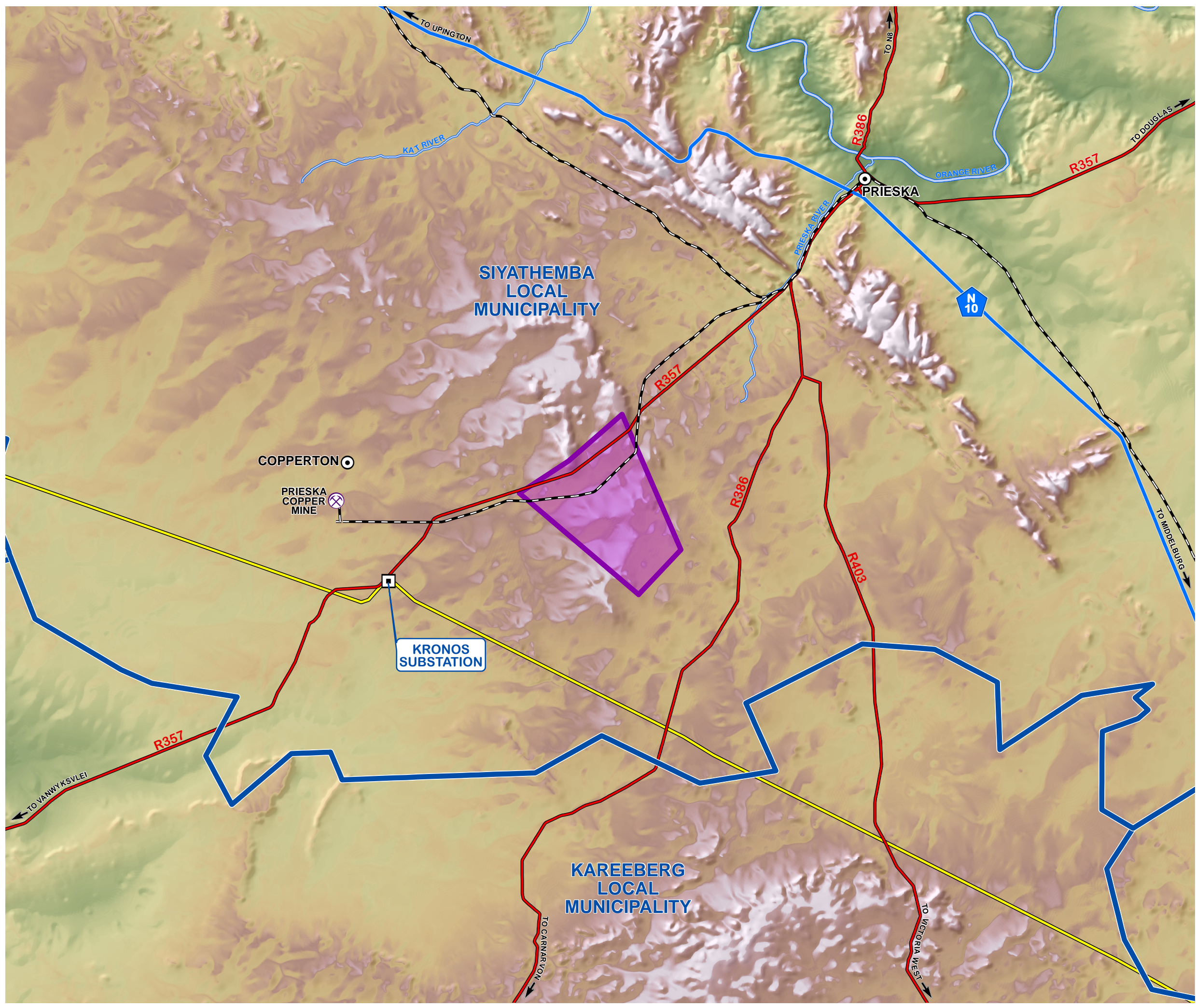












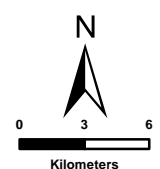
**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**  
ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE  
REGIONAL CONTEXT



**Legend**

-  Local Municipal Boundaries
-  National Route (N10)
-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Main Rivers
-  Main Towns
-  Kronos MTS Substation
-  Application Site
-  Proposed Aletta Wind Development Area

SOURCE:  
BIOTHERM ENERGY, 2015  
ESKOM, 2012  
MUNICIPAL DEMARCATION BOARD, 2011  
NFEPA, 2011  
NGI, 2014



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ENVIRONMENTAL DIVISION  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA  
Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
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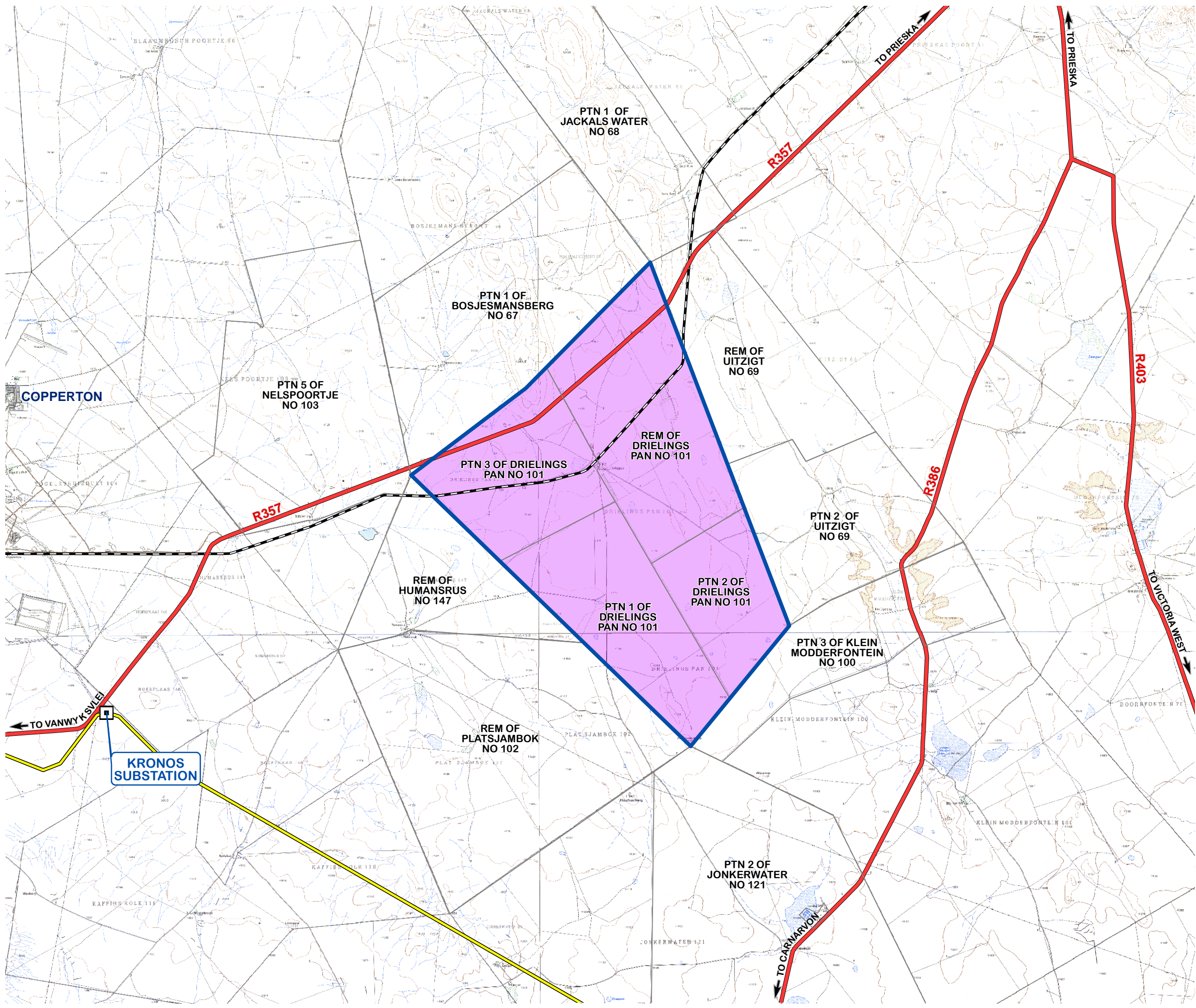
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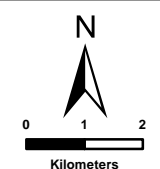
**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**  
ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE  
SITE LOCALITY

**Legend**

-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Existing Substation
-  Adjoining Farm Boundaries
-  Application Site
-  Proposed Aletta Wind Development Area



SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015



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51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA  
Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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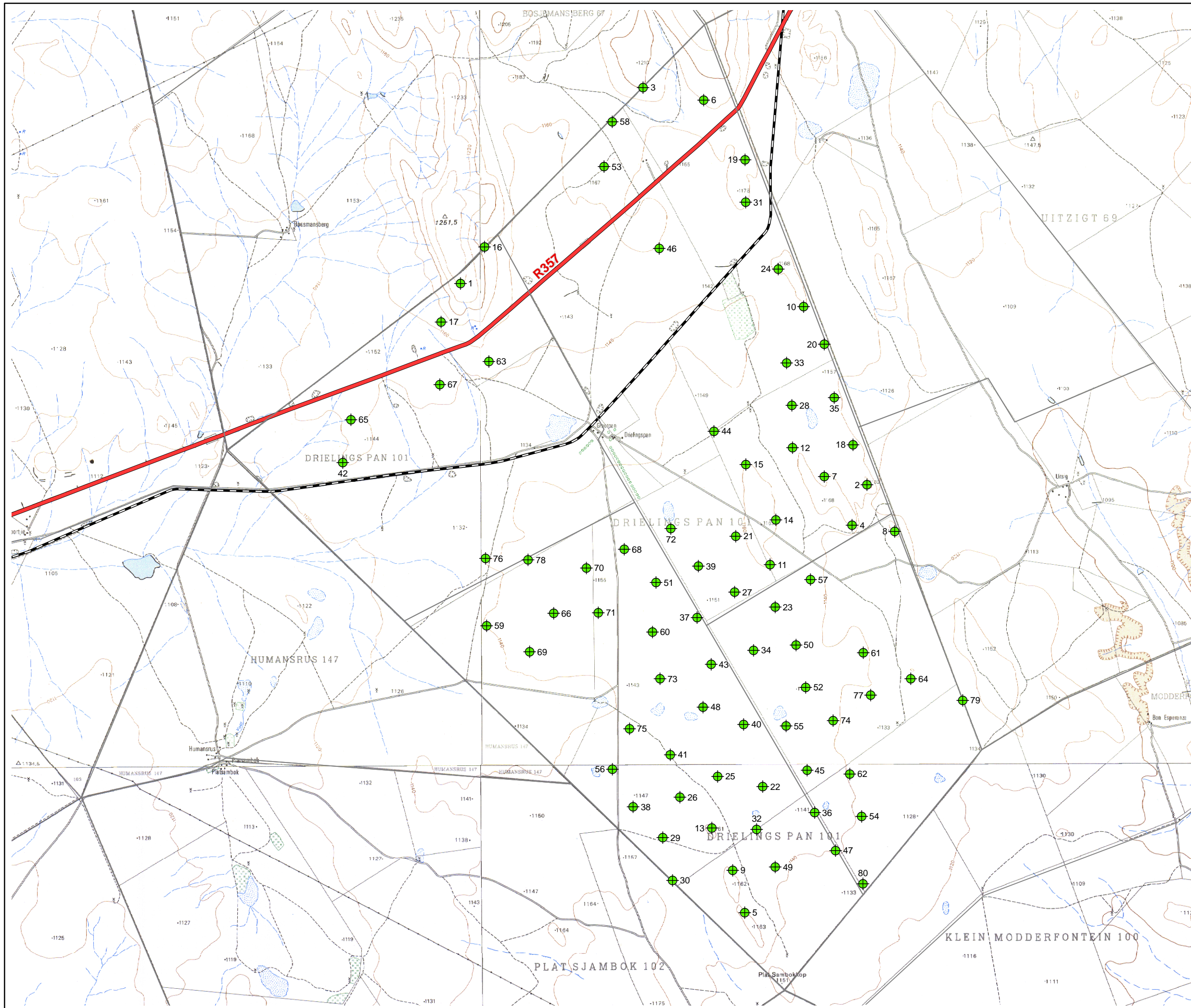
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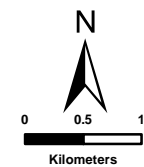
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FACILITY**  
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**  
**PROPOSED 80 TURBINE  
LAYOUT**

**Legend**

-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Farm Boundaries
-  Existing Substation
-  Proposed Turbine Positions (80 Turbines)



SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015



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51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA  
Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
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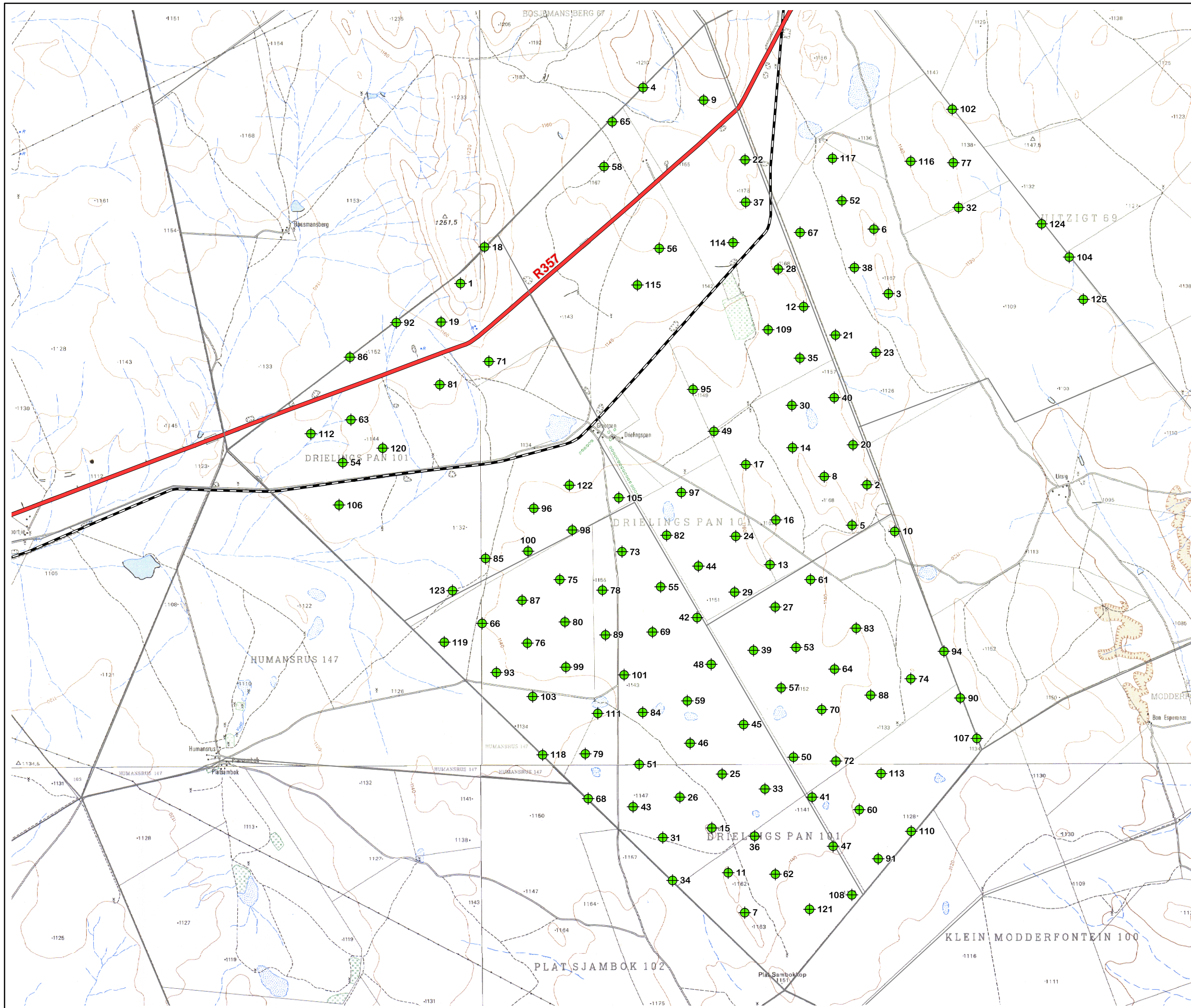
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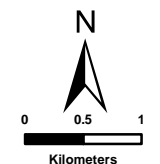
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140MW WIND ENERGY  
FACILITY**  
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**  
**PROPOSED 125 TURBINE  
LAYOUT**

**Legend**

-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Farm Boundaries
-  Existing Substation
-  Proposed Turbine Positions (125 Turbines)



SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015



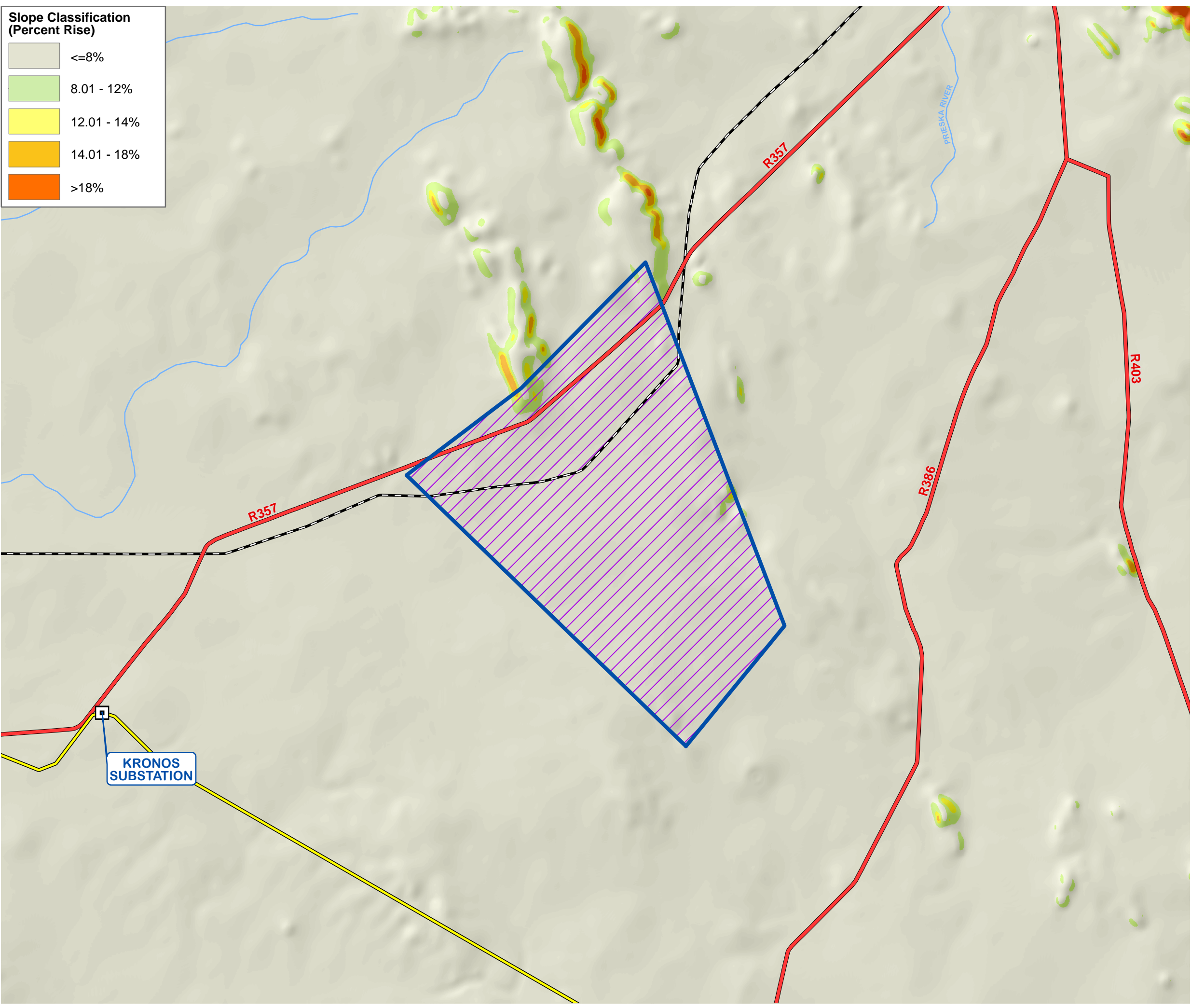
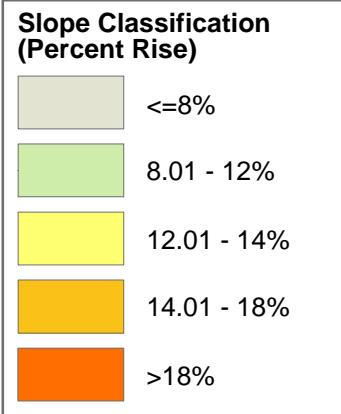
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RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA  
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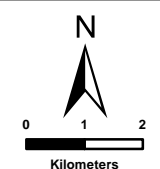
**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**SLOPE CLASSIFICATION**

- Legend**
-  Main Roads
  -  Railway Line
  -  Existing High Voltage Power Lines (400kV)
  -  Main Rivers/Water Courses
  -  Existing Substation
  -  Application Site
  -  Proposed Aletta Wind Development Area

SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015  
NGI, 2014



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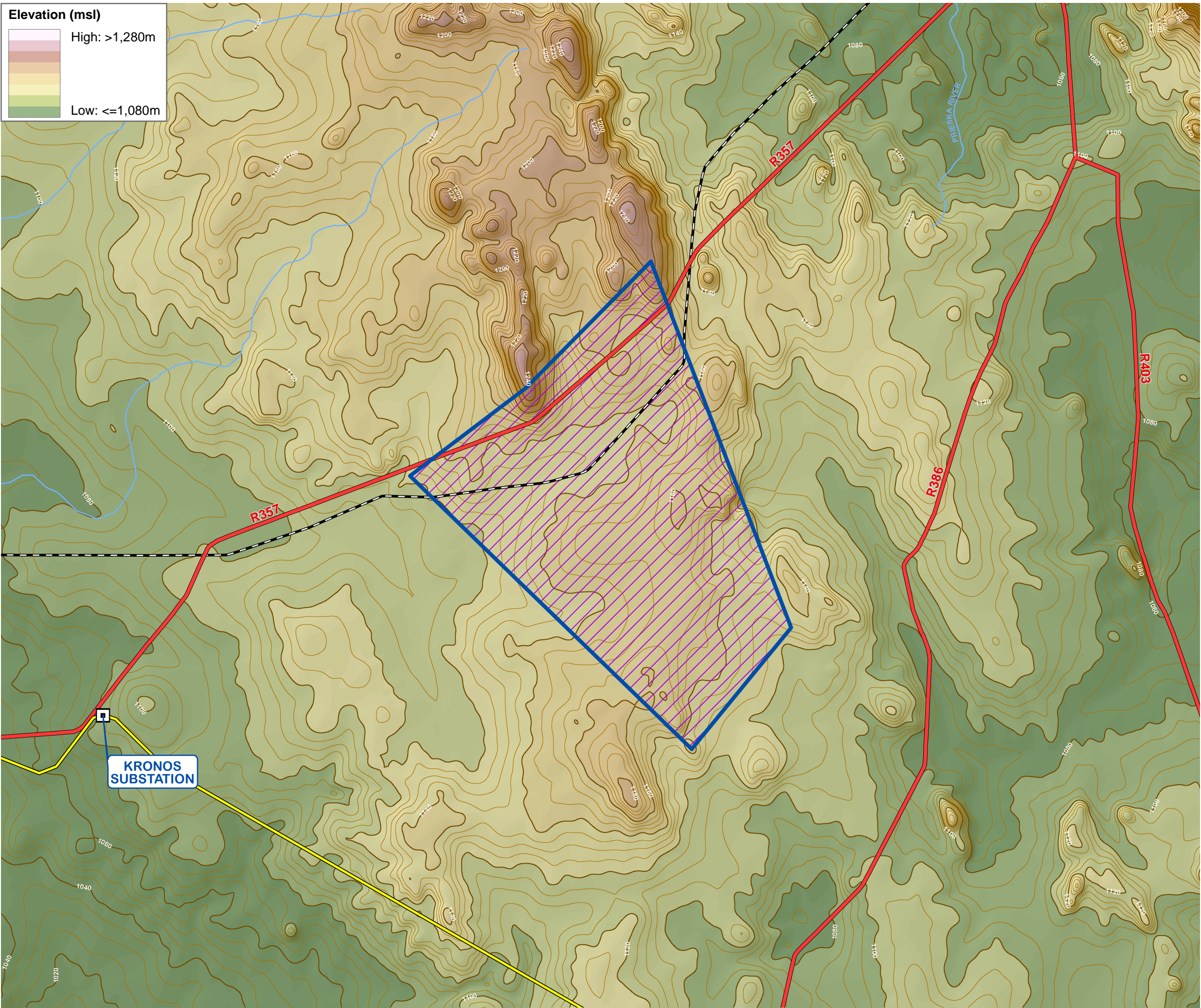
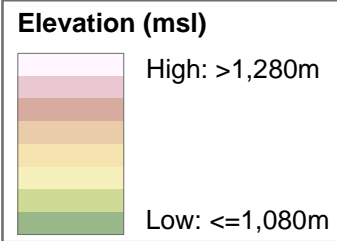
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<b>Project No</b> 13169	<b>Prepared By</b> KLS	<b>Date</b> 15/01/2016
<b>Map Ref No</b> 13169/SC_AW04	<b>Revision</b> 0	<b>Date</b> _____

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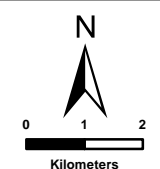
**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**TOPOGRAPHY**

- Legend**
- Main Roads
  - Railway Line
  - Existing High Voltage Power Lines (400kV)
  - Main Rivers/Water Courses
  - Contours (20m Interval)
  - Contours (5m Interval)
  - Existing Substation
  - Application Site
  - Proposed Aletta Wind Development Area

SOURCE:  
ESKOM, 2012  
BIOTHEM ENERGY, 2015  
NGI, 2014



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ENVIRONMENTAL DIVISION  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
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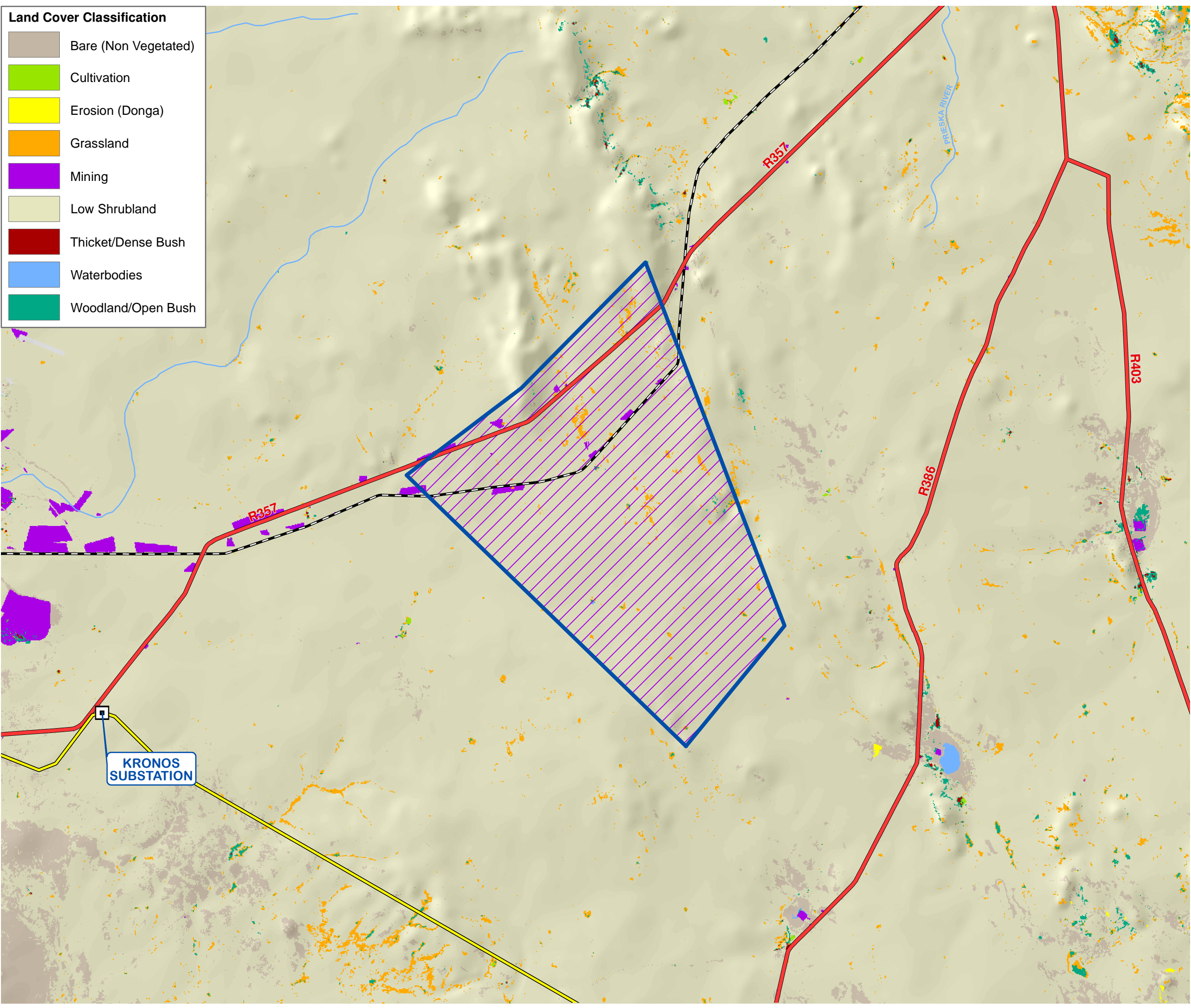
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**Land Cover Classification**

-  Bare (Non Vegetated)
-  Cultivation
-  Erosion (Donga)
-  Grassland
-  Mining
-  Low Shrubland
-  Thicket/Dense Bush
-  Waterbodies
-  Woodland/Open Bush










**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

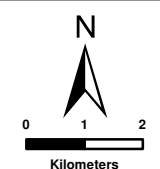
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**BROAD LAND COVER  
CLASSIFICATION**

**Legend**

-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Main Rivers/Water Courses
-  Existing Substation
-  Application Site
-  Proposed Aletta Wind Development Area

**SOURCE:**  
ESKOM, 2012  
BIOTHERM ENERGY, 2015  
2013-2014 SA NATIONAL LAND COVER  
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**ENVIRONMENTAL DIVISION**  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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<b>Map Ref No</b> 13169/SC_AW06	<b>Revision</b> 0	<b>Date</b>

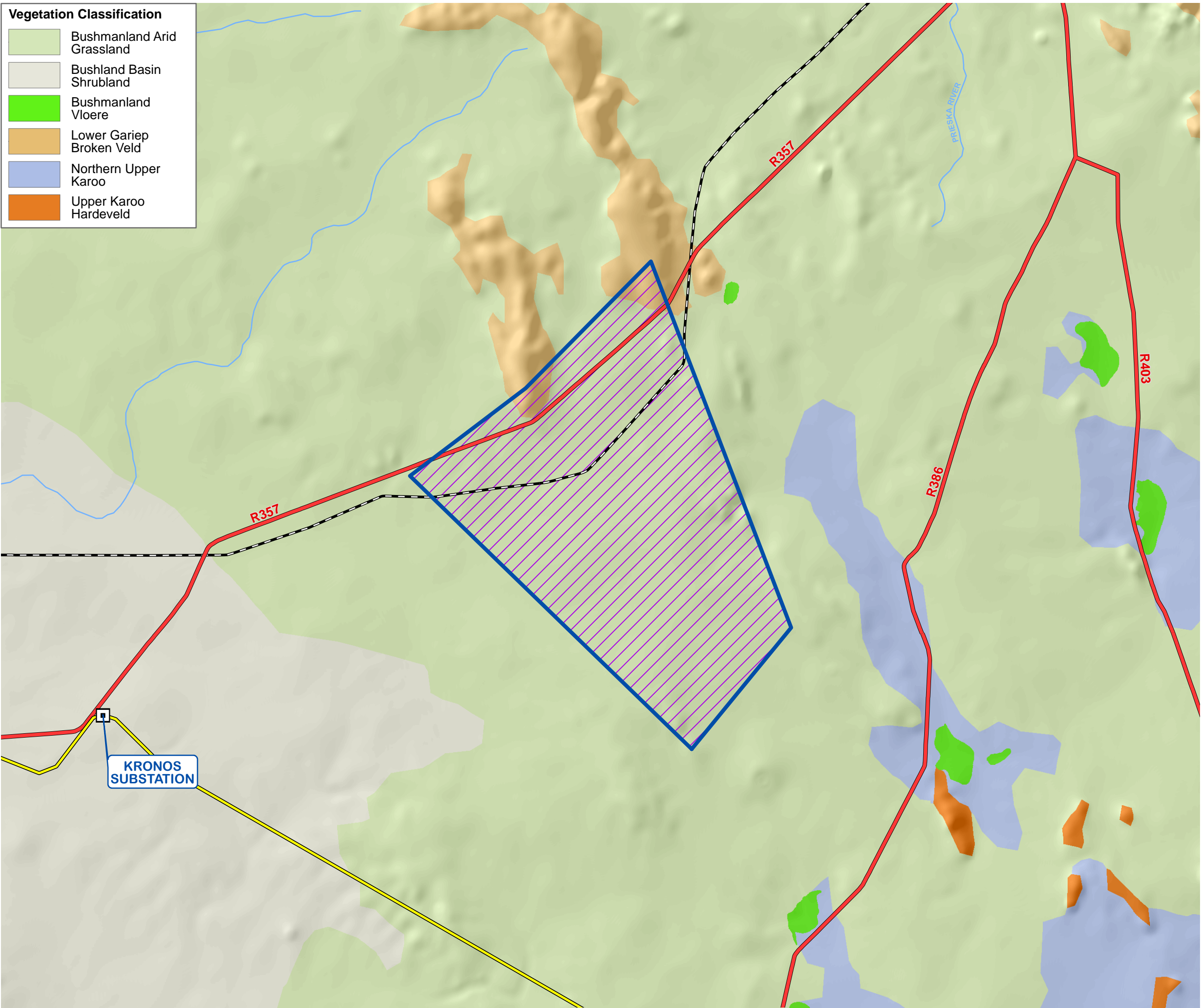
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**Vegetation Classification**

- Bushmanland Arid Grassland
- Bushland Basin Shrubland
- Bushmanland Vloere
- Lower Gariep Broken Veld
- Northern Upper Karoo
- Upper Karoo Hardeveld



**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

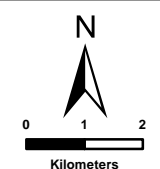
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**VEGETATION CLASSIFICATION**

**Legend**

- Main Roads
- Railway Line
- Existing High Voltage Power Lines (400kV)
- Main Rivers/Water Courses
- Existing Substation
- Application Site
- Proposed Aletta Wind Development Area

SOURCE:  
ESKOM, 2012  
BIOTERM ENERGY, 2015  
SANBI, 2009



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**ENVIRONMENTAL DIVISION**  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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<b>Map Ref No</b> 13169/SC_AW05	<b>Revision</b> 0	<b>Date</b> 

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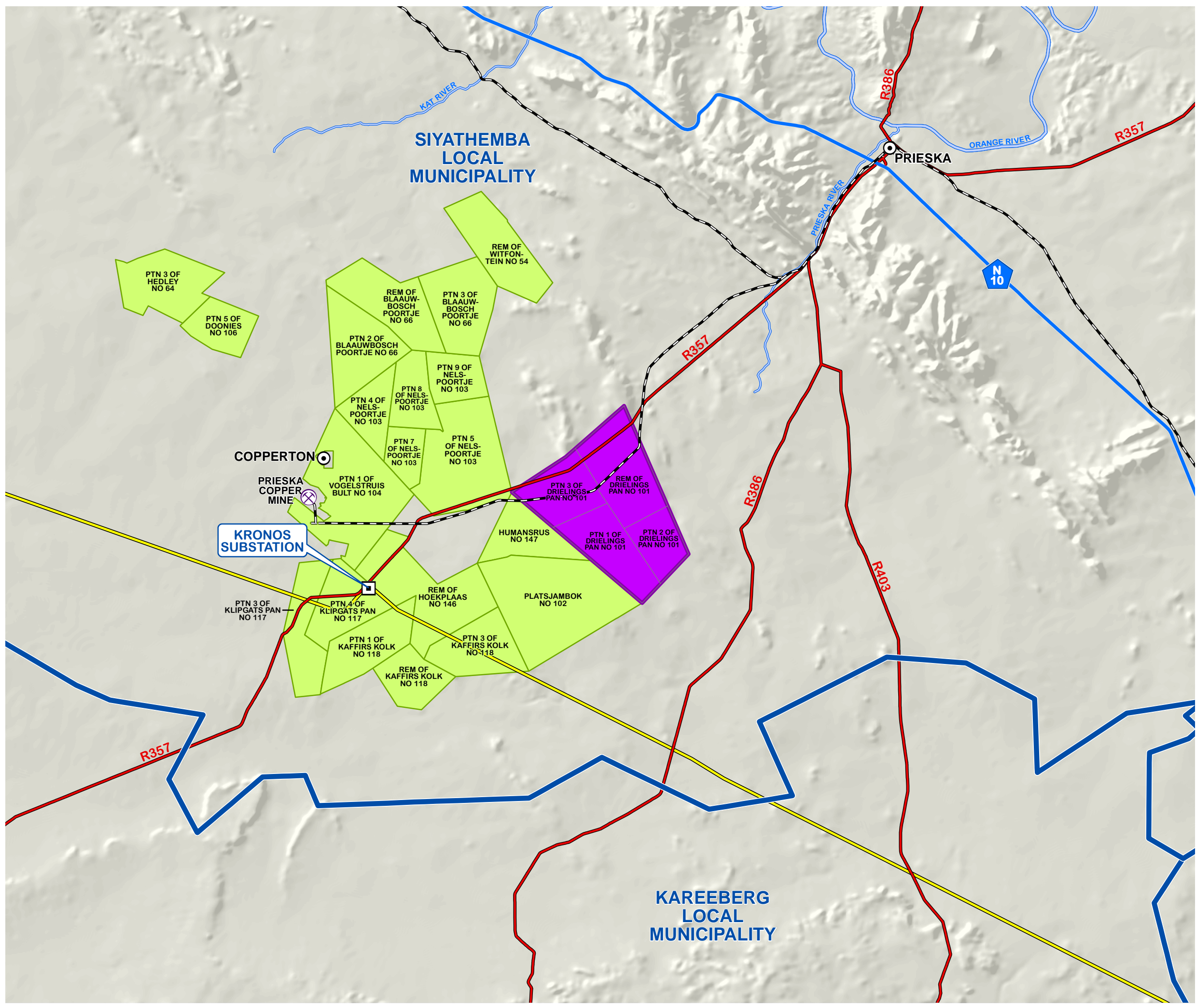
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# PROPOSED CONSTRUCTION OF A 140MW WIND ENERGY FACILITY

ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE

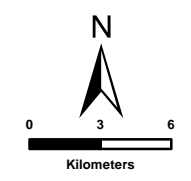
OTHER PROPOSED RENEWABLE ENERGY DEVELOPMENTS WITHIN 35KMS OF ALETTA WIND



## Legend

-  Local Municipal Boundaries
-  National Route (N10)
-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Main Rivers
-  Main Towns
-  Kronos MTS Substation
-  Application Site
-  Proposed Aletta Wind Development Area
-  Other Renewable Energy Application Sites

SOURCE:  
BIOTERM ENERGY, 2015  
ESKOM, 2012  
MUNICIPAL DEMARCATION BOARD, 2011  
NFEPA, 2011  
SOUTH AFRICAN RENEWABLE ENERGY  
EIA APPLICATION DATABASE, 2015



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51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA  
Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
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FACILITY**

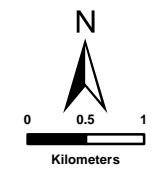
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**ENVIRONMENTAL SENSITIVITY**

**Legend**

-  Main Roads
-  Railway Line
-  Application Site
-  Proposed Aletta Wind Development Area
- Environmental Sensitivity**
-  Avifaunal Sensitivity
-  Bat Sensitivity: High (Inclusive of Buffers)
-  Bat Sensitivity: Medium (Inclusive of Buffers)
-  Biodiversity Sensitivity: Medium-High
-  Heritage Sensitivity: Medium-High
-  Heritage Sensitivity: Medium
-  Wetlands
-  Water Courses

SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015  
GOOGLE EARTH, 2015



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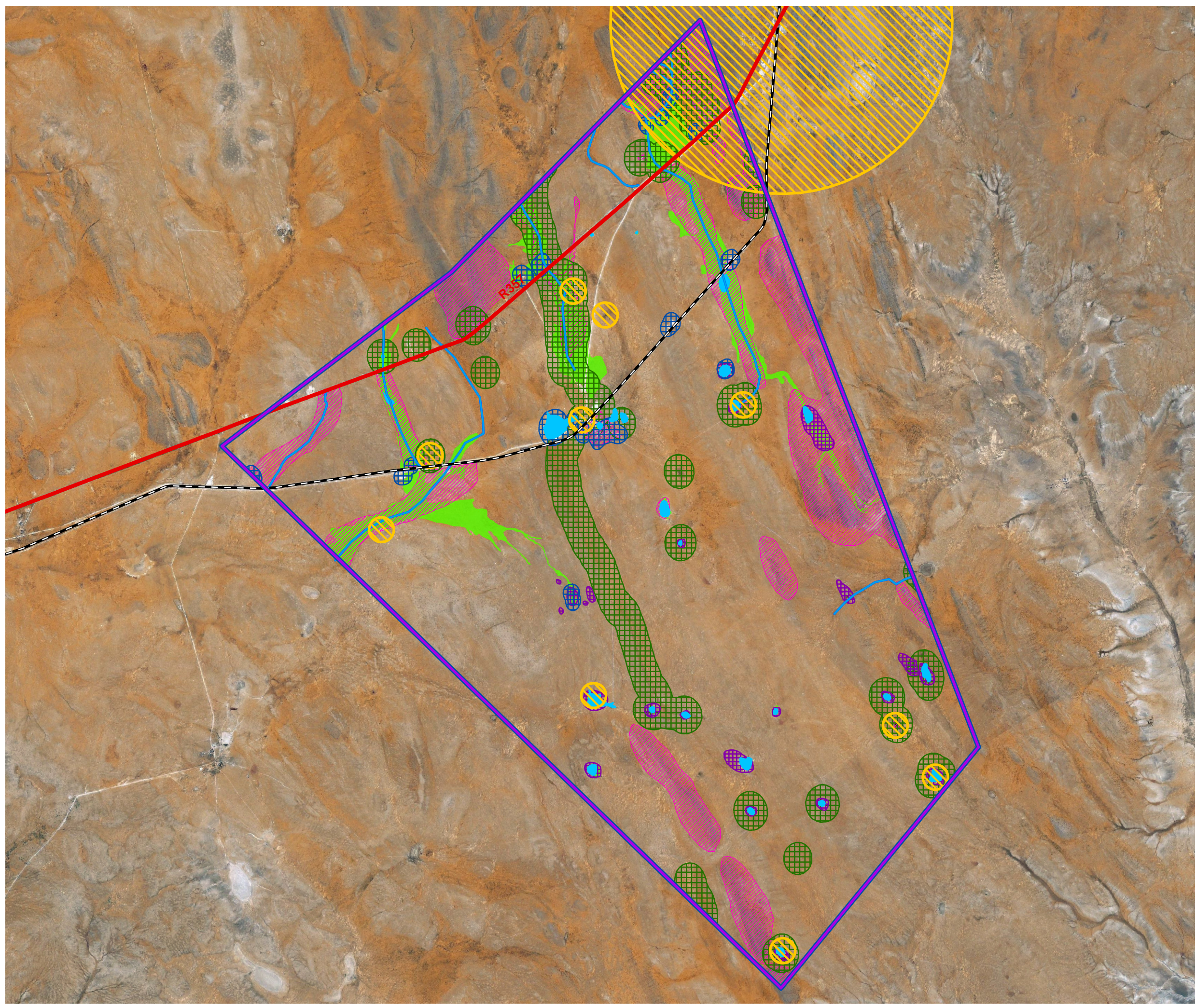
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51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

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Fax: +27 11 803 7272  
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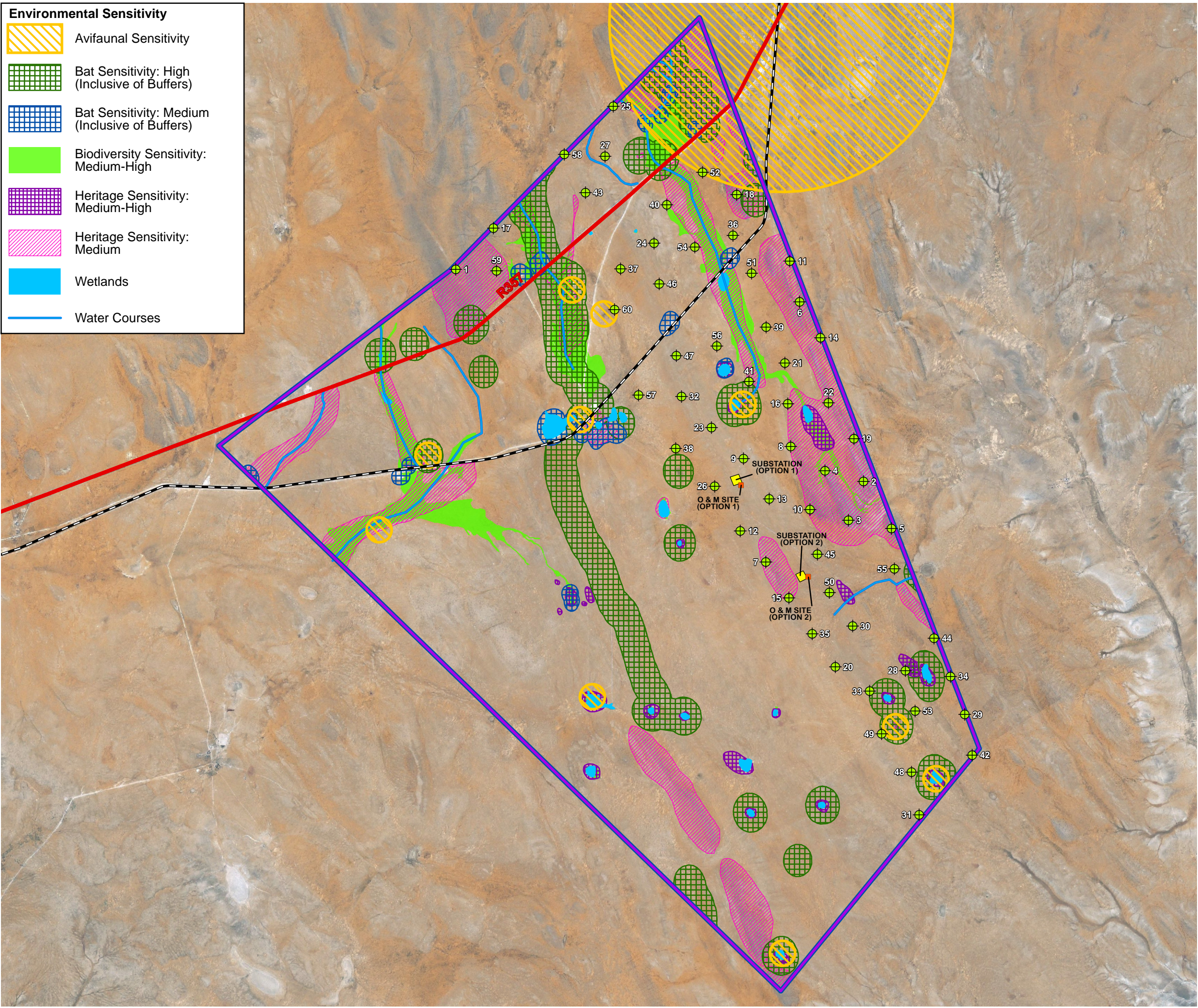
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**Environmental Sensitivity**

-  Avifaunal Sensitivity
-  Bat Sensitivity: High (Inclusive of Buffers)
-  Bat Sensitivity: Medium (Inclusive of Buffers)
-  Biodiversity Sensitivity: Medium-High
-  Heritage Sensitivity: Medium-High
-  Heritage Sensitivity: Medium
-  Wetlands
-  Water Courses











**PROPOSED  
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FACILITY**

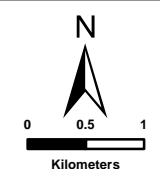
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**DETAILED 60 TURBINE LAYOUT**

**Legend**

-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Application Site
-  Proposed Aletta Wind Development Area
-  Proposed Turbine Positions (60 Turbines)
-  Substation Site Alternatives
-  O&M Site Alternatives

SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015  
GOOGLE EARTH, 2015



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51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

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Fax: +27 11 803 7272  
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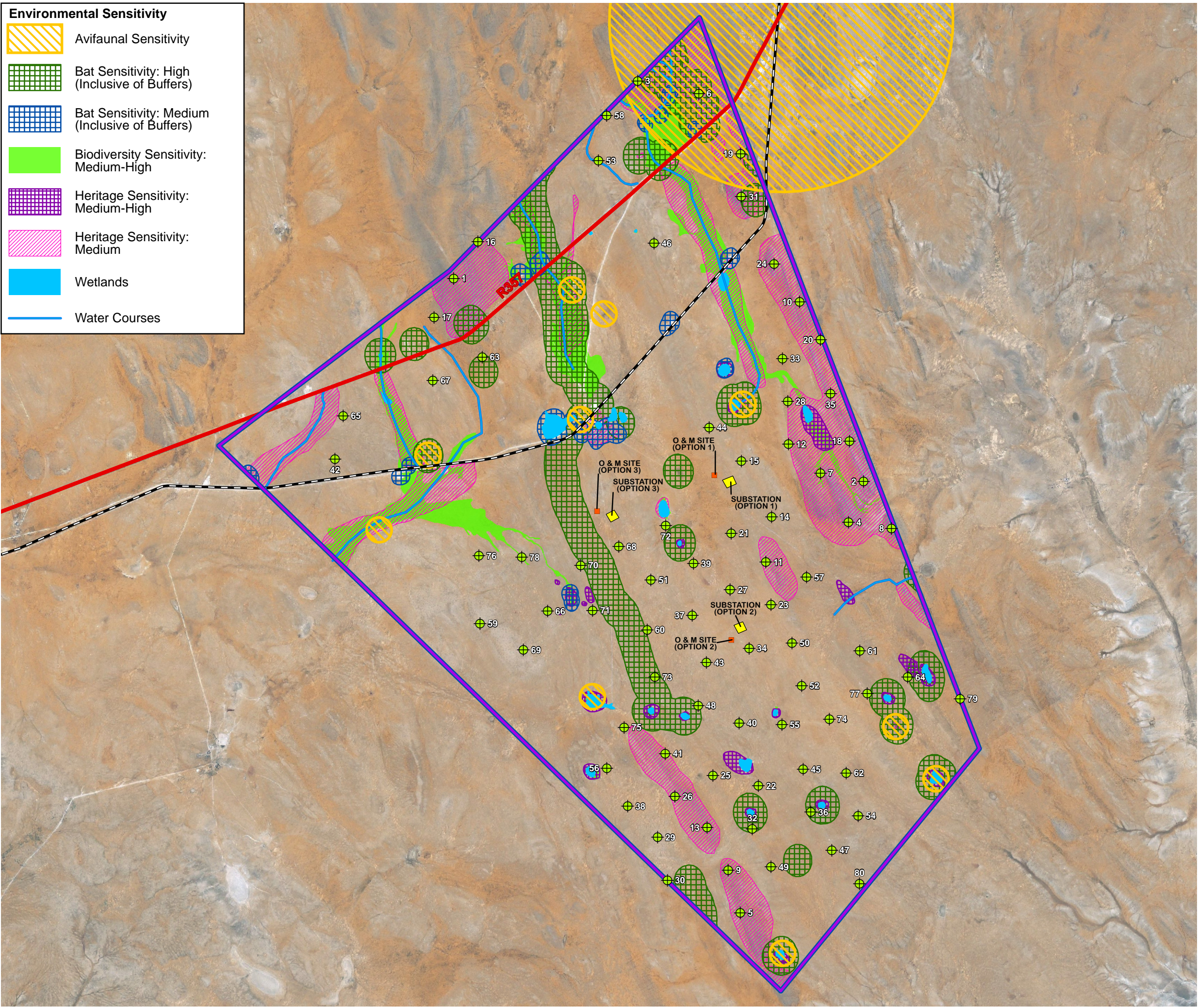
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**Environmental Sensitivity**

-  Avifaunal Sensitivity
-  Bat Sensitivity: High (Inclusive of Buffers)
-  Bat Sensitivity: Medium (Inclusive of Buffers)
-  Biodiversity Sensitivity: Medium-High
-  Heritage Sensitivity: Medium-High
-  Heritage Sensitivity: Medium
-  Wetlands
-  Water Courses











**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

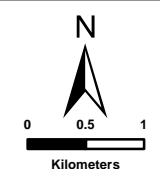
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**DETAILED 80 TURBINE LAYOUT**

**Legend**

-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Application Site
-  Proposed Aletta Wind Development Area
-  Proposed Turbine Positions (80 Turbines)
-  Substation Site Alternatives
-  O&M Site Alternatives

SOURCE:  
ESKOM, 2012  
BIOTHEM ENERGY, 2015  
GOOGLE EARTH, 2015



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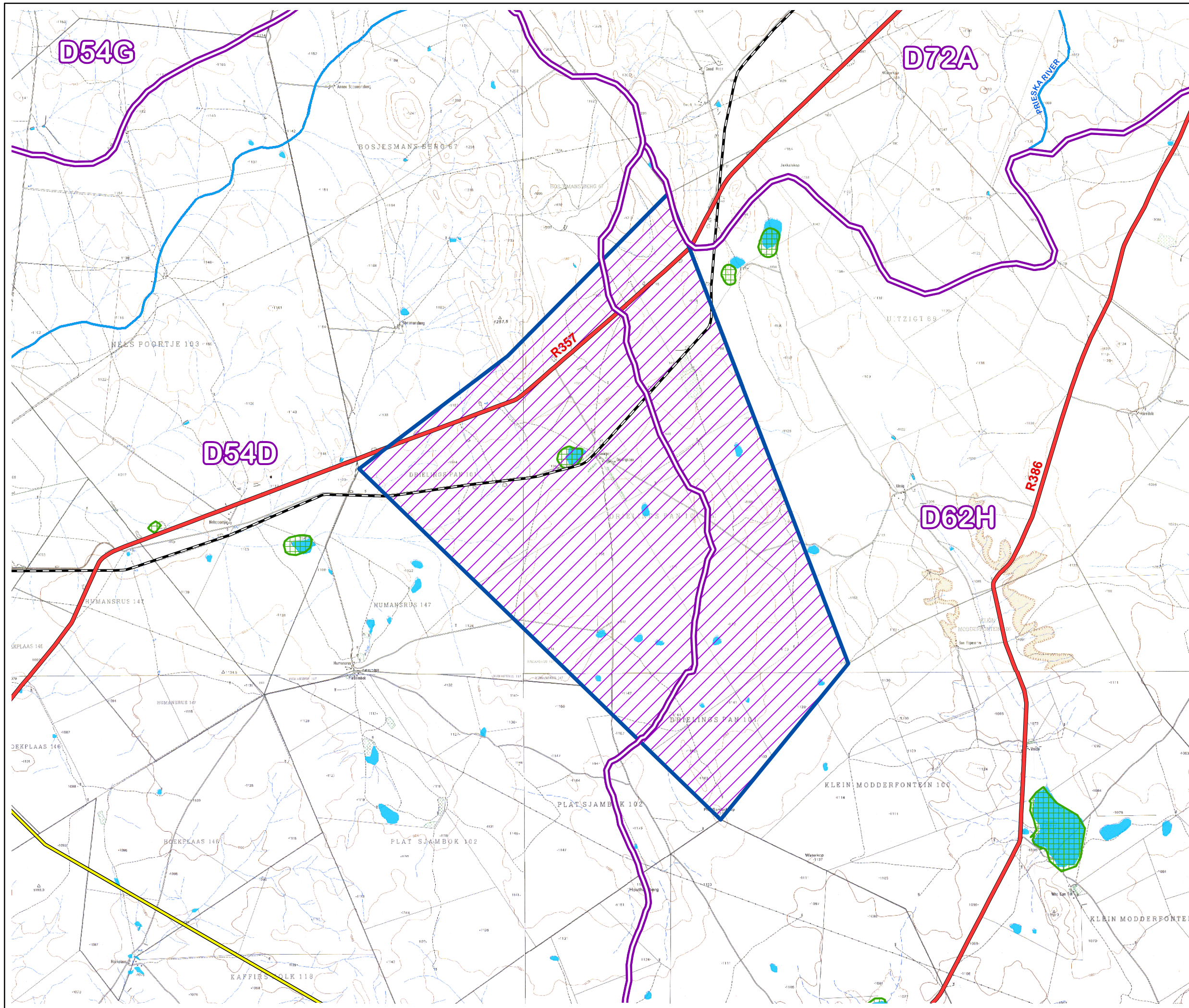
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**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

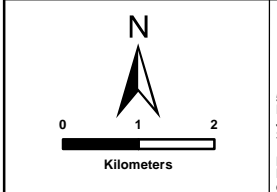
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**SURFACE WATER ASSESSMENT:  
DATABASE SURFACE WATER  
OCCURRENCE**

**Legend**

-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Existing Substation
-  Application Site
-  Proposed Aletta Wind Development Area
- Surface Water Features**
-  Quaternary Catchment Boundaries
-  Catchment Number
-  Rivers
-  Wetlands (NFEPA)
-  Wetlands (ENPAT)

SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015  
ENPAT, 2001  
NFEPA, 2011



**SIVEST**

ENVIRONMENTAL DIVISION  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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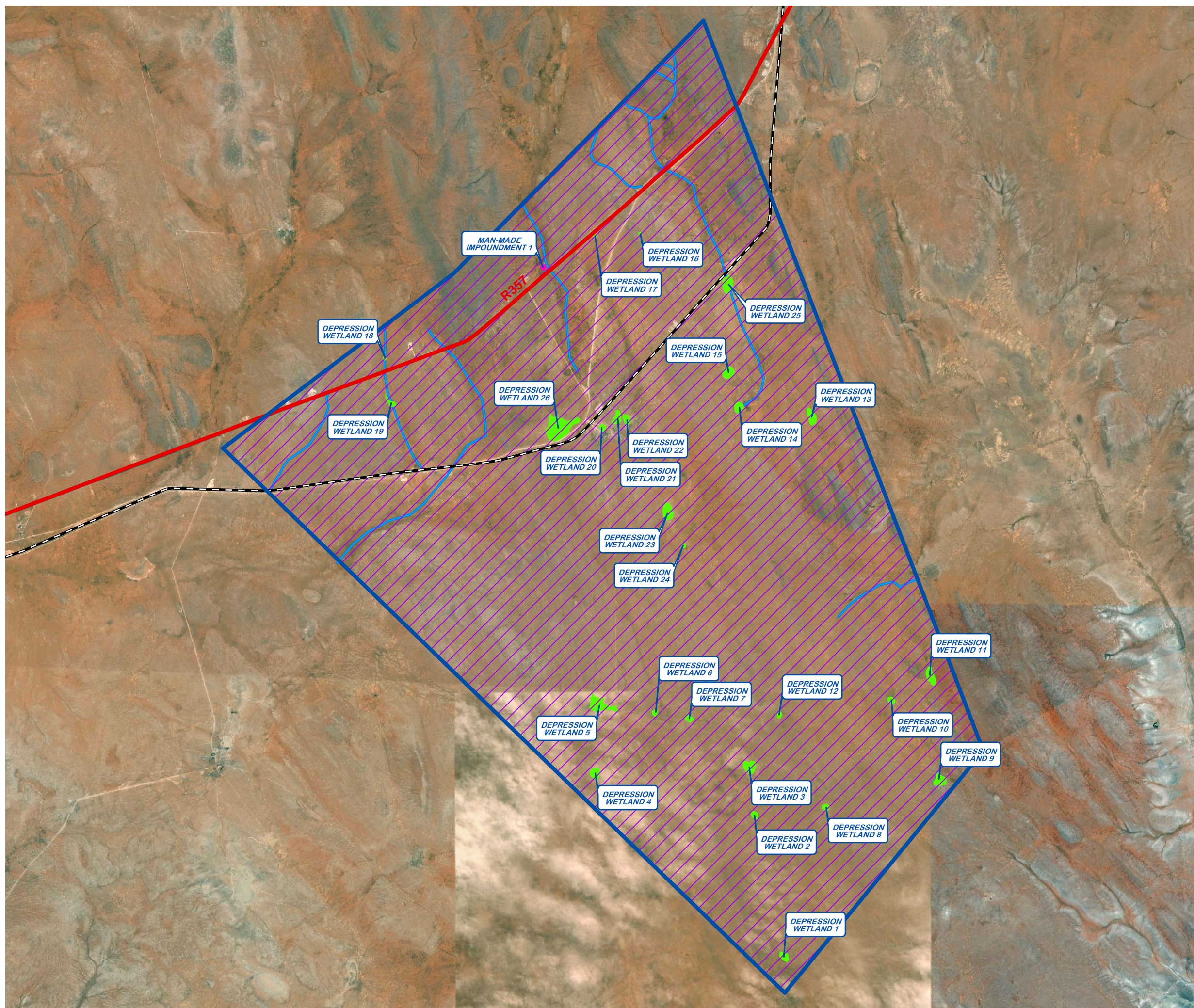
**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

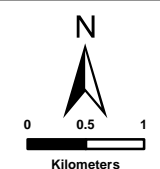
**SURFACE WATER ASSESSMENT:  
DESKTOP SURFACE WATER  
OCCURRENCE**

**Legend**

-  Main Roads
  -  Railway Line
  -  Application Site
  -  Proposed Aletta Wind Development Area
- Surface Water Features**
-  Water Courses
  -  Wetlands
  -  Man-Made Impoundment



SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015  
GOOGLE EARTH, 2015



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ENVIRONMENTAL DIVISION  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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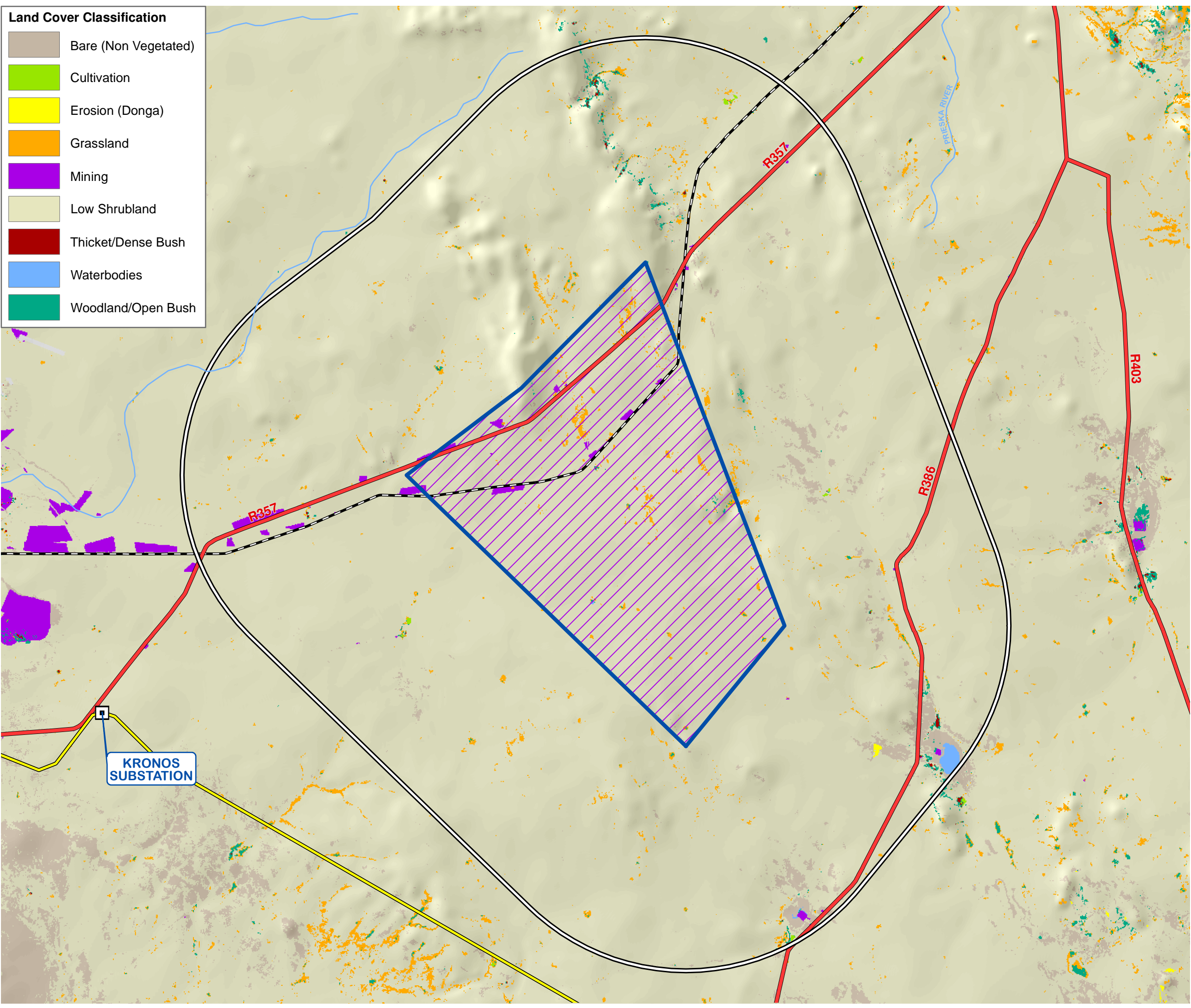
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**Land Cover Classification**

- Bare (Non Vegetated)
- Cultivation
- Erosion (Donga)
- Grassland
- Mining
- Low Shrubland
- Thicket/Dense Bush
- Waterbodies
- Woodland/Open Bush



**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

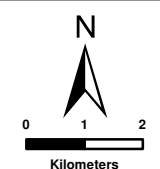
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**VISUAL ASSESSMENT:  
BROAD LAND COVER  
CLASSIFICATION**

**Legend**

- Main Roads
- Railway Line
- Existing High Voltage Power Lines (400kV)
- Main Rivers/Water Courses
- Existing Substation
- Application Site
- Proposed Aletta Wind Development Area
- 8km Visual Assessment Zone

**SOURCE:**  
ESKOM, 2012  
BIOTHERM ENERGY, 2015  
2013-2014 SA NATIONAL LAND COVER  
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**ENVIRONMENTAL DIVISION**  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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<b>Map Ref No</b> 13169/SCV_AW06	<b>Revision</b> 0	<b>Date</b> 

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**Zones of Potential Visual Impact**

- High Impact (<= 2kms)
- Moderate Impact (2.1 - 5kms)
- Low Impact (5.1 - 8kms)

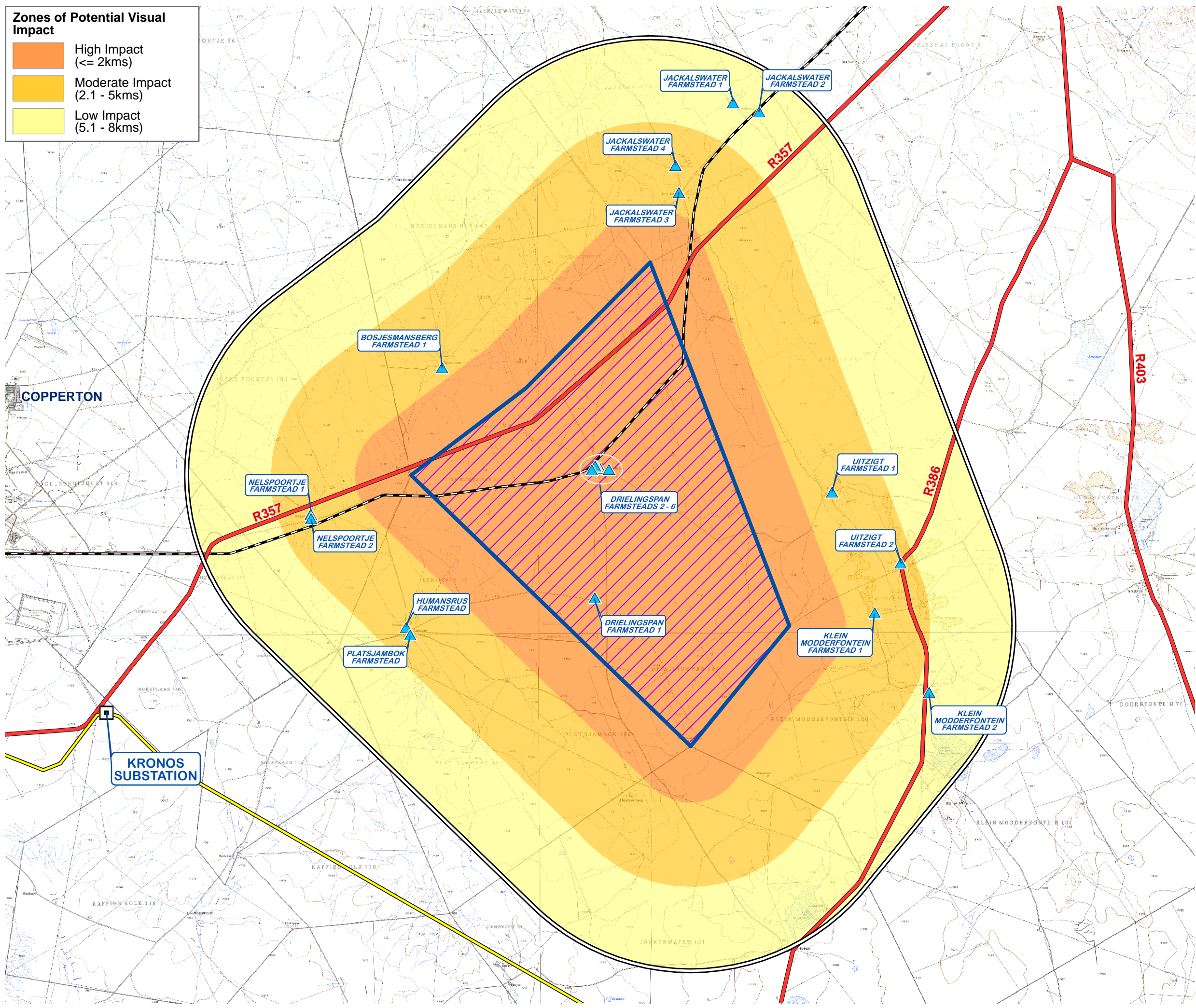
**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

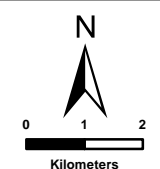
**VISUAL ASSESSMENT:  
POTENTIALLY SENSITIVE  
VISUAL RECEPTOR LOCATIONS**

**Legend**

- Main Roads
- Railway Line
- Existing High Voltage Power Lines (400kV)
- Existing Substation
- Application Site
- Proposed Aletta Wind Development Area
- 8km Visual Assessment Zone
- Potentially Sensitive Receptor Locations



SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015



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**ENVIRONMENTAL DIVISION**  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
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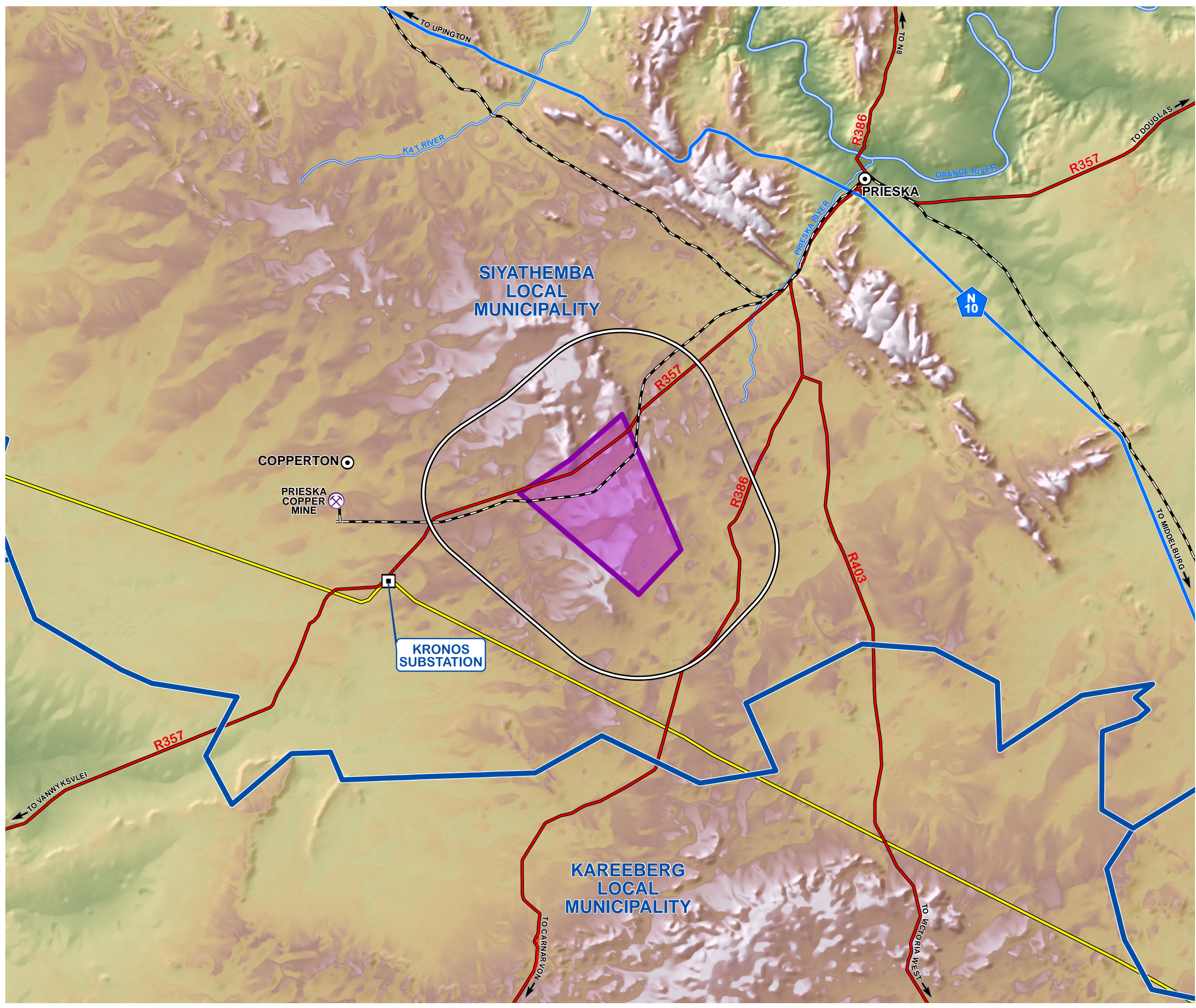
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
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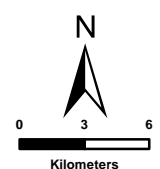
**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**  
ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE  
**VISUAL ASSESSMENT:  
REGIONAL CONTEXT**



**Legend**

-  Local Municipal Boundaries
-  National Route (N10)
-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Main Rivers
-  Main Towns
-  Kronos MTS Substation
-  Application Site
-  Proposed Aletta Wind Development Area
-  8km Visual Assessment Zone

SOURCE:  
BIOTHERM ENERGY, 2015  
ESKOM, 2012  
MUNICIPAL DEMARCATION BOARD, 2011  
NFEPA, 2011  
NGI, 2014



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ENVIRONMENTAL DIVISION  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA  
Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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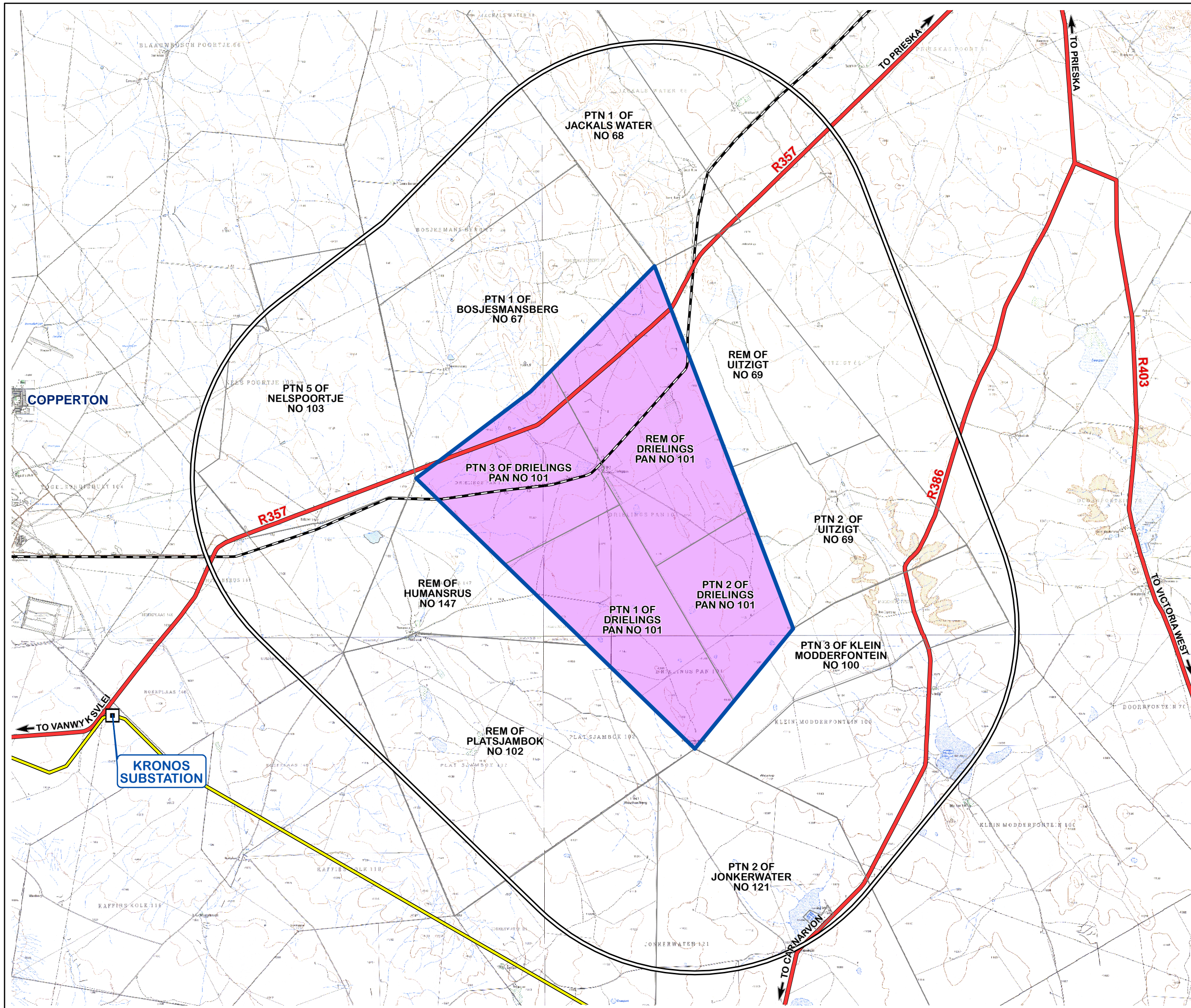
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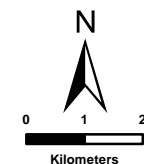
**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**  
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**  
**VISUAL ASSESSMENT:  
SITE LOCALITY**

**Legend**

-  Main Roads
-  Railway Line
-  Existing High Voltage Power Lines (400kV)
-  Existing Substation
-  Adjoining Farm Boundaries
-  Application Site
-  Proposed Aletta Wind Development Area
-  8km Visual Assessment Zone



SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015



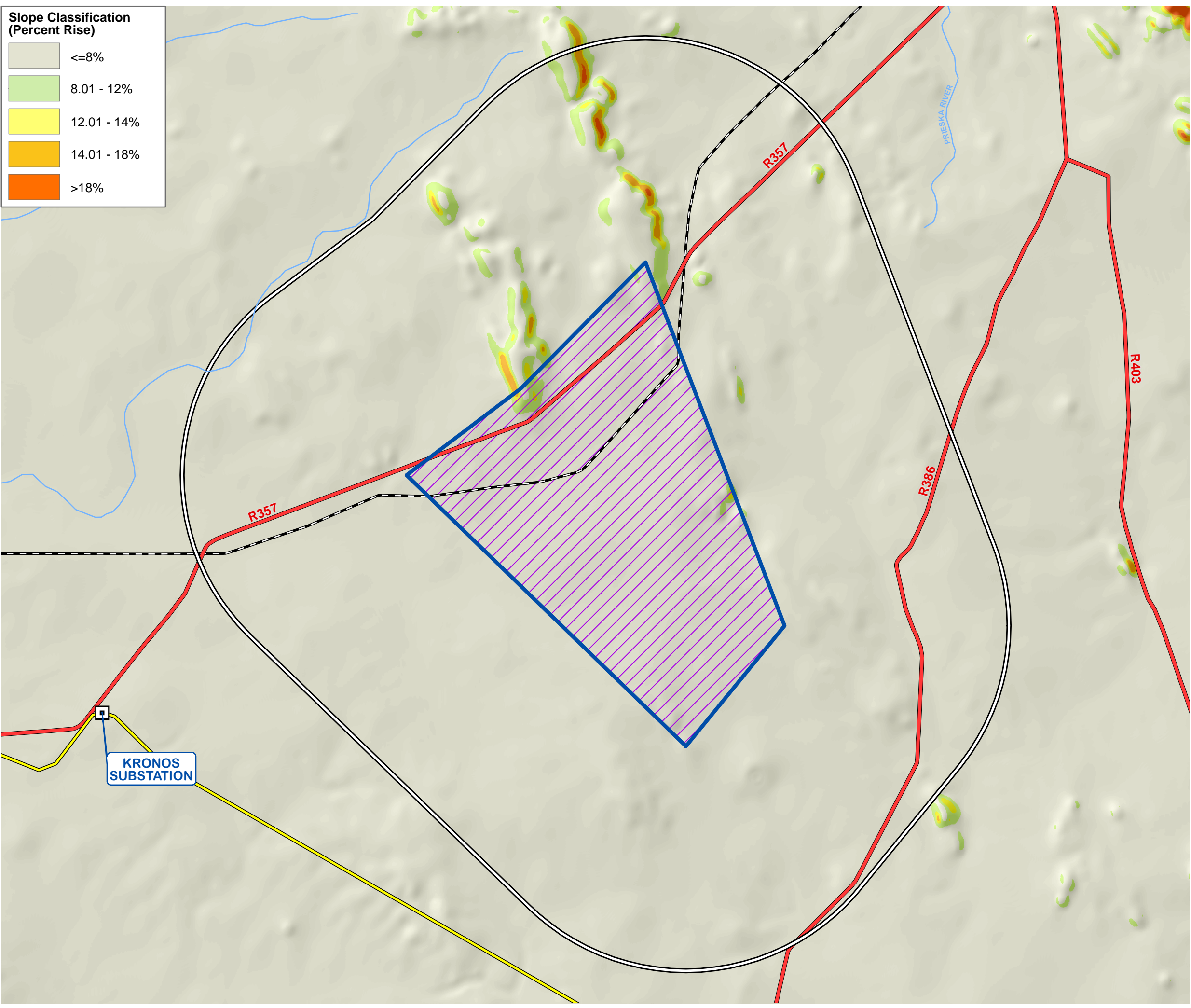
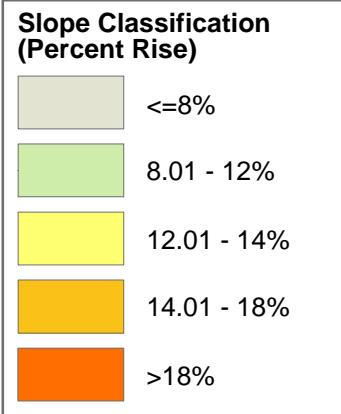
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51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA  
Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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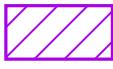
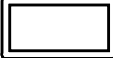
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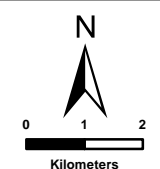




**PROPOSED CONSTRUCTION OF A 140MW WIND ENERGY FACILITY**  
**ALETTA WIND NEAR COPPERTON**  
**NORTHERN CAPE PROVINCE**  
**VISUAL ASSESSMENT: SLOPE CLASSIFICATION**

- Legend**
-  Main Roads
  -  Railway Line
  -  Existing High Voltage Power Lines (400kV)
  -  Main Rivers/Water Courses
  -  Existing Substation
  -  Application Site
  -  Proposed Aletta Wind Development Area
  -  8km Visual Assessment Zone

SOURCE:  
 ESKOM, 2012  
 BIOTHERM ENERGY, 2015  
 NGI, 2014



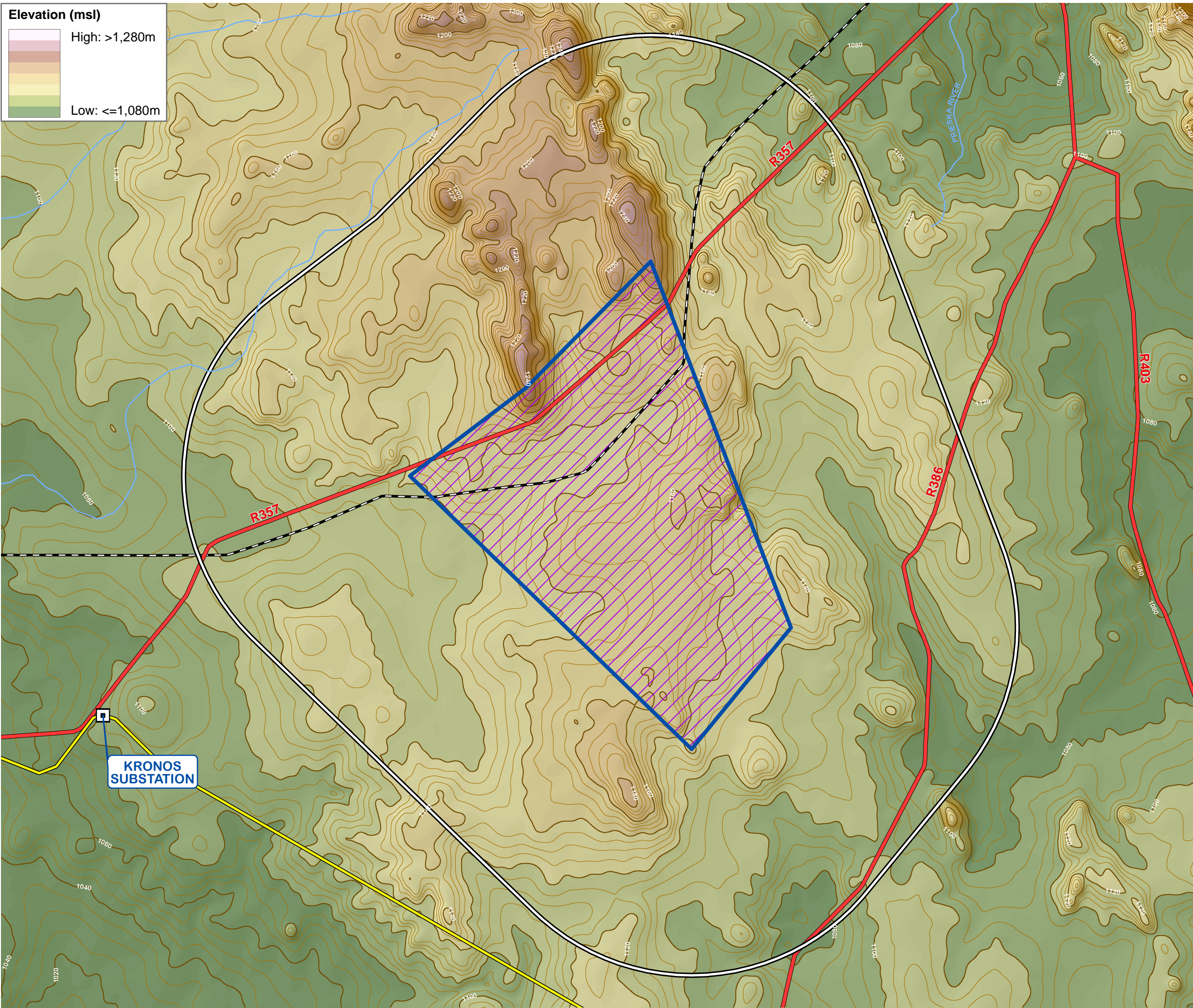
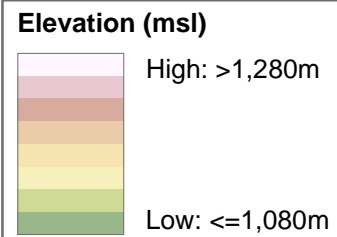
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 ENVIRONMENTAL DIVISION  
 51 WESSELS ROAD  
 RIVONIA, 2128  
 JOHANNESBURG  
 SOUTH AFRICA  
 Phone: +27 11 798 0600  
 Fax: +27 11 803 7272  
 e-mail: info@sivest.co.za

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**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

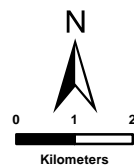
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**VISUAL ASSESSMENT:  
TOPOGRAPHY**

**Legend**

- Main Roads
- Railway Line
- Existing High Voltage Power Lines (400kV)
- Main Rivers/Water Courses
- Contours (20m Interval)
- Contours (5m Interval)
- Existing Substation
- Application Site
- Proposed Aletta Wind Development Area
- 8km Visual Assessment Zone

SOURCE:  
ESKOM, 2012  
BIOTHERM ENERGY, 2015  
NGI, 2014



**ENVIRONMENTAL DIVISION**  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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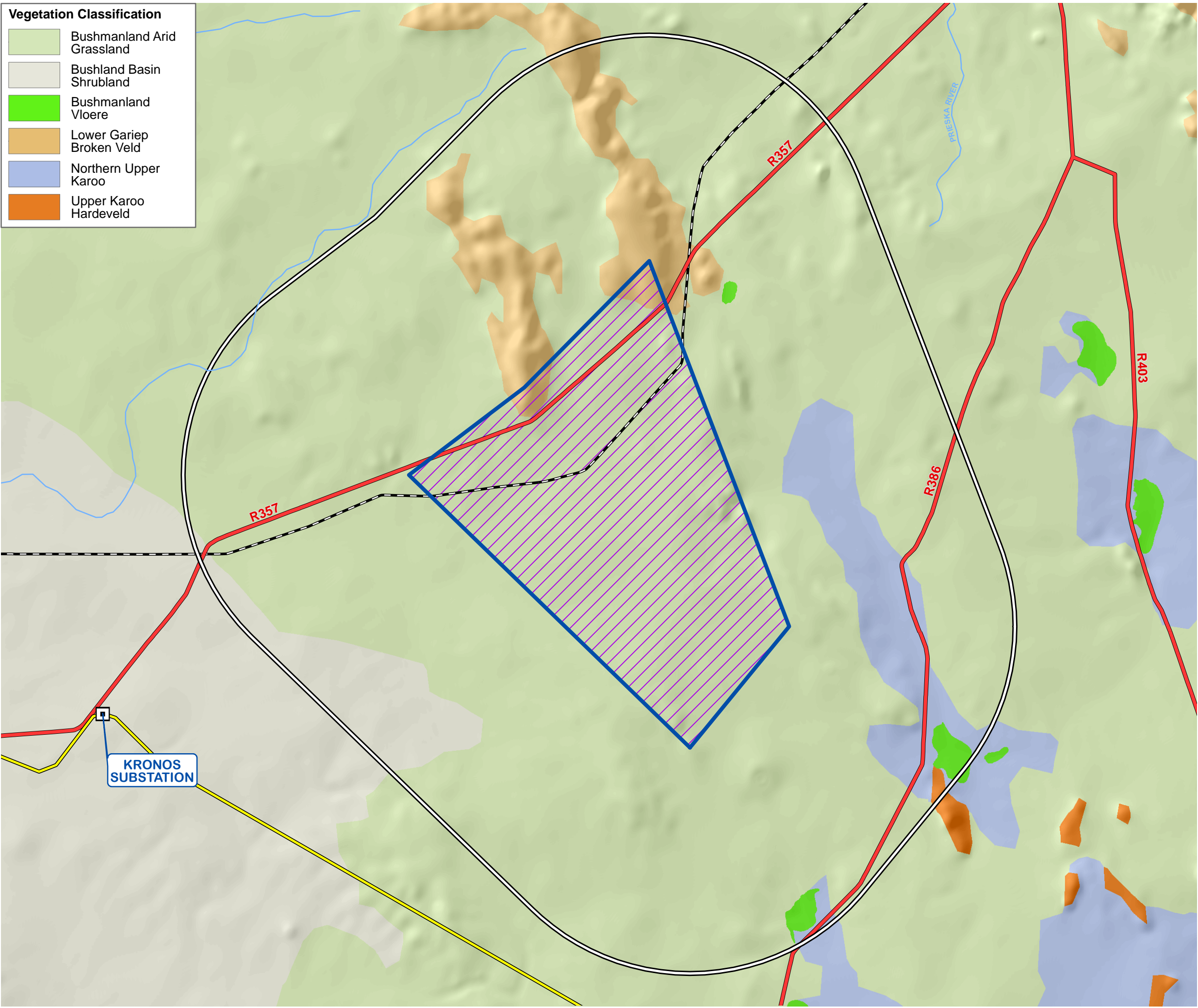
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**Vegetation Classification**

	Bushmanland Arid Grassland
	Bushland Basin Shrubland
	Bushmanland Vloere
	Lower Gariep Broken Veld
	Northern Upper Karoo
	Upper Karoo Hardeveld








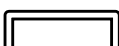


**PROPOSED  
CONSTRUCTION OF A  
140MW WIND ENERGY  
FACILITY**

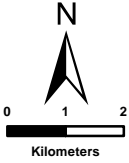
**ALETTA WIND  
NEAR COPPERTON  
NORTHERN CAPE PROVINCE**

**VISUAL ASSESSMENT:  
VEGETATION CLASSIFICATION**

**Legend**

	Main Roads
	Railway Line
	Existing High Voltage Power Lines (400kV)
	Main Rivers/Water Courses
	Existing Substation
	Application Site
	Proposed Aletta Wind Development Area
	8km Visual Assessment Zone

SOURCE:  
ESKOM, 2012  
BIOTERM ENERGY, 2015  
SANBI, 2009



**SIVEST**

**ENVIRONMENTAL DIVISION**  
51 WESSELS ROAD  
RIVONIA, 2128  
JOHANNESBURG  
SOUTH AFRICA

Phone: +27 11 798 0600  
Fax: +27 11 803 7272  
e-mail: info@sivest.co.za

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