrophic; red soils widespread
Ba2	PLINTHIC CATENA: UPLAND DUPLEX AND MARGALITIC SOILS RARE; Dystrophic and/or mesotrophic; red soils widespread
Bb3	PLINTHIC CATENA: UPLAND DUPLEX AND MARGALITIC SOILS RARE; Dystrophic and/or mesotrophic; red soils not widespread
Bb19	PLINTHIC CATENA: UPLAND DUPLEX AND MARGALITIC SOILS RARE; Dystrophic and/or mesotrophic; red soils not widespread
Ea15	ONE OR MORE OF: VERTIC, MELANIC, RED STRUCTURED DIAGNOSTIC HORIZONS; Undifferentiated
Ea20	ONE OR MORE OF: VERTIC, MELANIC, RED STRUCTURED DIAGNOSTIC HORIZONS; Undifferentiated



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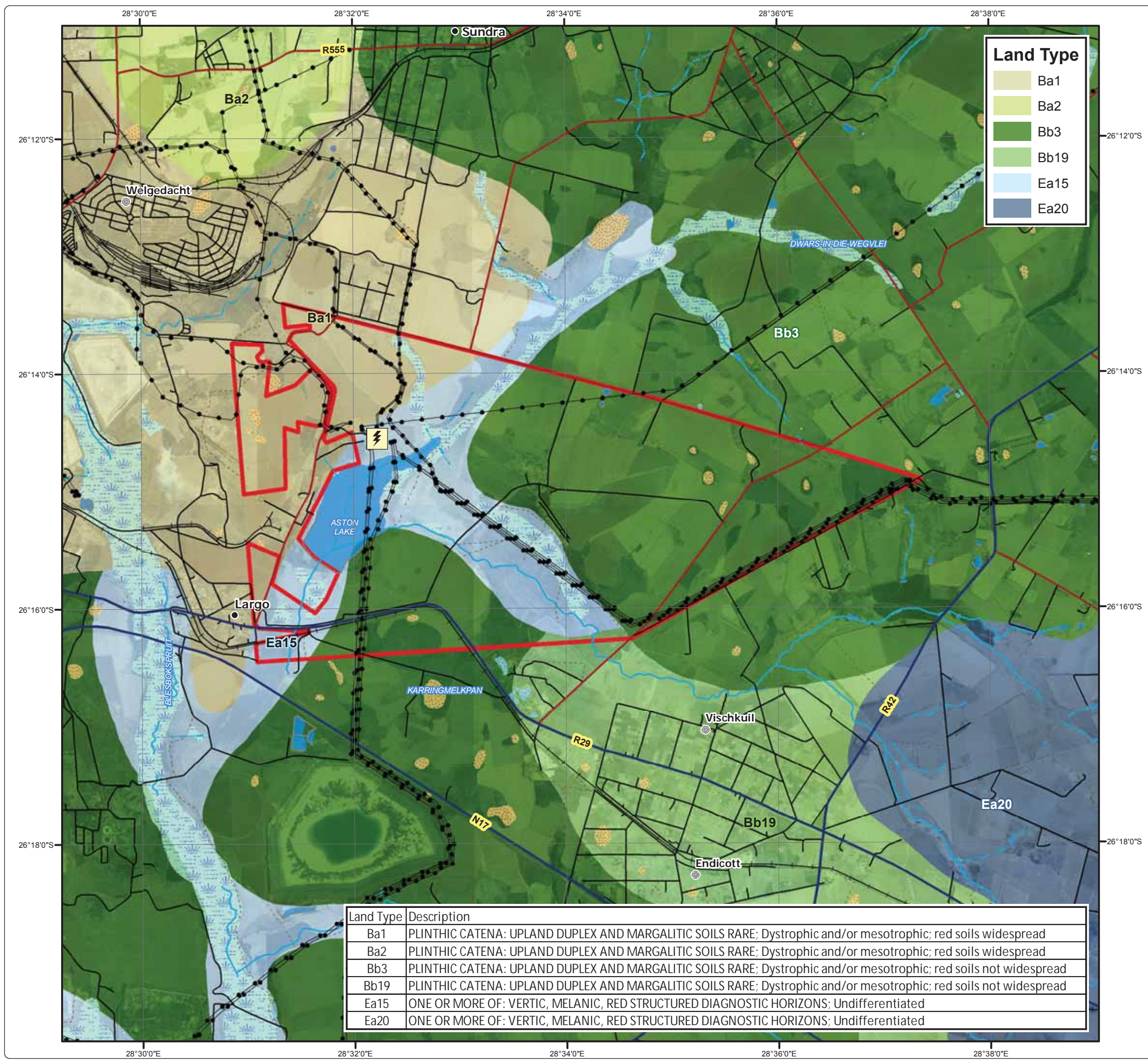
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Projection: Transverse Mercator	Ref #: meg.CNC4065.201607.039
Datum: WGS 1984	Revision Number: 3
Central Meridian: 29°E	Date: 28/03/2017



N  
0 0.5 1 2 3  
Kilometres  
1:60 000

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# Palmietkuilen Project EIA

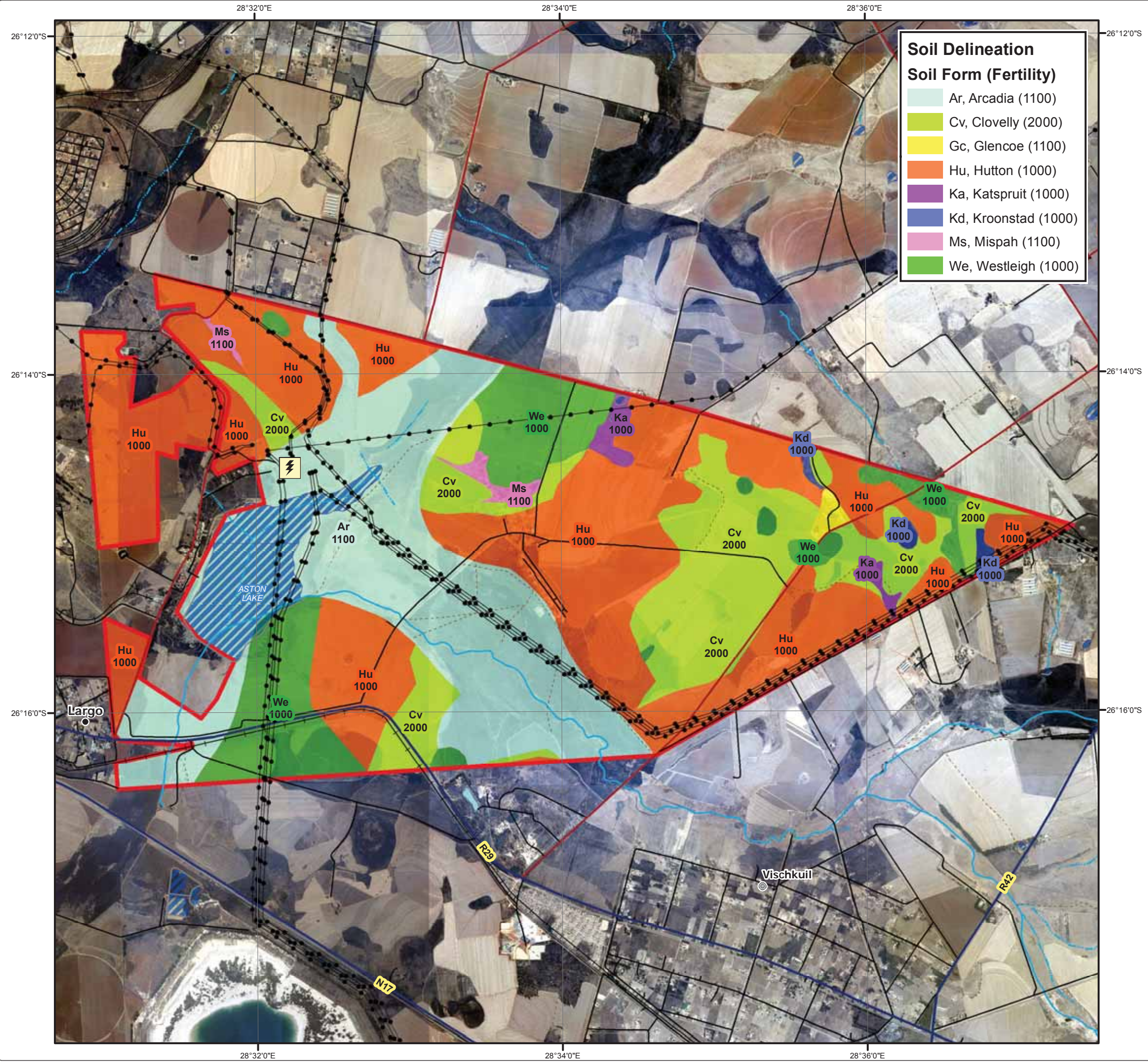
## Soil Delineation

**Soil Delineation**  
**Soil Form (Fertility)**

- Ar, Arcadia (1100)
- Cv, Clovelly (2000)
- Gc, Glencoe (1100)
- Hu, Hutton (1000)
- Ka, Katspruit (1000)
- Kd, Kroonstad (1000)
- Ms, Mispah (1100)
- We, Westleigh (1000)

**Legend**

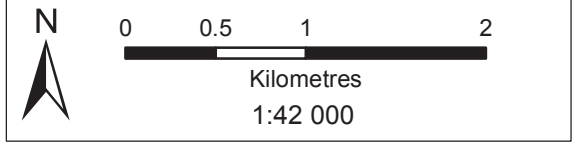
- Mining Right Boundary
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake



  
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Datum: WGS 1984                              Revision Number: 2  
Central Meridian: 29°E                        Date: 28/03/2017


























# Palmietkuilen Project EIA

## Land Capability

### Legend

-  Mining Right Boundary
-  Other Town
-  Settlement
-  Sub-Station
-  Power Line
-  Arterial / National Route
-  Main Road
-  Minor Road
-  Track
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream
-  Dam Wall
-  Dam / Lake
-  Wetland
-  Perennial Pan
-  Non-Perennial Pan / Stream

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

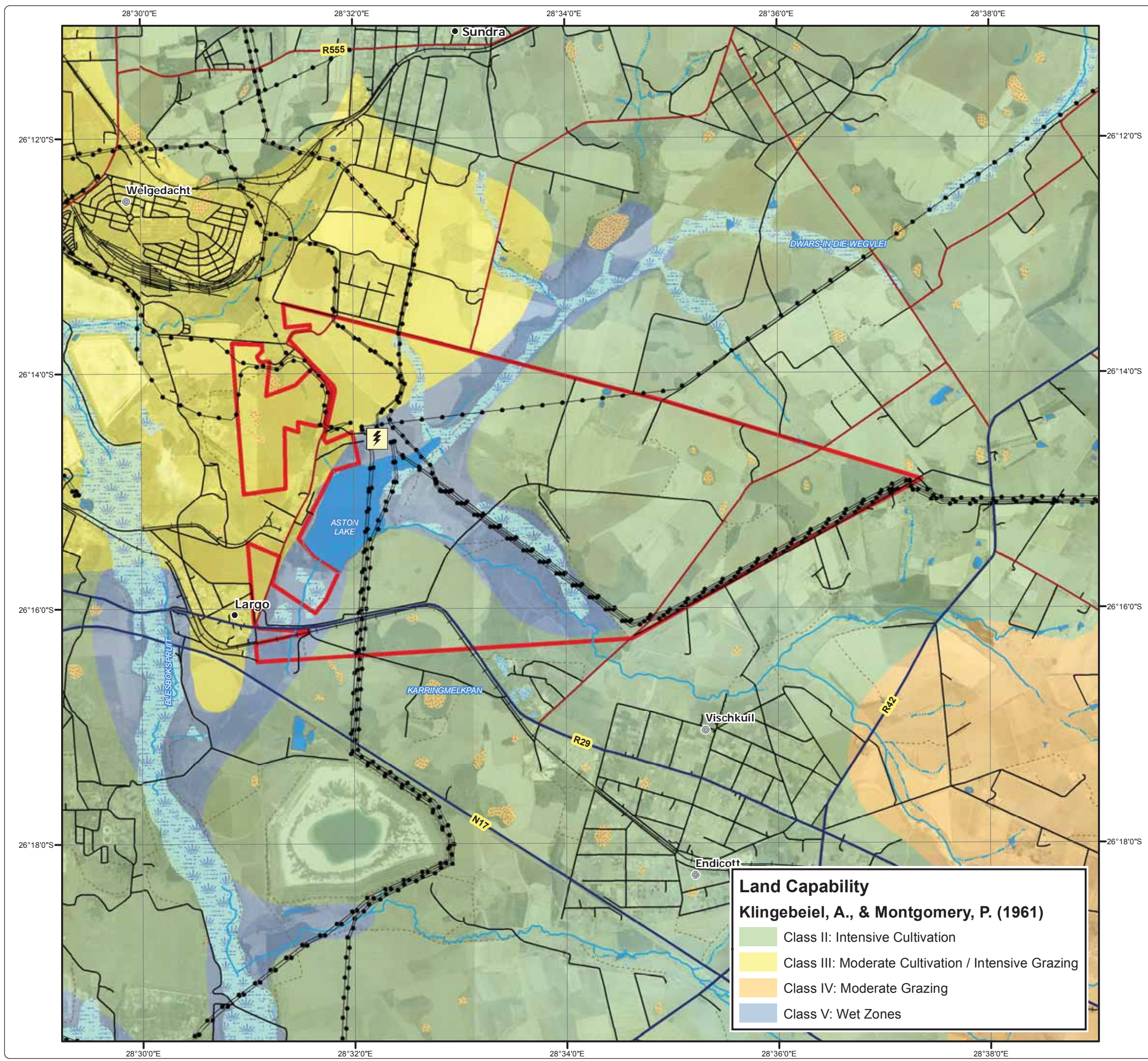
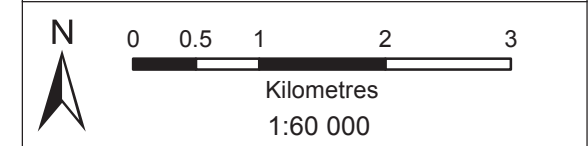
-  Class II: Intensive Cultivation
-  Class III: Moderate Cultivation / Intensive Grazing
-  Class IV: Moderate Grazing
-  Class V: Wet Zones



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 Datum: WGS 1984                              Revision Number: 2  
 Central Meridian: 29°E                        Date: 19/01/2017





# Palmietkuilen Project EIA

## Land Use

### Legend

- Mining Right Boundary
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream

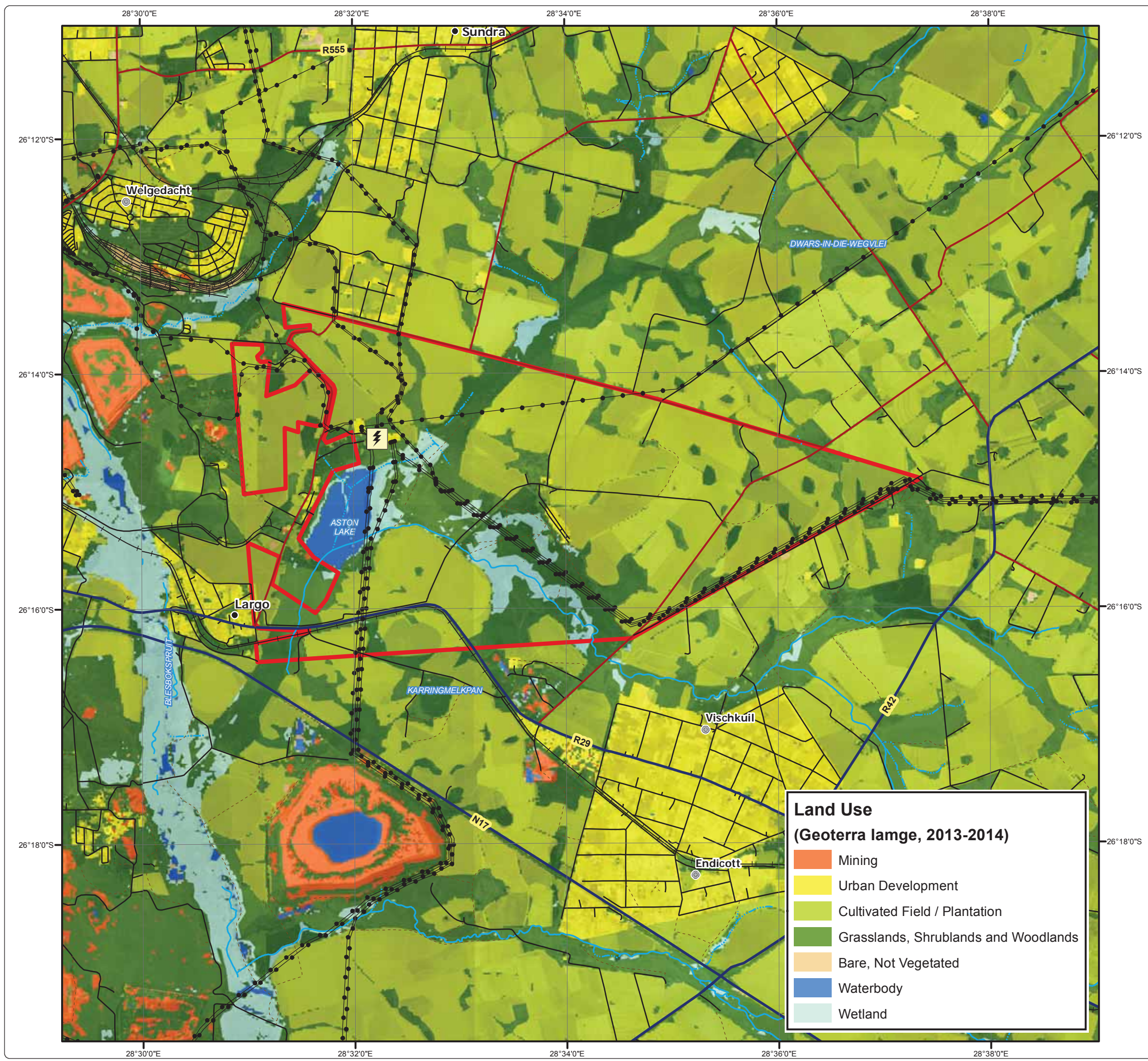
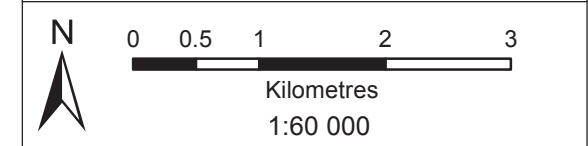
**Land Use**  
(Geoterra Image, 2013-2014)

- Mining
- Urban Development
- Cultivated Field / Plantation
- Grasslands, Shrublands and Woodlands
- Bare, Not Vegetated
- Waterbody
- Wetland



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





Projection: Transverse Mercator      Ref #: meg.CNC4065.201607.040  
 Datum: WGS 1984      Revision Number: 2  
 Central Meridian: 29°E      Date: 19/01/2017





# Palmietkuilen Project EIA Surface Water Sampling Locations

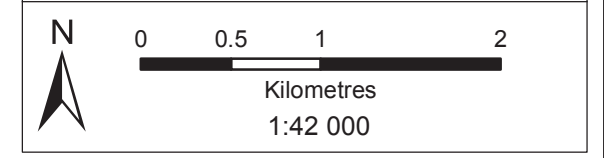
## Legend

-  Mining Right Boundary
-  Surface Water Sampling Location
-  Surface Water Sampling Location (Dry)
-  Other Town
-  Settlement
-  Sub-Station
-  Power Line
-  Arterial / National Route
-  Main Road
-  Minor Road
-  Track
-  Railway Line
-  Delineated Stream
-  Dam / Lake



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Projection: Transverse Mercator Ref #: meg.CNC4065.201610.178  
 Datum: WGS 1984 Revision Number: 1  
 Central Meridian: 29°E Date: 28/03/2017






# Palmietkuilen Project EIA

## Quaternary Catchments

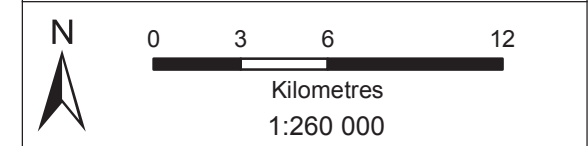
### Legend

-  Mining Right Boundary
-  Major Town
-  Other Town
-  Settlement
-  Main Road
-  Arterial / National Route
-  Railway Line
-  Dam Wall
-  Non-Perennial Stream
-  Perennial Stream
-  Dam / Lake
-  Wetland
-  Perennial Pan
-  Non-Perennial Pan / Stream
-  Quaternary Catchment
-  Affected Catchment



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Projection: Transverse Mercator      Ref #: meg.CNC4065.201607.051  
 Datum: WGS 1984      Revision Number: 2  
 Central Meridian: 29°E      Date: 28/03/2017























# Palmietkuilen Project EIA

## Floodline Delineation

### Legend

-  Mining Right Boundary
-  Preferred Power Line Route
-  Preferred Access Road Route
-  Infrastructure Footprint
-  Other Town
-  Settlement
-  Sub-Station
-  Power Line
-  Arterial / National Route
-  Main Road
-  Minor Road
-  Track
-  Railway Line
-  Delineated Stream
-  Dam / Lake

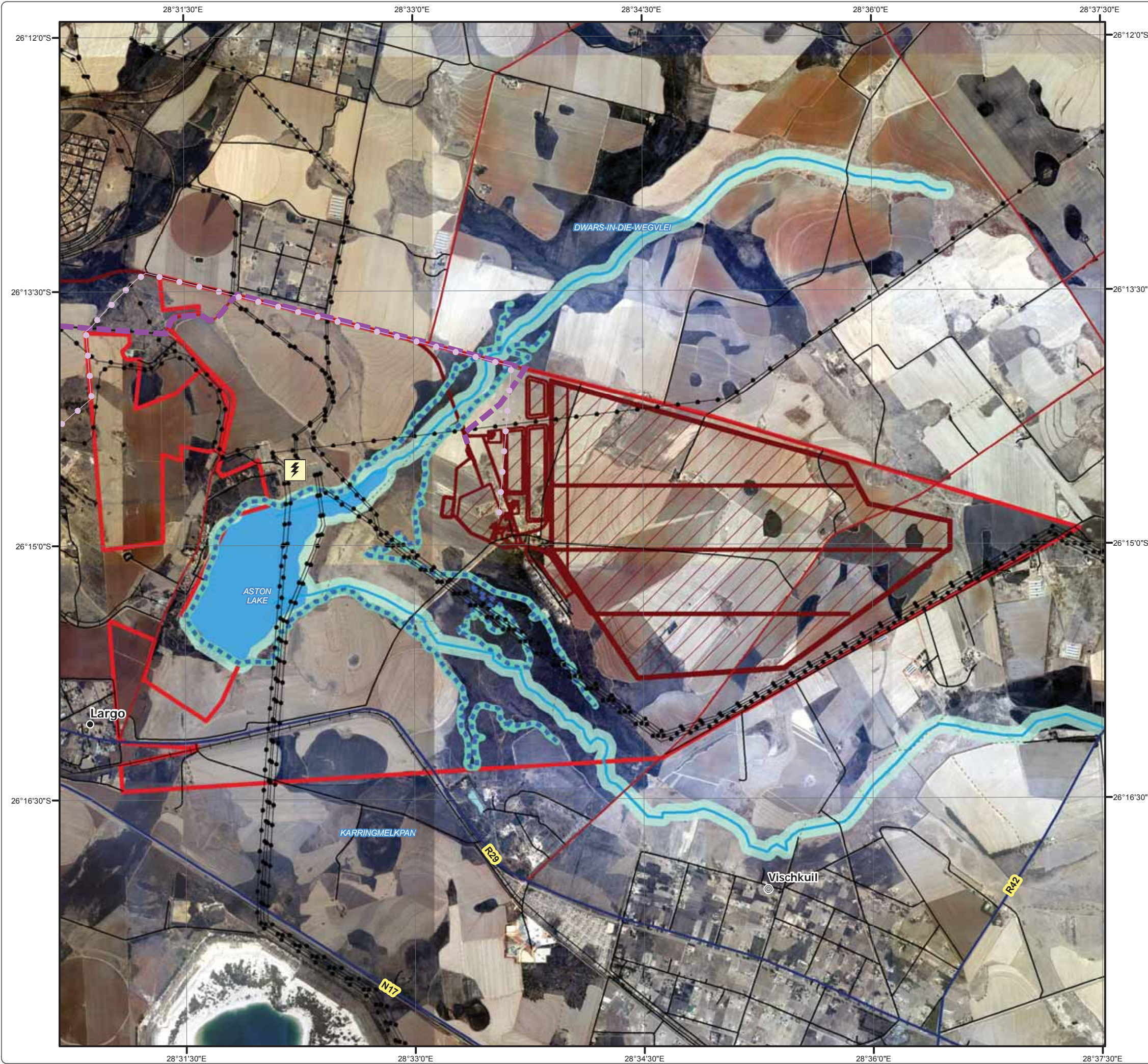
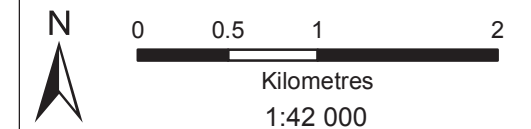
### Floodline Delineation

-  1:50 Year Floodline Delineation
-  1:100 Year Floodline Delineation
-  100 m Watercourse Buffer



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Projection: Transverse Mercator      Ref #: meg.CNC4065.201611.032  
 Datum: WGS 1984                              Revision Number: 3  
 Central Meridian: 29°E                        Date: 28/03/2017

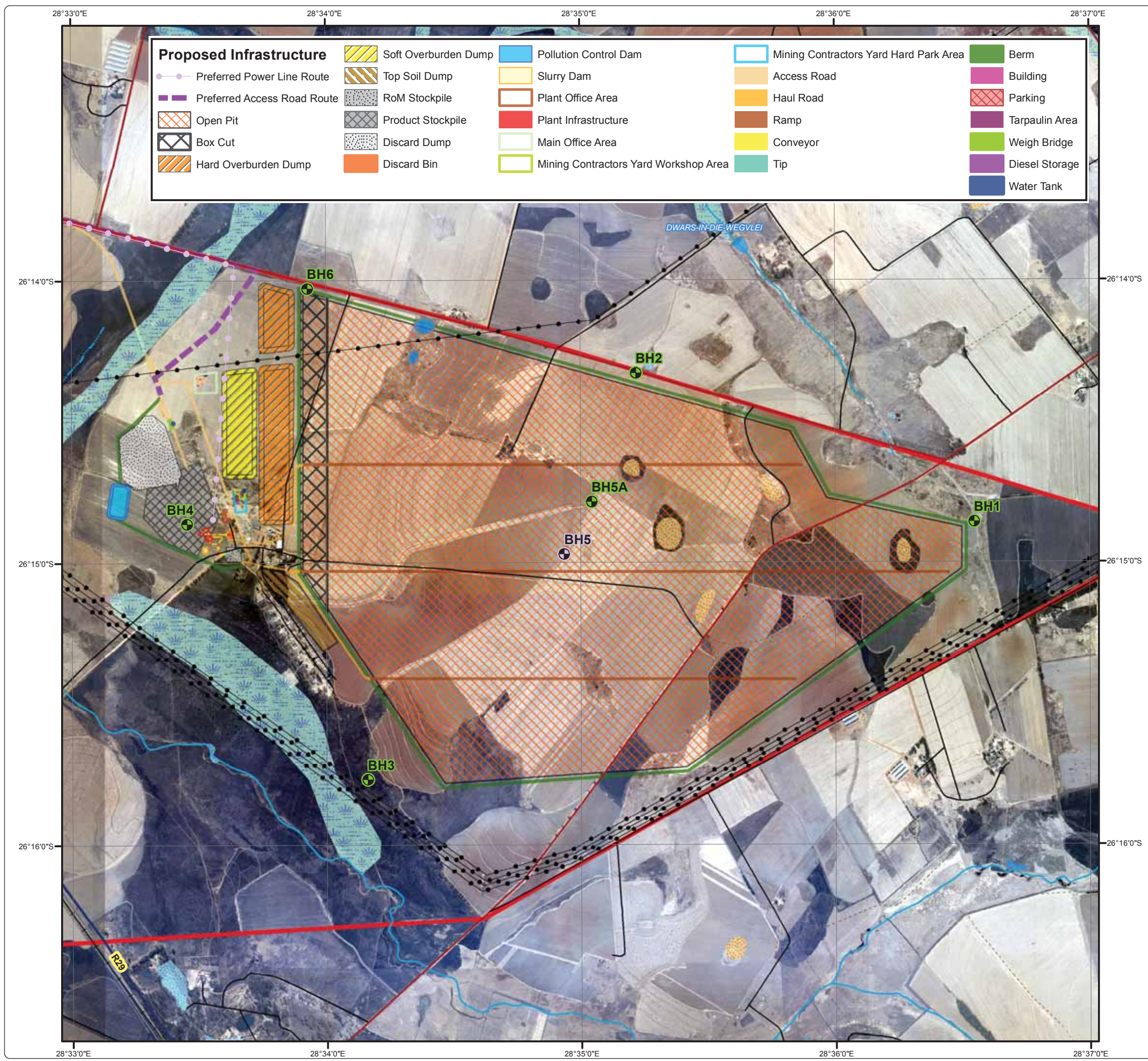




# Palmietkuilen Project EIA

## Newly Drilled Monitoring Boreholes

Proposed Infrastructure			
	Preferred Power Line Route		Soft Overburden Dump
	Preferred Access Road Route		Top Soil Dump
	Open Pit		RoM Stockpile
	Box Cut		Product Stockpile
	Hard Overburden Dump		Discard Dump
	Pollution Control Dam		Discard Bin
	Slurry Dam		Plant Infrastructure
	Plant Office Area		Main Office Area
	Mining Contractors Yard Hard Park Area		Mining Contractors Yard Workshop Area
	Access Road		Tip
	Haul Road		Berm
	Ramp		Building
	Conveyor		Parking
			Tarpaulin Area
			Weigh Bridge
			Diesel Storage
			Water Tank



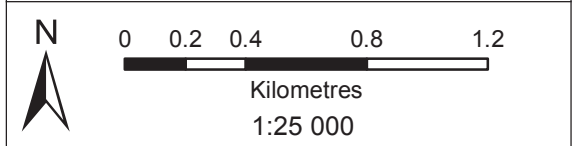
### Legend

- Mining Right Boundary
  - Power Line
  - Arterial / National Route
  - Main Road
  - Minor Road
  - Track
  - Railway Line
  - Non-Perennial Stream
  - Perennial Stream
  - Dam Wall
  - Dam / Lake
  - Wetland
  - Perennial Pan
  - Non-Perennial Pan / Stream
- #### Newly Drilled Monitoring Boreholes
- Monitoring Borehole
  - Collapsed Borehole



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 Datum: WGS 1984 Revision Number: 3  
 Central Meridian: 29°E Date: 24/03/2017





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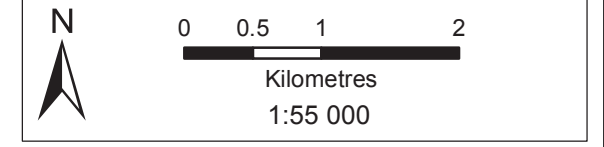
## Hydrocensus Boreholes

### Legend

- Mining Right Boundary
- ⊕ Hydrocensus Borehole
- ⊕ Hydrocensus Borehole (Sampled)
- ⊙ Other Town
- Settlement
- ⚡ Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- - - Track
- +— Railway Line
- · - · - Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream

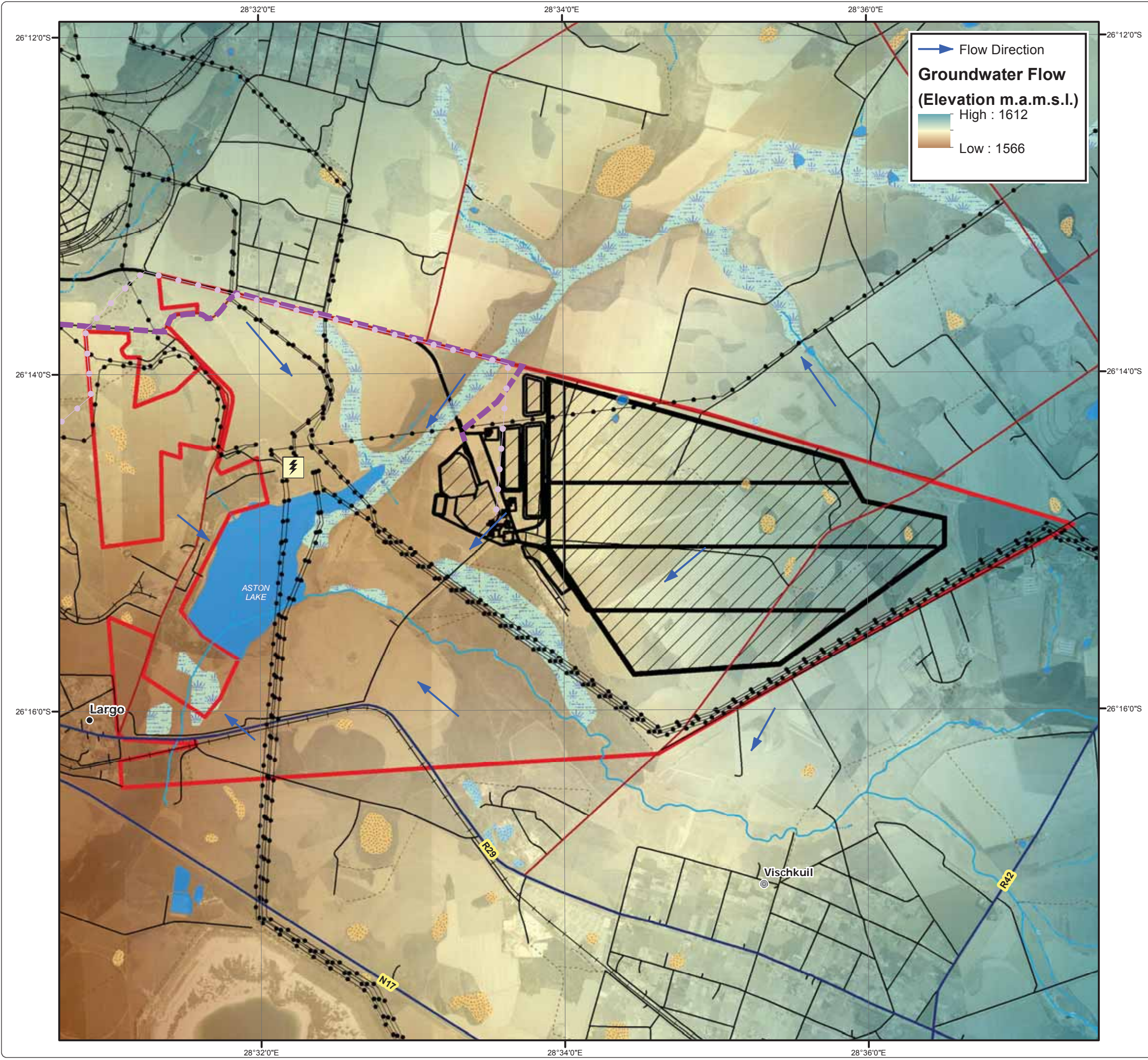


Projection: Transverse Mercator      Ref #: meg.CNC4065.201701.114  
 Datum: WGS 1984      Revision Number: 2  
 Central Meridian: 29°E      Date: 07/02/2017





# Palmietkuilen Project EIA Groundwater Flow Direction



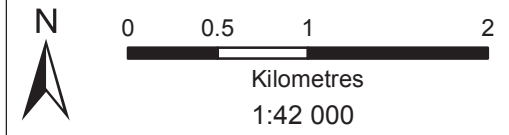
Flow Direction  
**Groundwater Flow**  
 (Elevation m.a.s.l.)  
 High : 1612  
 Low : 1566

### Legend

- Mining Right Boundary
- Preferred Power Line Route
- Preferred Access Road Route
- Infrastructure Footprint
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream



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 Datum: WGS 1984 Revision Number: 1  
 Central Meridian: 29°E Date: 28/03/2017









# Palmietkuilen Project EIA

## Regional Vegetation

### Legend

- Mining Right Boundary
- Other Town
- Settlement
- ⚡ Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream

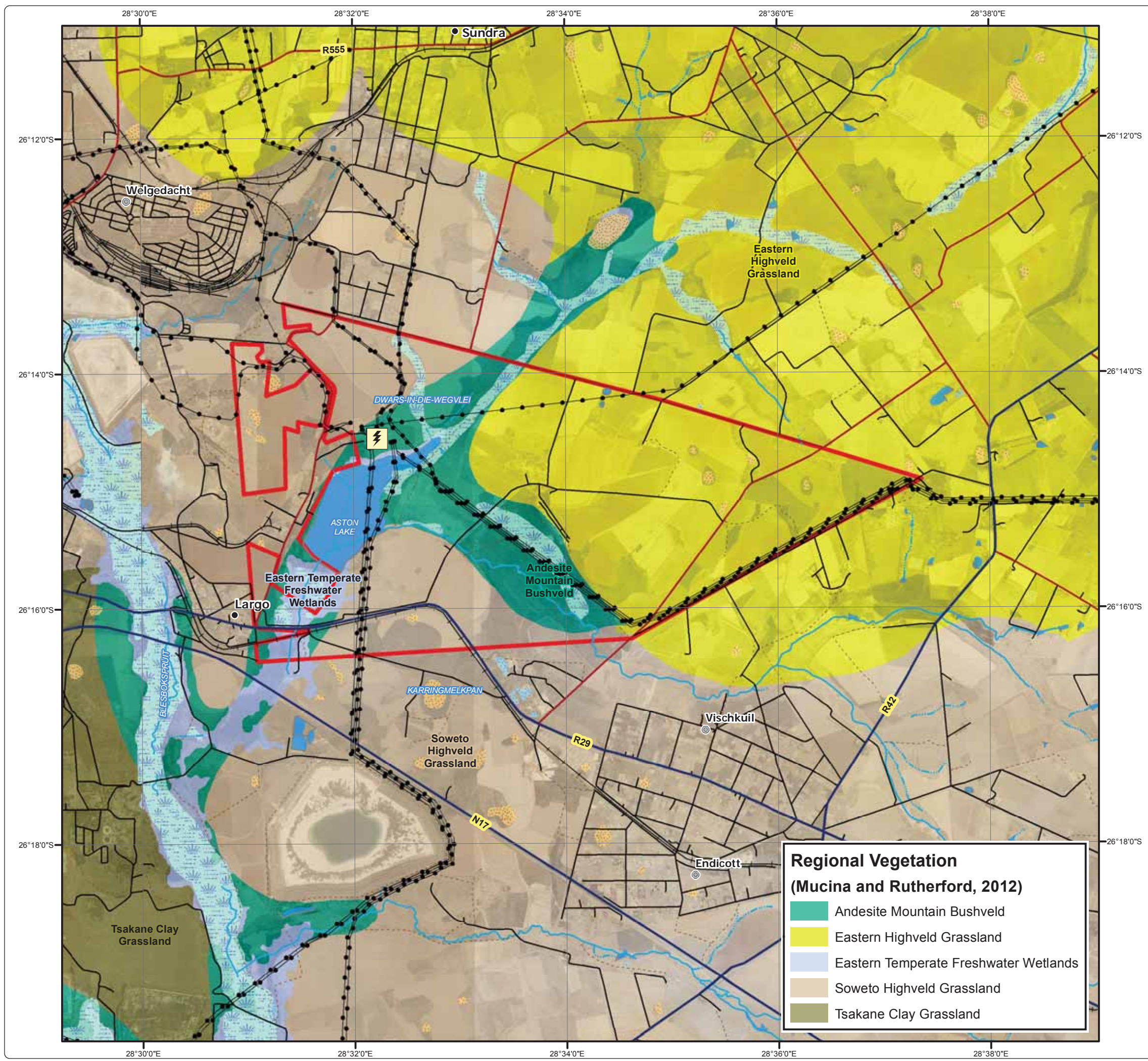
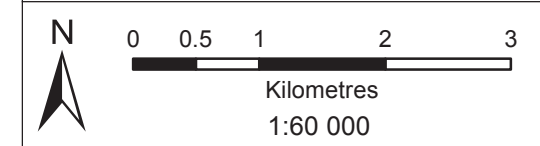
#### Regional Vegetation (Mucina and Rutherford, 2012)

- Andesite Mountain Bushveld
- Eastern Highveld Grassland
- Eastern Temperate Freshwater Wetlands
- Soweto Highveld Grassland
- Tsakane Clay Grassland



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 Datum: WGS 1984    Revision Number: 3  
 Central Meridian: 29°E    Date: 28/03/2017





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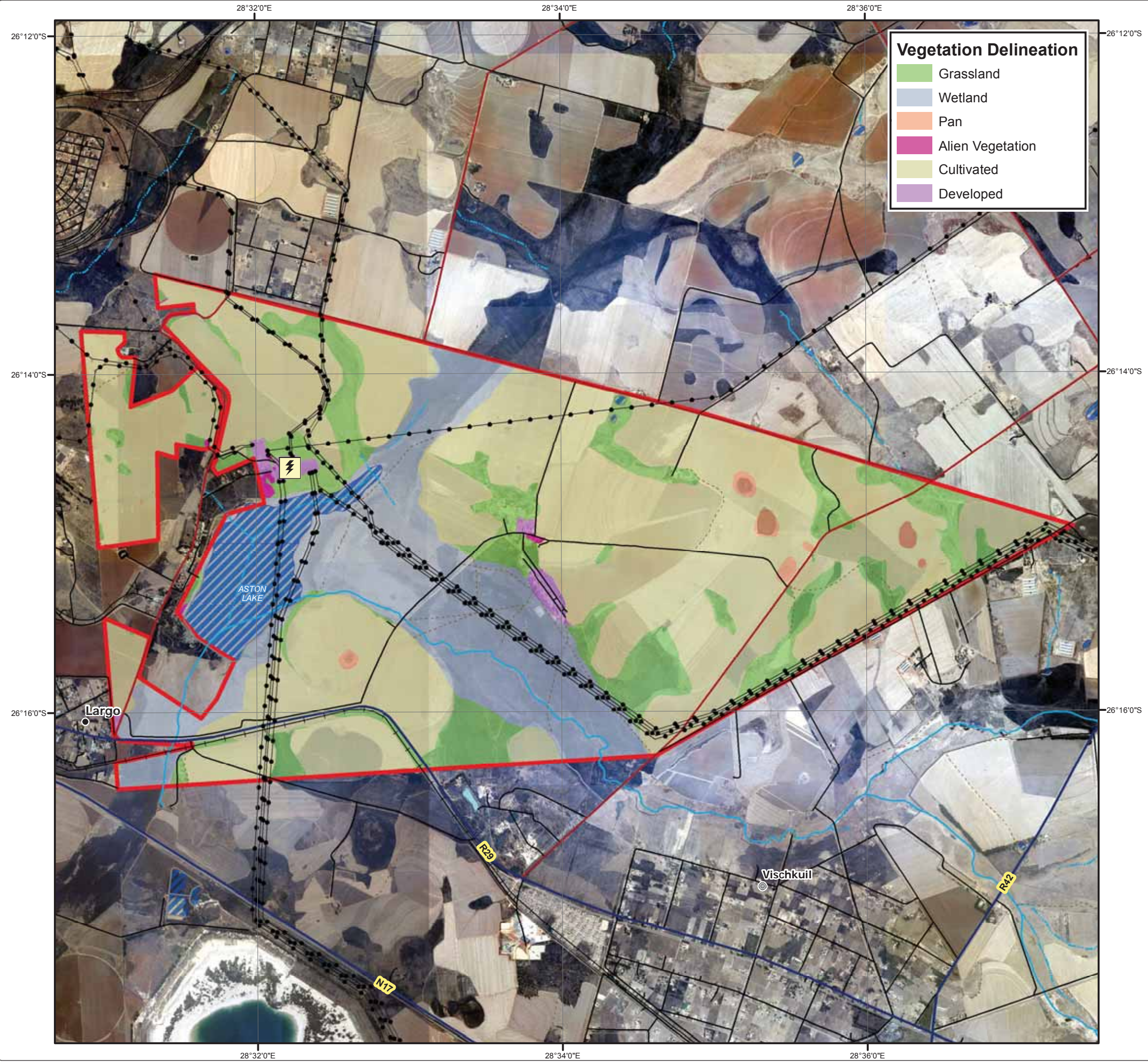
## Vegetation Delineation

**Vegetation Delineation**

- Grassland
- Wetland
- Pan
- Alien Vegetation
- Cultivated
- Developed

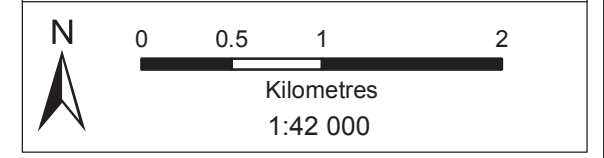
### Legend

- Mining Right Boundary
- Other Town
- Settlement
- Sub-Station
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- Main Road
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- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake



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Projection: Transverse Mercator Ref #: meg.CNC4065.201607.107  
 Datum: WGS 1984 Revision Number: 1  
 Central Meridian: 29°E Date: 28/03/2017





# Palmietkuilen Project EIA

## Gauteng C-Plan

**Gauteng C-Plan (SANBI, 2011)**

- Ecological Support Area
- Important Area
- Irreplaceable Area
- Protected Area

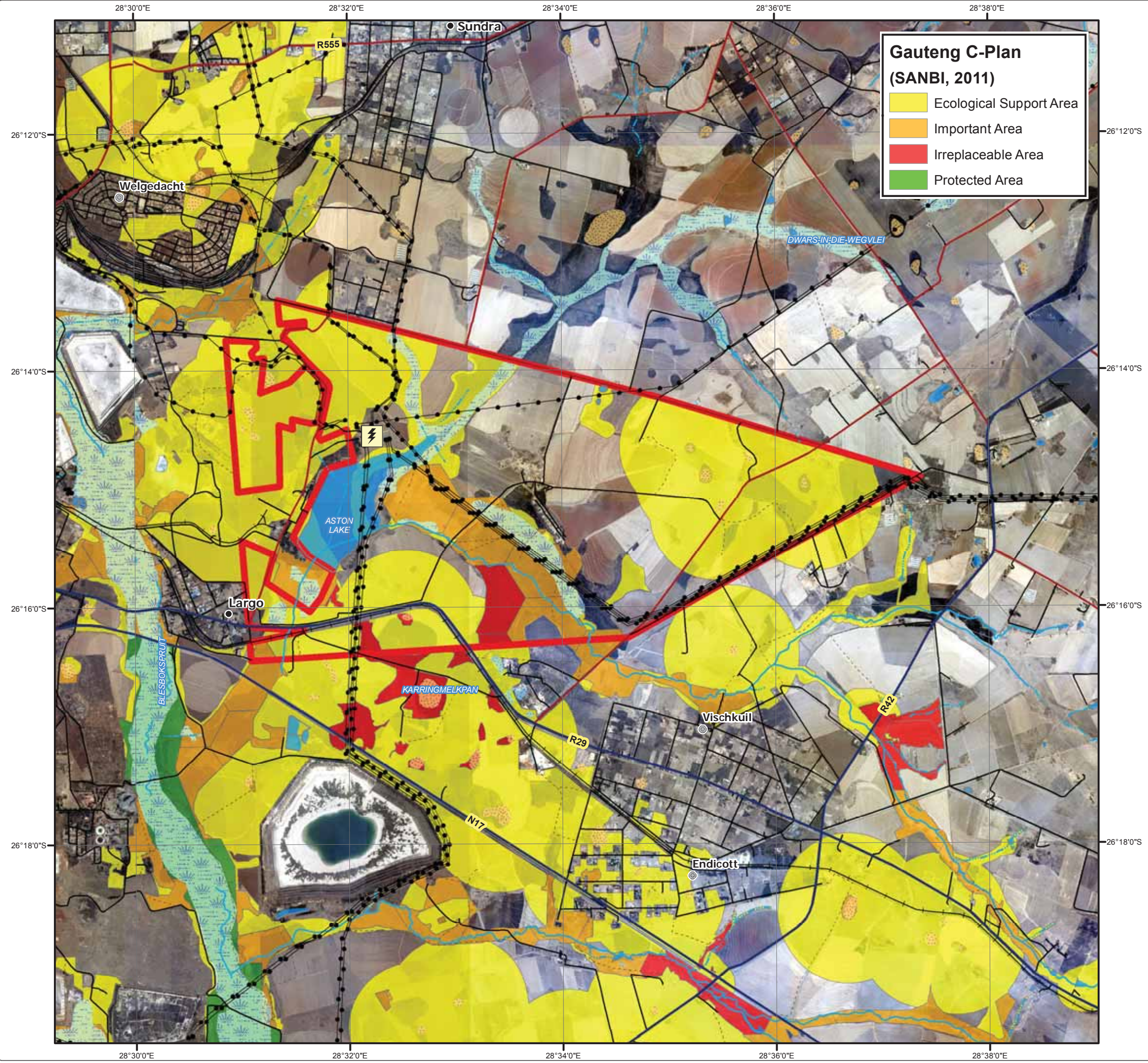
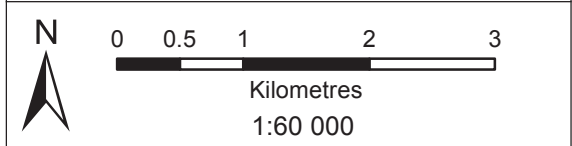
**Legend**

- Mining Right Boundary
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
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- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream



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 Datum: WGS 1984                              Revision Number: 3  
 Central Meridian: 29°E                        Date: 28/03/2017
























# Palmietkuilen Project EIA

## Protected Areas

South African Protected Areas Database  
(Department of Environmental Affairs, 2015)

-  Nature Reserve
-  Ramsar Site

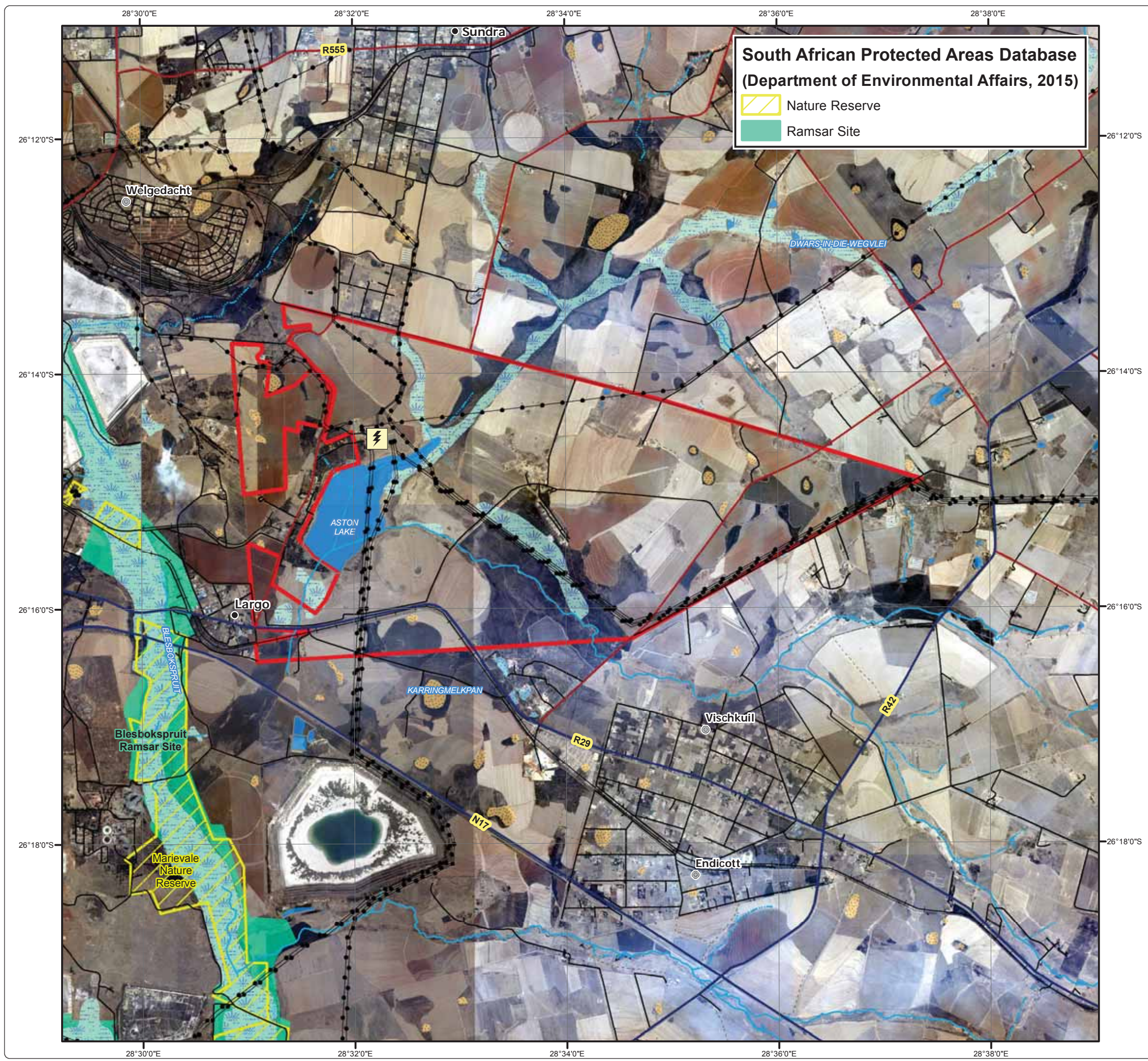
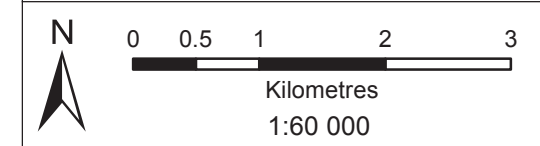
### Legend

-  Mining Right Boundary
-  Other Town
-  Settlement
-  Sub-Station
-  Power Line
-  Arterial / National Route
-  Main Road
-  Minor Road
-  Track
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream
-  Dam Wall
-  Dam / Lake
-  Wetland
-  Perennial Pan
-  Non-Perennial Pan / Stream



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Datum: WGS 1984 Revision Number: 3  
Central Meridian: 29°E Date: 28/03/2017






















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## Important Bird Areas

### Legend

-  Mining Right Boundary
-  Other Town
-  Settlement
-  Sub-Station
-  Power Line
-  Arterial / National Route
-  Main Road
-  Minor Road
-  Track
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream
-  Dam Wall
-  Dam / Lake
-  Wetland
-  Perennial Pan
-  Non-Perennial Pan / Stream

### Important Bird Areas (BirdLife South Africa, 2015)

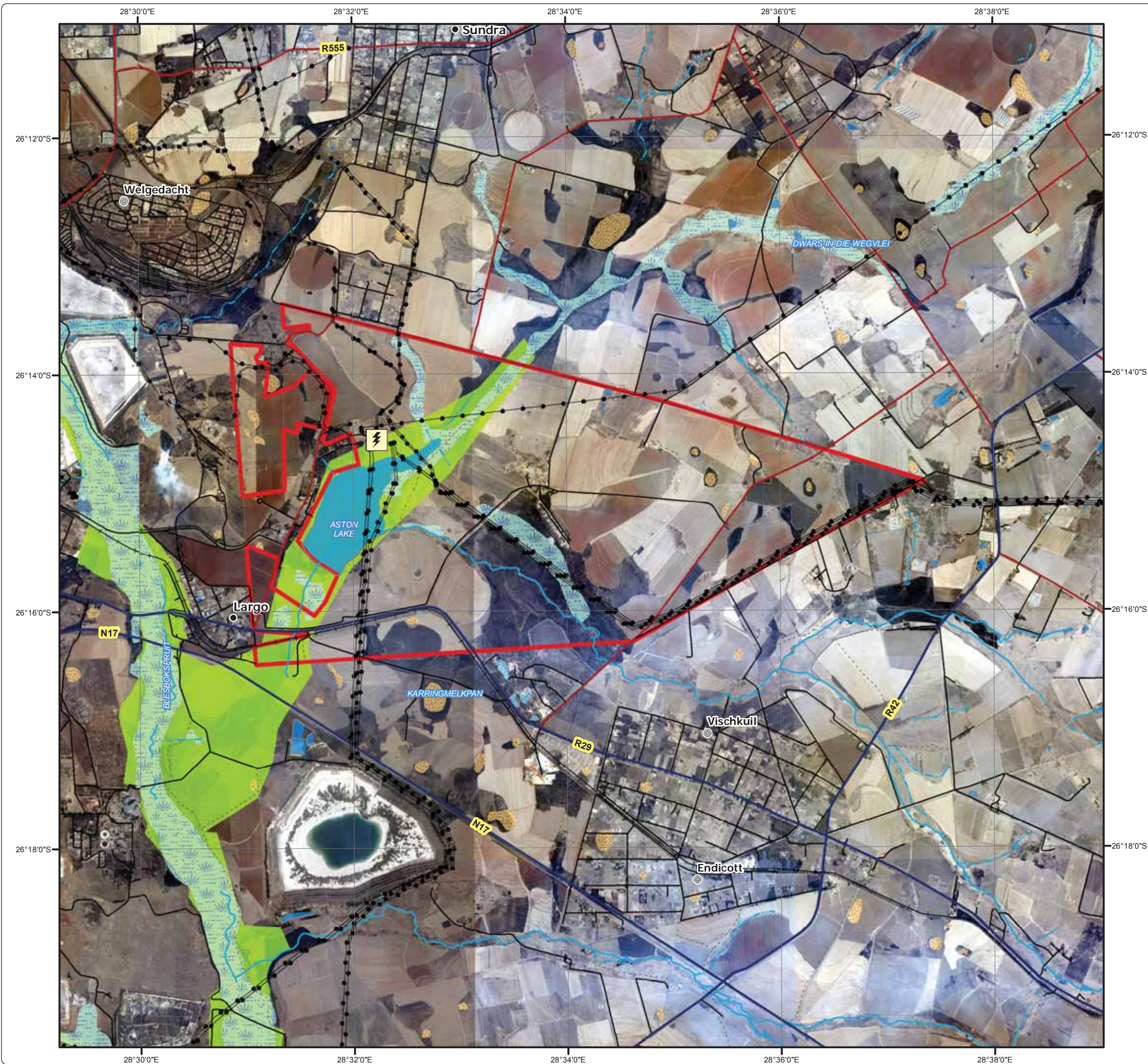
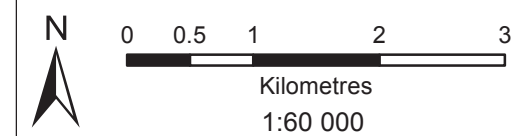
-  Blesbokspruit



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Projection: Transverse Mercator      Ref #: meg.CNC4065.201607.054  
Datum: WGS 1984      Revision Number: 3  
Central Meridian: 29°E      Date: 28/03/2017





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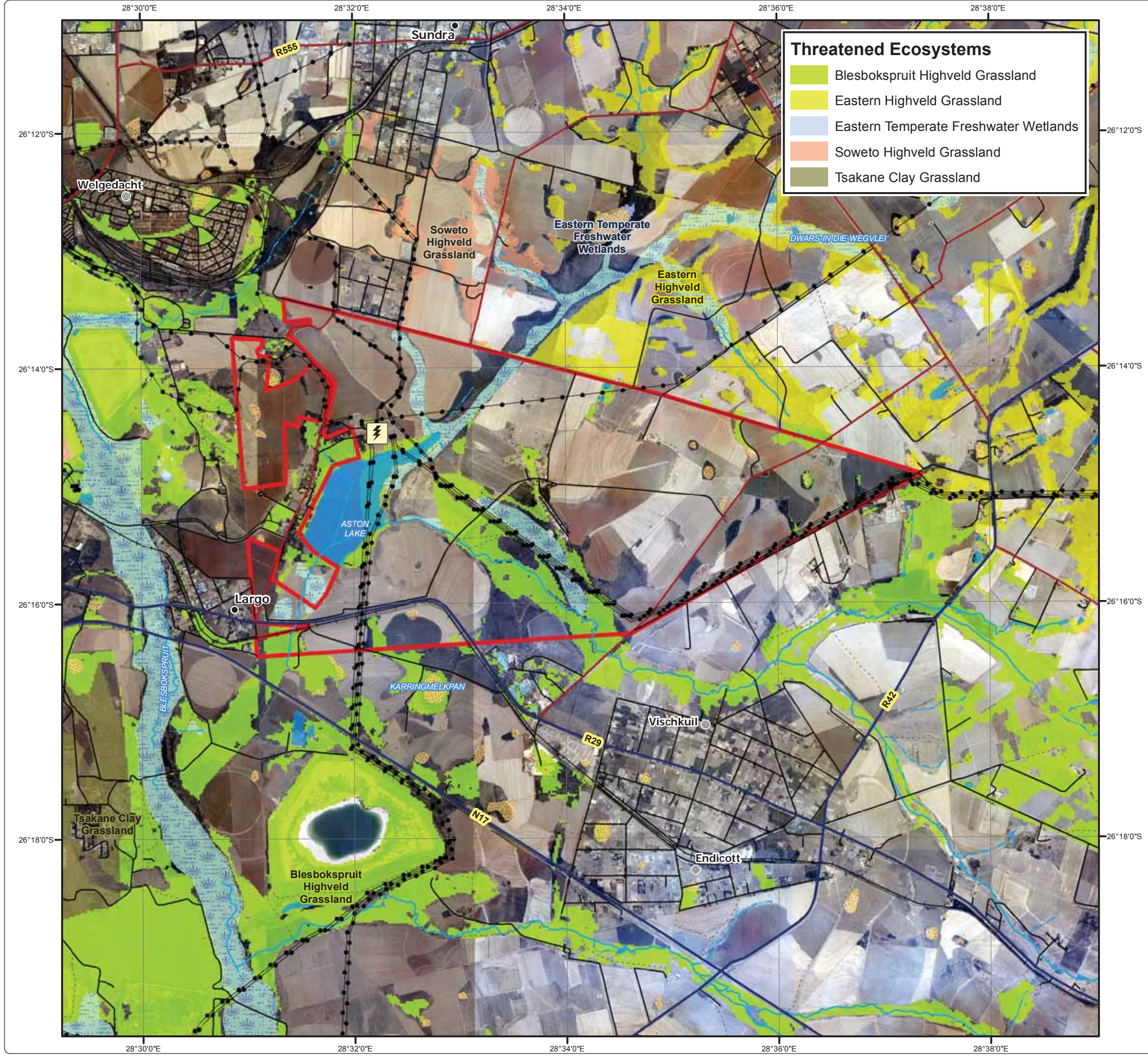
## Threatened Ecosystems

**Threatened Ecosystems**

- Blesbokspruit Highveld Grassland
- Eastern Highveld Grassland
- Eastern Temperate Freshwater Wetlands
- Soweto Highveld Grassland
- Tsakane Clay Grassland

**Legend**

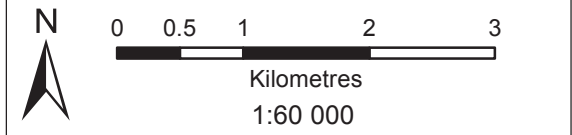
- Mining Right Boundary
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream



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Projection: Transverse Mercator Ref #: meg.CNC4065.201607.059  
 Datum: WGS 1984 Revision Number: 3  
 Central Meridian: 29°E Date: 28/03/2017
















# Palmietkuilen Project EIA

## NPAES Focus Areas

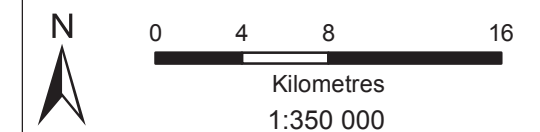
### Legend

-  Mining Right Boundary
-  Power Station
-  Major Town
-  Secondary Town
-  Other Town
-  Main Road
-  Arterial / National Route
-  Railway Line
-  Perennial Stream
-  Dam
- NPAES Focus Areas**
-  NW/Gauteng Bushveld



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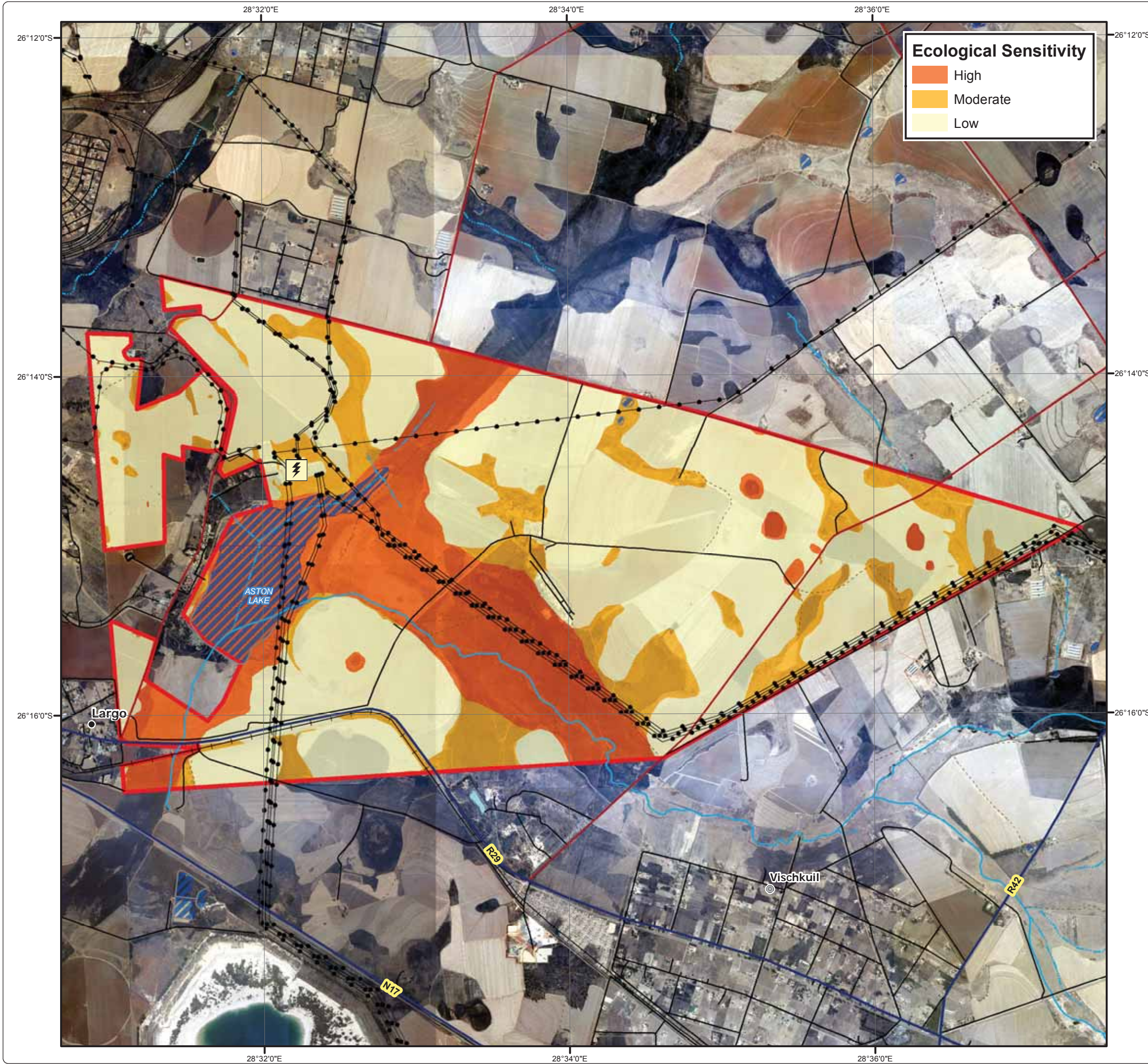
Projection: Transverse Mercator      Ref #: meg.CNC4065.201607.055  
 Datum: WGS 1984                              Revision Number: 3  
 Central Meridian: 29°E                        Date: 28/03/2017





# Palmietkuilen Project EIA

## Ecological Sensitivity Plan



**Ecological Sensitivity**

- High
- Moderate
- Low

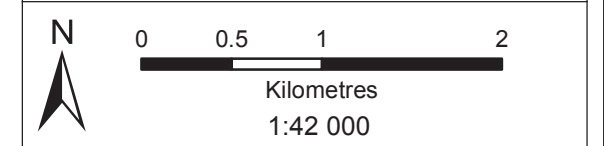
### Legend

- Mining Right Boundary
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake



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Projection: Transverse Mercator      Ref #: meg.CNC4065.201612.005  
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 Central Meridian: 29°E                        Date: 28/03/2017



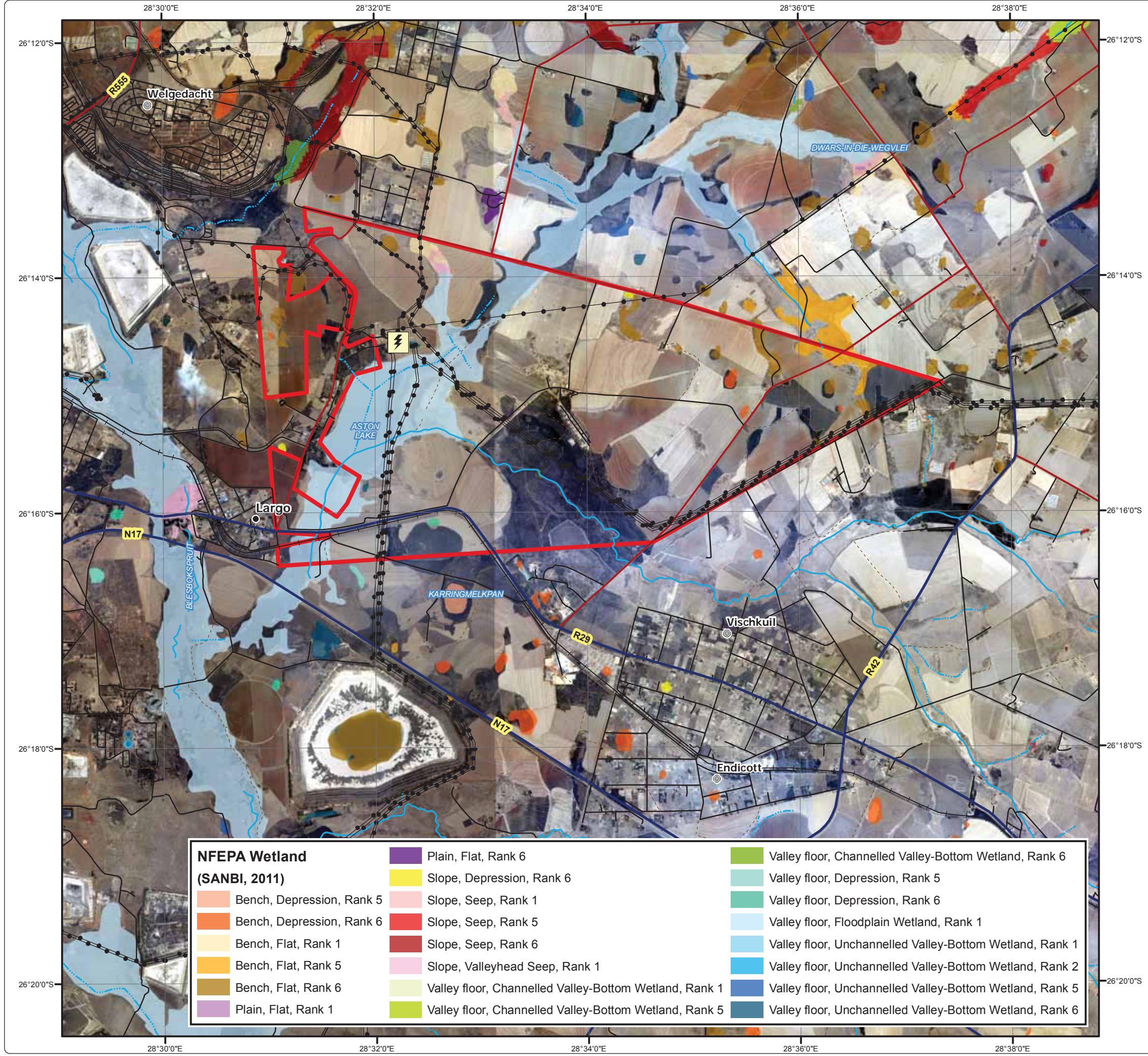


# Palmietkuilen Project EIA


## NFEPA Wetlands

### Legend

- Mining Right Boundary
- Other Town
- Settlement
- ⚡ Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream




NFEPA Wetland (SANBI, 2011)		
<span style="display: inline-block; width: 15px; height: 15px; background-color: #f4a460; border: 1px solid black;"></span> Bench, Depression, Rank 5	<span style="display: inline-block; width: 15px; height: 15px; background-color: #9932cc; border: 1px solid black;"></span> Plain, Flat, Rank 6	<span style="display: inline-block; width: 15px; height: 15px; background-color: #90ee90; border: 1px solid black;"></span> Valley floor, Channelled Valley-Bottom Wetland, Rank 6
<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff8c00; border: 1px solid black;"></span> Bench, Depression, Rank 6	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ffff00; border: 1px solid black;"></span> Slope, Depression, Rank 6	<span style="display: inline-block; width: 15px; height: 15px; background-color: #90ee90; border: 1px solid black;"></span> Valley floor, Depression, Rank 5
<span style="display: inline-block; width: 15px; height: 15px; background-color: #fff2cc; border: 1px solid black;"></span> Bench, Flat, Rank 1	<span style="display: inline-block; width: 15px; height: 15px; background-color: #f08080; border: 1px solid black;"></span> Slope, Seep, Rank 1	<span style="display: inline-block; width: 15px; height: 15px; background-color: #3cb371; border: 1px solid black;"></span> Valley floor, Depression, Rank 6
<span style="display: inline-block; width: 15px; height: 15px; background-color: #ffd966; border: 1px solid black;"></span> Bench, Flat, Rank 5	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ff4500; border: 1px solid black;"></span> Slope, Seep, Rank 5	<span style="display: inline-block; width: 15px; height: 15px; background-color: #add8e6; border: 1px solid black;"></span> Valley floor, Floodplain Wetland, Rank 1
<span style="display: inline-block; width: 15px; height: 15px; background-color: #c08040; border: 1px solid black;"></span> Bench, Flat, Rank 6	<span style="display: inline-block; width: 15px; height: 15px; background-color: #800000; border: 1px solid black;"></span> Slope, Seep, Rank 6	<span style="display: inline-block; width: 15px; height: 15px; background-color: #add8e6; border: 1px solid black;"></span> Valley floor, Unchannelled Valley-Bottom Wetland, Rank 1
<span style="display: inline-block; width: 15px; height: 15px; background-color: #d8bfd8; border: 1px solid black;"></span> Plain, Flat, Rank 1	<span style="display: inline-block; width: 15px; height: 15px; background-color: #ffb6c1; border: 1px solid black;"></span> Slope, Valleyhead Seep, Rank 1	<span style="display: inline-block; width: 15px; height: 15px; background-color: #1e90ff; border: 1px solid black;"></span> Valley floor, Unchannelled Valley-Bottom Wetland, Rank 2
	<span style="display: inline-block; width: 15px; height: 15px; background-color: #e0e080; border: 1px solid black;"></span> Valley floor, Channelled Valley-Bottom Wetland, Rank 1	<span style="display: inline-block; width: 15px; height: 15px; background-color: #4169e1; border: 1px solid black;"></span> Valley floor, Unchannelled Valley-Bottom Wetland, Rank 5
	<span style="display: inline-block; width: 15px; height: 15px; background-color: #90ee90; border: 1px solid black;"></span> Valley floor, Channelled Valley-Bottom Wetland, Rank 5	<span style="display: inline-block; width: 15px; height: 15px; background-color: #4682b4; border: 1px solid black;"></span> Valley floor, Unchannelled Valley-Bottom Wetland, Rank 6



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Kilometres

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# Palmietkuilen Project EIA Mining and Biodiversity Guidelines

**Mining and Biodiversity Guidelines (SANBI, 2013)**

- A. LEGALLY PROTECTED - MINING PROHIBITED
- B. HIGHEST BIODIVERSITY IMPORTANCE - HIGHEST RISK FOR MINING
- C. HIGH BIODIVERSITY IMPORTANCE - HIGH RISK TO MINING
- D. MODERATE BIODIVERSITY IMPORTANCE - MODERATE RISK FOR MINING

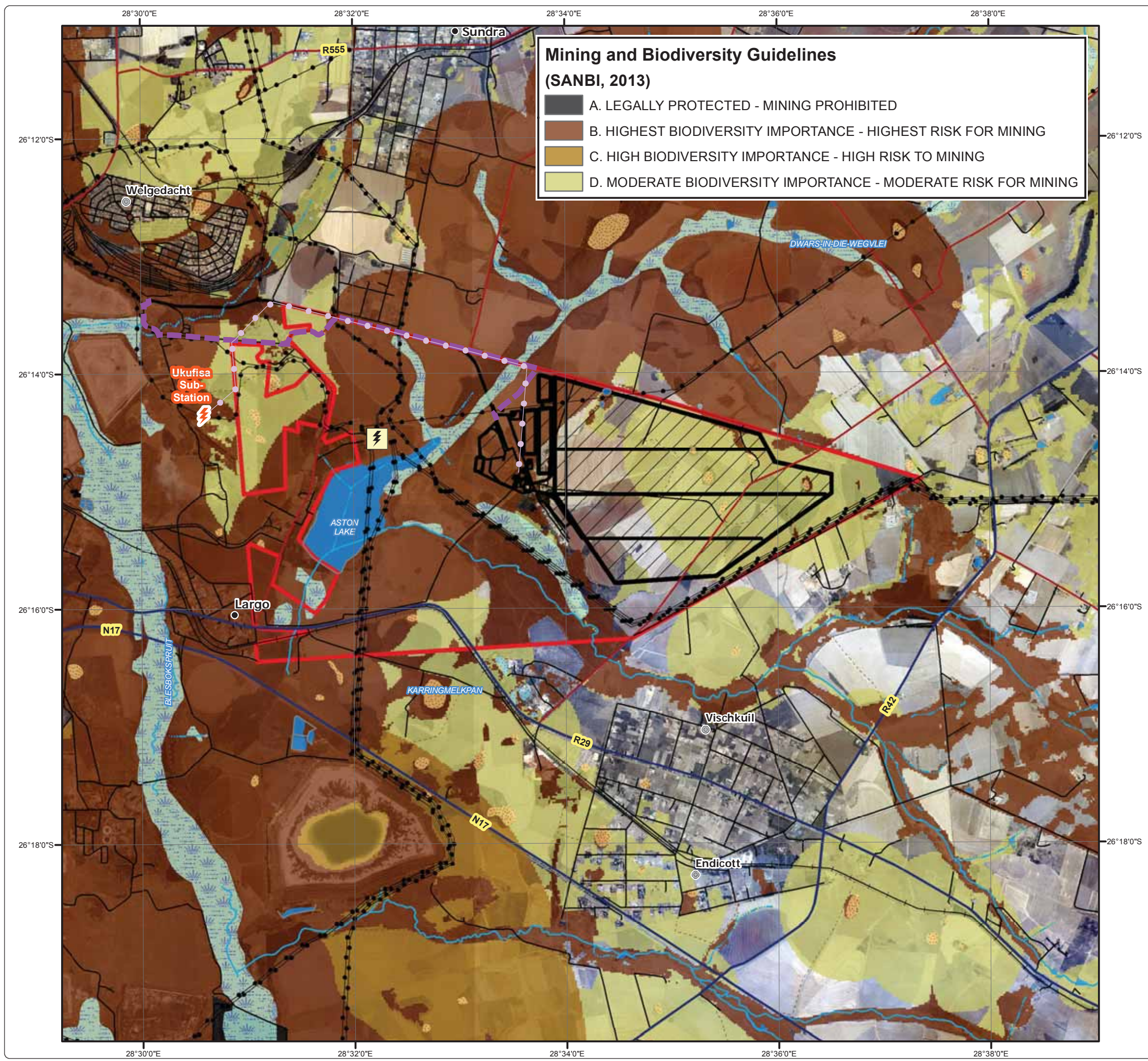
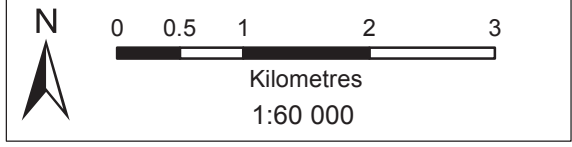
**Legend**

- Mining Right Boundary
- Preferred Power Line Route
- Preferred Access Road Route
- Infrastructure Footprint
- Other Town
- Settlement
- Sub-Station
- Ukufisa Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream



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Projection: Transverse Mercator      Ref #: meg.CNC4065.201607.037  
 Datum: WGS 1984      Revision Number: 4  
 Central Meridian: 29°E      Date: 28/03/2017





# Palmietkuilen Project EIA

## Wetland Delineation

**Wetland Delineation**

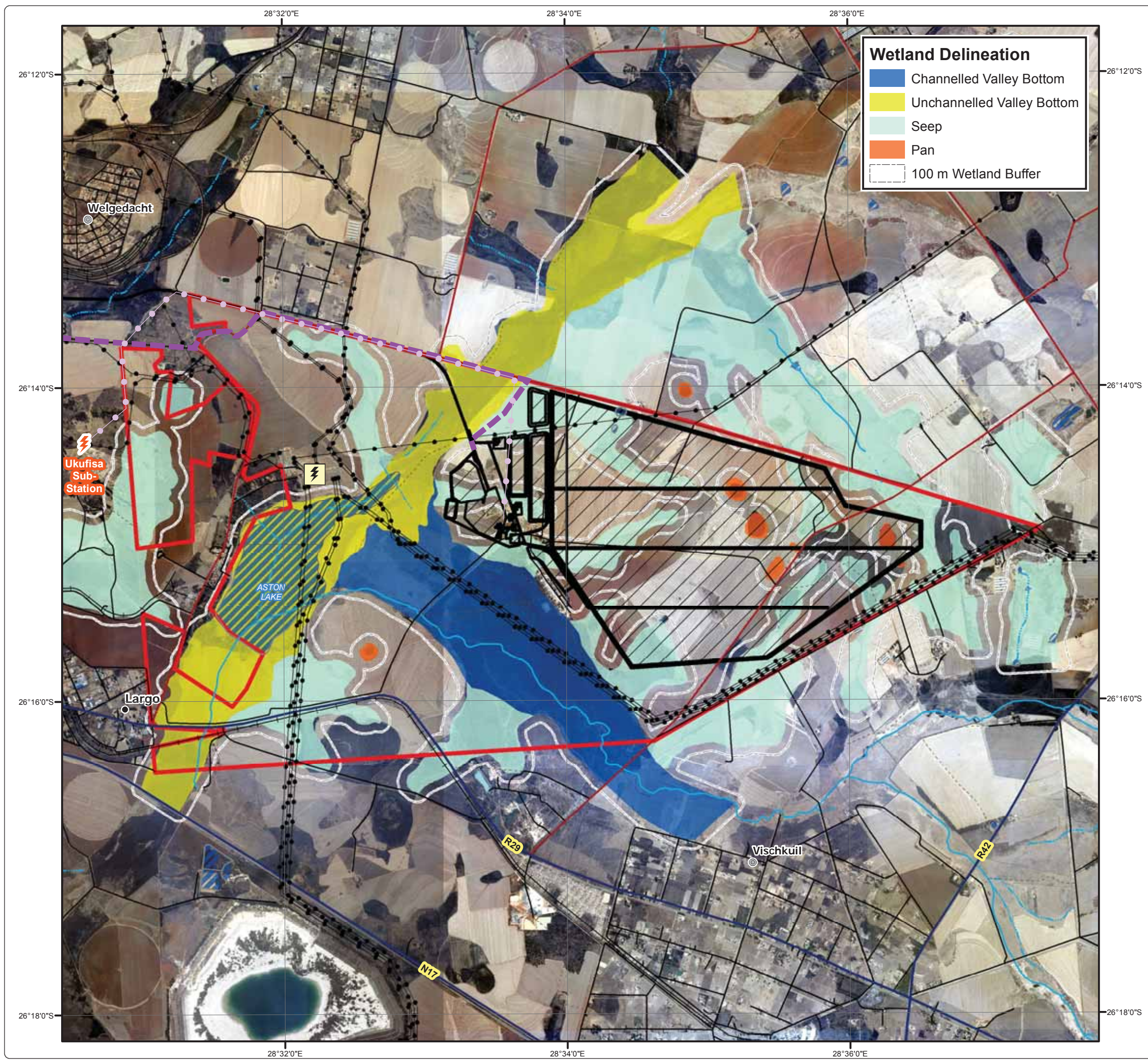
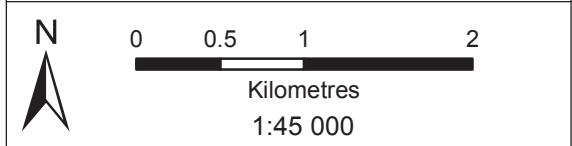
- Channelled Valley Bottom
- Unchannelled Valley Bottom
- Seep
- Pan
- 100 m Wetland Buffer

**Legend**

- Mining Right Boundary
- Preferred Power Line Route
- Preferred Access Road Route
- Infrastructure Footprint
- Other Town
- Settlement
- Sub-Station
- Ukufisa Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake



Projection: Transverse Mercator Datum: WGS 1984 Central Meridian: 29°E Ref #: meg.CNC4065.201607.041 Revision Number: 2 Date: 28/03/2017





# Palmietkuilen Project EIA

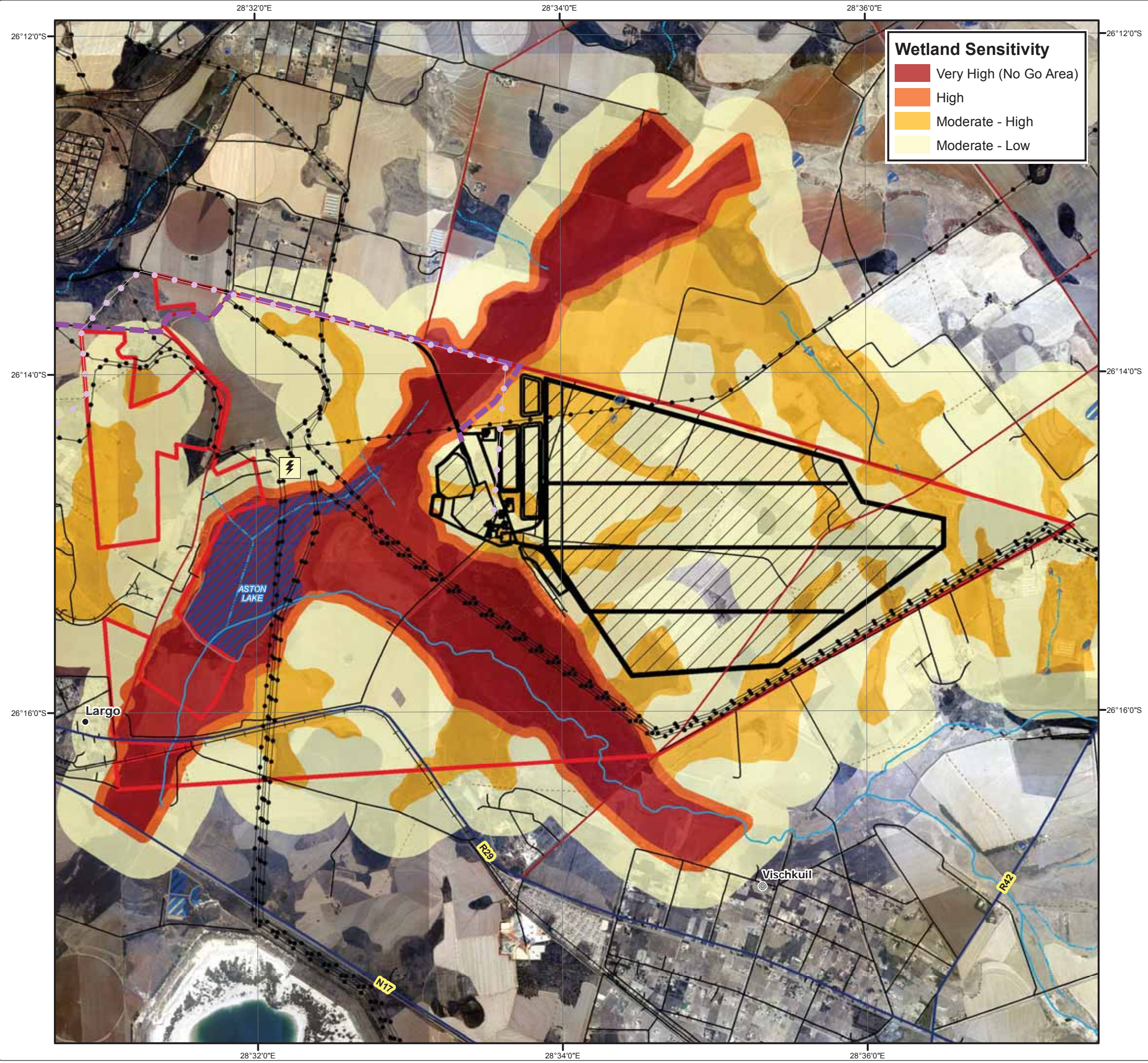
## Wetland Sensitivity Plan

**Wetland Sensitivity**

- Very High (No Go Area)
- High
- Moderate - High
- Moderate - Low

**Legend**

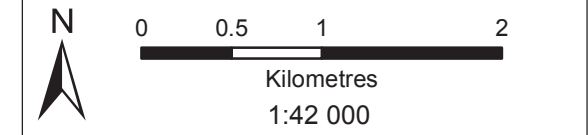
- Mining Right Boundary
- Preferred Power Line Route
- Preferred Access Road Route
- Infrastructure Footprint
- Other Town
- Settlement
- ⚡ Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake



  
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 Datum: WGS 1984                              Revision Number: 2  
 Central Meridian: 29°E                        Date: 28/03/2017





# Palmietkuilen Project EIA Aquatic Sampling Locations

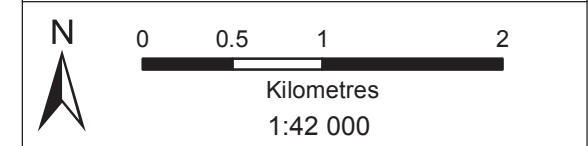
## Legend

- Mining Right Boundary
- Aquatic Sampling Location
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream



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 Datum: WGS 1984      Revision Number: 2  
 Central Meridian: 29°E      Date: 28/03/2017



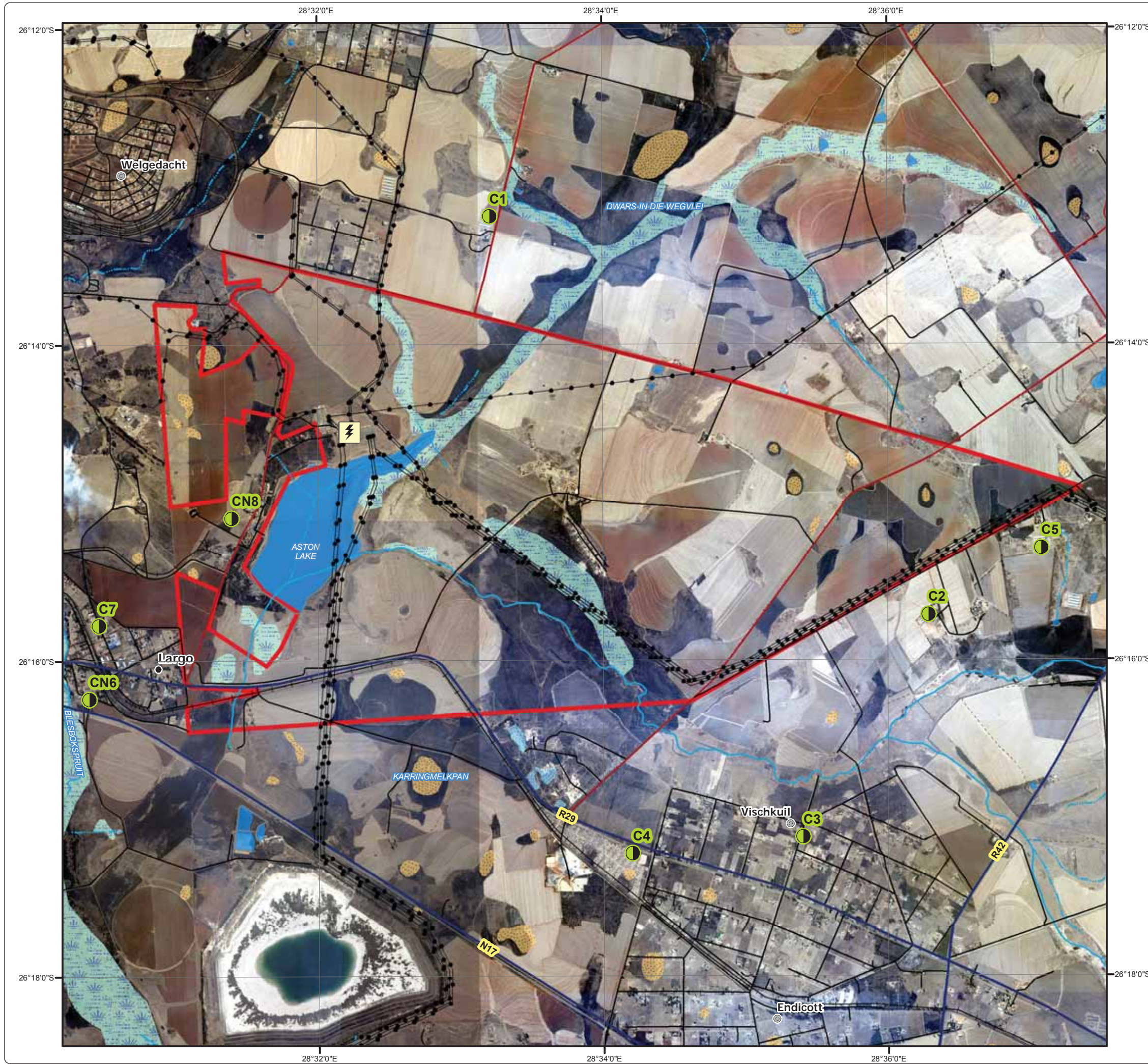



# Palmietkuilen Project EIA

## Dust Monitoring Locations

### Legend

- Mining Right Boundary
- Air Quality Monitoring Point
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream






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Projection: Transverse Mercator	Ref #: meg.CNC4065.201609.008
Datum: WGS 1984	Revision Number: 1
Central Meridian: 29°E	Date: 28/03/2017



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Kilometres  
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## Noise Monitoring Locations

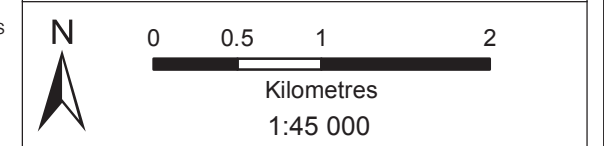
### Legend

- Mining Right Boundary
- Noise Monitoring Location
- Other Town
- Settlement
- Sub-Station
- ⚡ Ukufisa Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Track
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream

Proposed Infrastructure		
<span style="border-bottom: 1px dashed purple; width: 15px; margin-right: 5px;"></span> Preferred Power Line Route	<span style="background-color: grey; border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Discard Dump	<span style="background-color: brown; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Ramp
<span style="border-bottom: 1px dashed purple; width: 15px; margin-right: 5px;"></span> Preferred Access Road Route	<span style="background-color: orange; border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Discard Bin	<span style="background-color: yellow; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Conveyor
<span style="border: 1px solid red; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Open Pit	<span style="background-color: blue; border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Pollution Control Dam	<span style="background-color: lightgreen; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Tip
<span style="border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Box Cut	<span style="background-color: yellow; border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Slurry Dam	<span style="background-color: green; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Berm
<span style="background-color: orange; border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Hard Overburden Dump	<span style="border: 1px solid red; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Plant Office Area	<span style="background-color: pink; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Building
<span style="background-color: yellow; border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Soft Overburden Dump	<span style="background-color: red; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Plant Infrastructure	<span style="background-color: purple; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Parking
<span style="background-color: grey; border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Top Soil Dump	<span style="border: 1px solid green; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Main Office Area	<span style="background-color: darkpurple; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Tarpaulin Area
<span style="background-color: grey; border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> RoM Stockpile	<span style="border: 1px solid green; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Mining Contractors Yard Workshop Area	<span style="background-color: lightgreen; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Weigh Bridge
<span style="background-color: grey; border: 1px solid black; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Product Stockpile	<span style="border: 1px solid blue; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Mining Contractors Yard Hard Park Area	<span style="background-color: purple; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Diesel Storage
	<span style="background-color: orange; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Access Road	<span style="background-color: blue; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Water Tank
	<span style="background-color: yellow; width: 15px; height: 10px; display: inline-block; margin-right: 5px;"></span> Haul Road	

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Projection: Transverse Mercator      Ref #: meg.CNC4065.201609.115  
 Datum: WGS 1984      Revision Number: 3  
 Central Meridian: 29°E      Date: 28/03/2017






















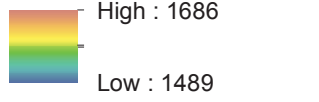
# Palmietkuilen Project EIA

## Topographical Model


### Legend

-  Mining Right Boundary
-  Major Town
-  Other Town
-  Settlement
-  Sub-Station
-  Trig. Beacon
-  Power Line
-  Arterial / National Route
-  Main Road
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream
-  Contour (20 m )
-  Dam Wall
-  Dam / Lake
-  Wetland
-  Perennial Pan
-  Non-Perennial Pan / Stream

**Topography Model**  
(Elevation m.a.m.s.l.)




High : 1686  
Low : 1489



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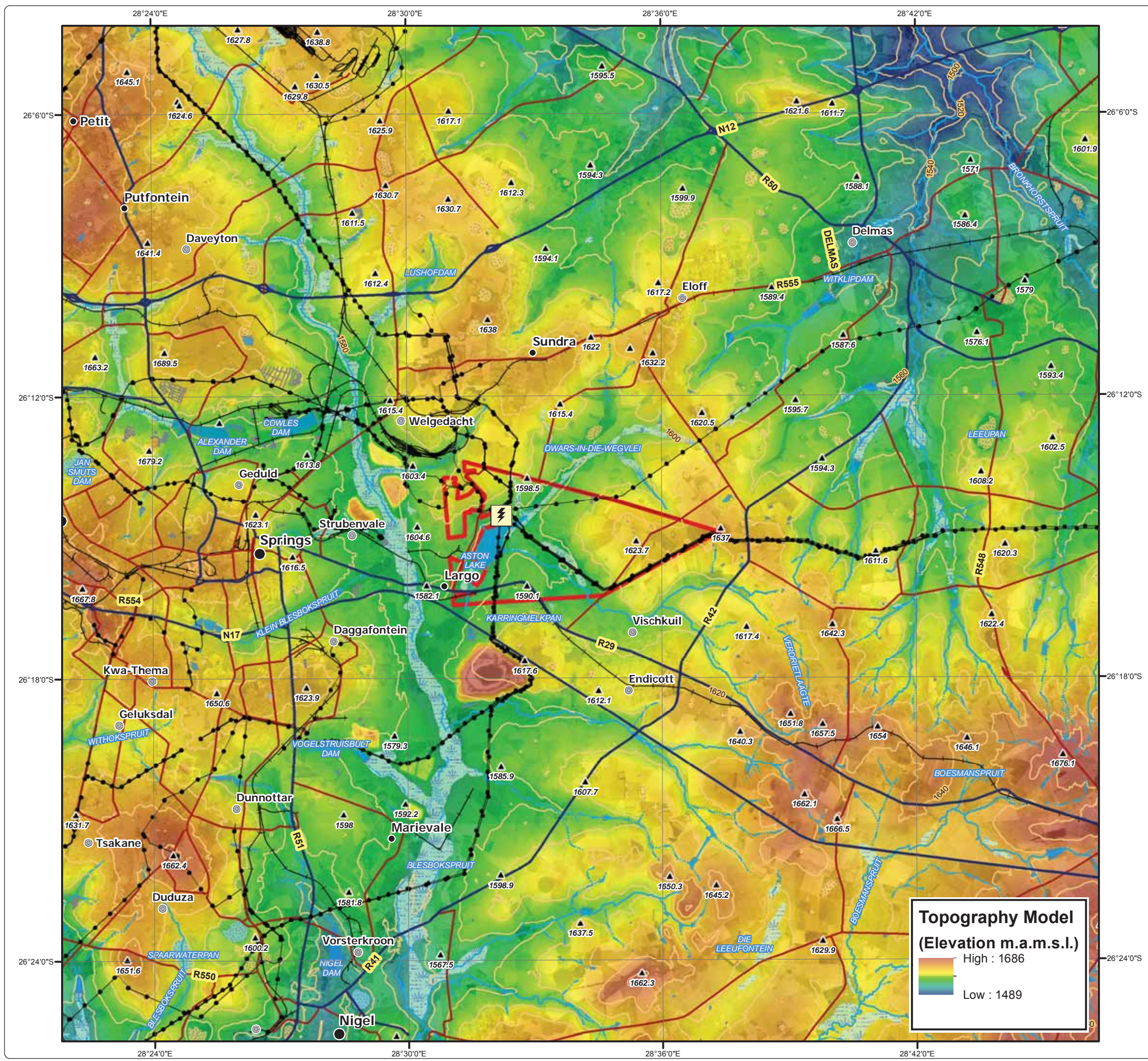
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Projection: Transverse Mercator    Ref #: meg.CNC4065.201607.056  
Datum: WGS 1984    Revision Number: 3  
Central Meridian: 29°E    Date: 28/03/2017



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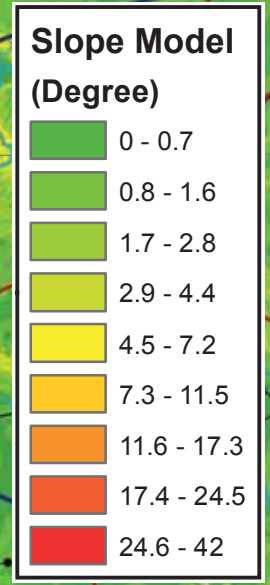
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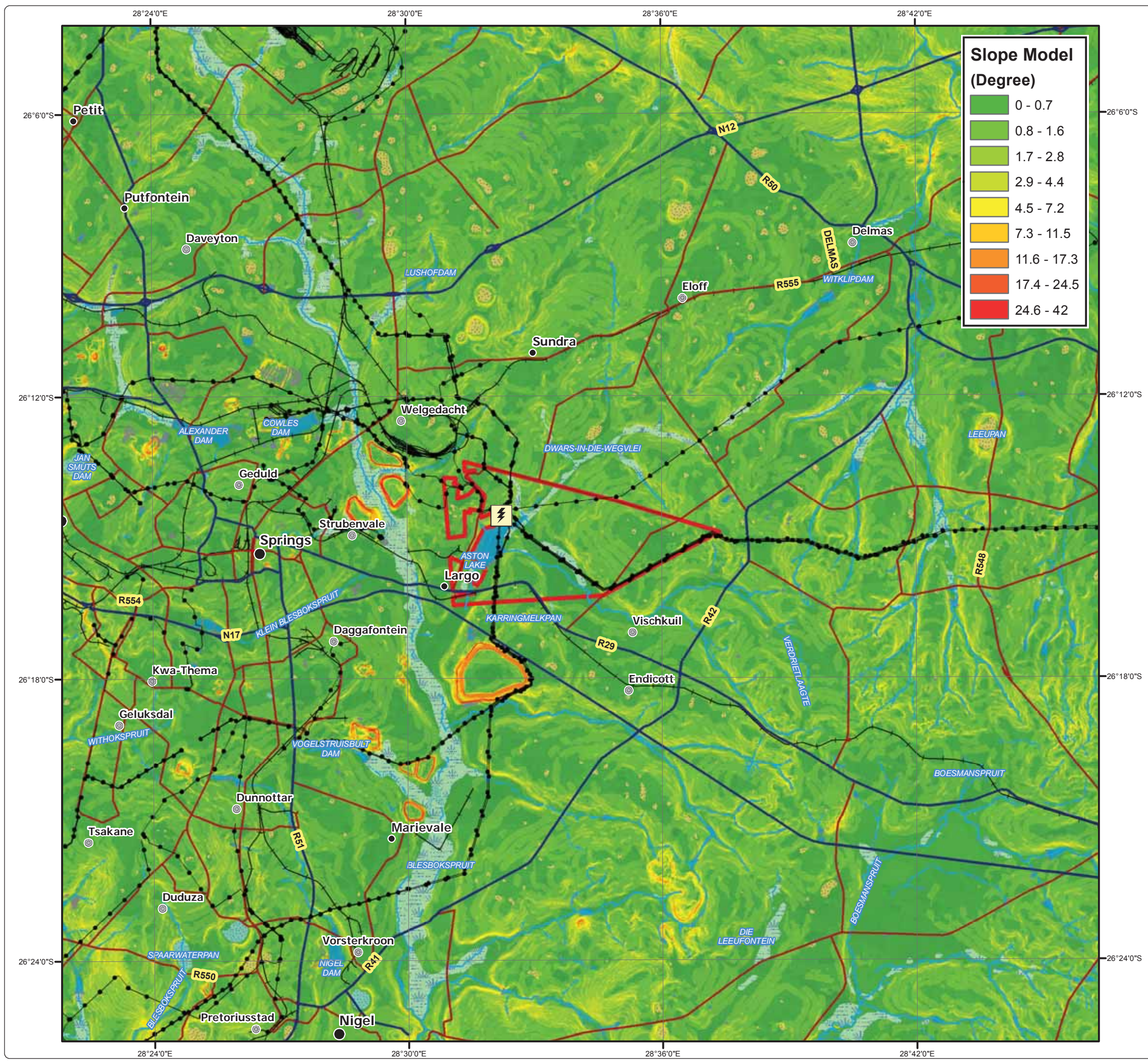
# Palmietkuilen Project EIA

## Slope Model



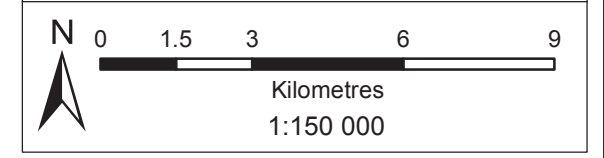
### Legend

- Mining Right Boundary
- Major Town
- Other Town
- Settlement
- Sub-Station
- Power Line
- Arterial / National Route
- Main Road
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Perennial Pan
- Non-Perennial Pan / Stream



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

Projection: Transverse Mercator      Ref #: meg.CNC4065.201607.058  
 Datum: WGS 1984      Revision Number: 3  
 Central Meridian: 29°E      Date: 28/03/2017































# Palmietkuilen Project EIA

## Aspect Model

### Legend

-  Mining Right Boundary
-  Major Town
-  Other Town
-  Settlement
-  Sub-Station
-  Power Line
-  Arterial / National Route
-  Main Road
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream
-  Dam Wall
-  Dam / Lake
-  Wetland
-  Perennial Pan
-  Non-Perennial Pan / Stream

### Aspect Model

	Flat (-1)
	North (0-22.5)
	Northeast (22.5-67.5)
	East (67.5-112.5)
	Southeast (112.5-157.5)
	South (157.5-202.5)
	Southwest (202.5-247.5)
	West (247.5-292.5)
	Northwest (292.5-337.5)
	North (337.5-360)



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