

PROPOSED CONSTRUCTION OF FOUR WIND FARMS AND ASSOCIATED GRID CONNECTION
NEAR LOERIESFONTEIN, NORTHERN CAPE PROVINCE
PROJECT OVERVIEW

Legend

-  Local Municipal Boundaries
-  Secondary Roads
-  Local Access Roads
-  Adjoining Farm Boundaries
-  Helios Substation
-  Proposed Linking Substation Site Alternatives

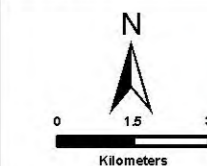
Proposed Wind Farm Projects

-  Graskoppies Wind Farm
-  Hartebeestleegte Wind Farm
-  Ithemba Wind Farm
-  Xha! Boom Wind Farm

Proposed Corridor Alternatives

-  Option 1
-  Option 2
-  Option 3
-  Option 4

SOURCE: MUNICIPAL DEMARCATION BOARD, 2011
 NGI, 2014

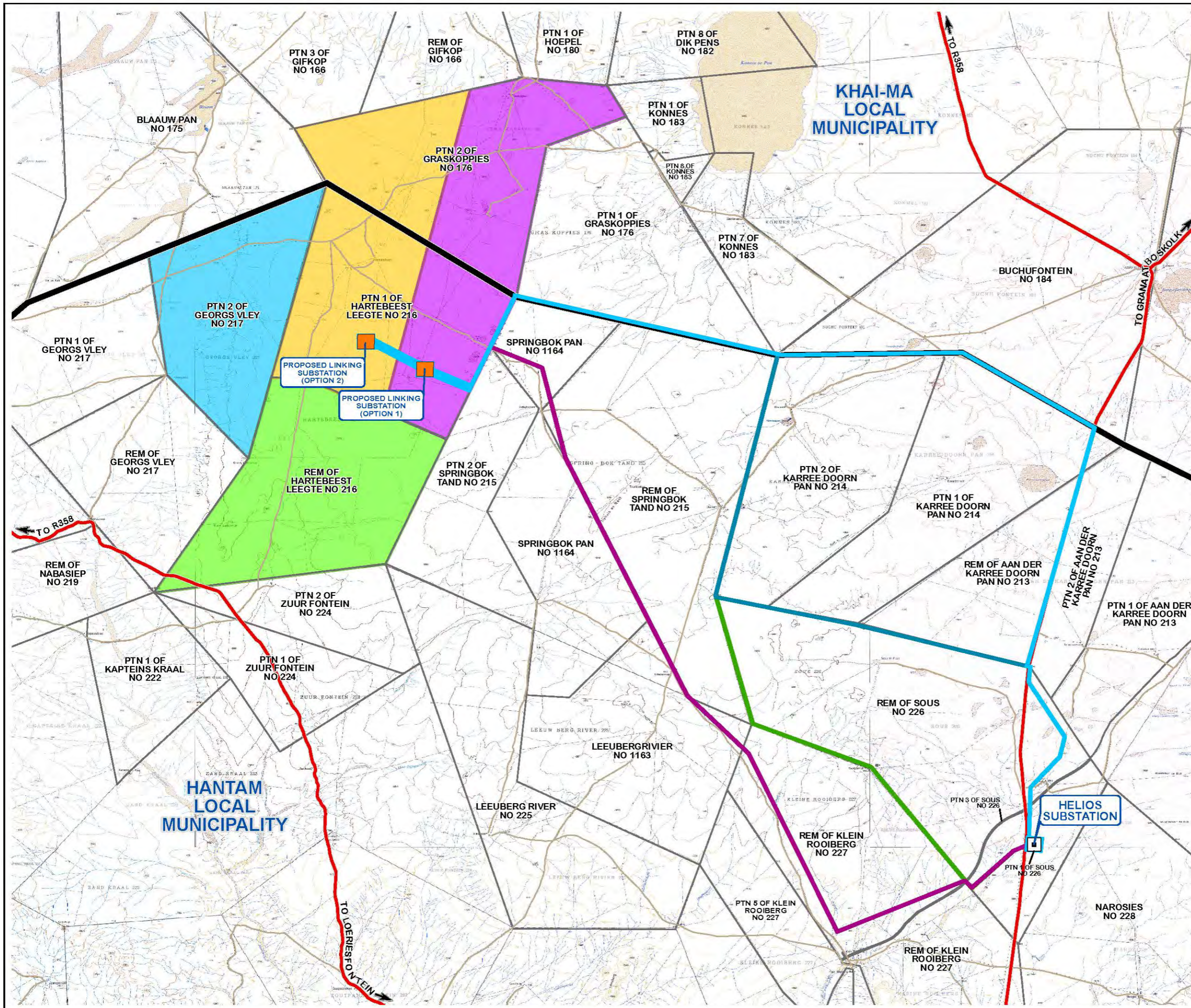


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Map Ref No 13622/BID_01	Revision 2	Date 23/05/2017








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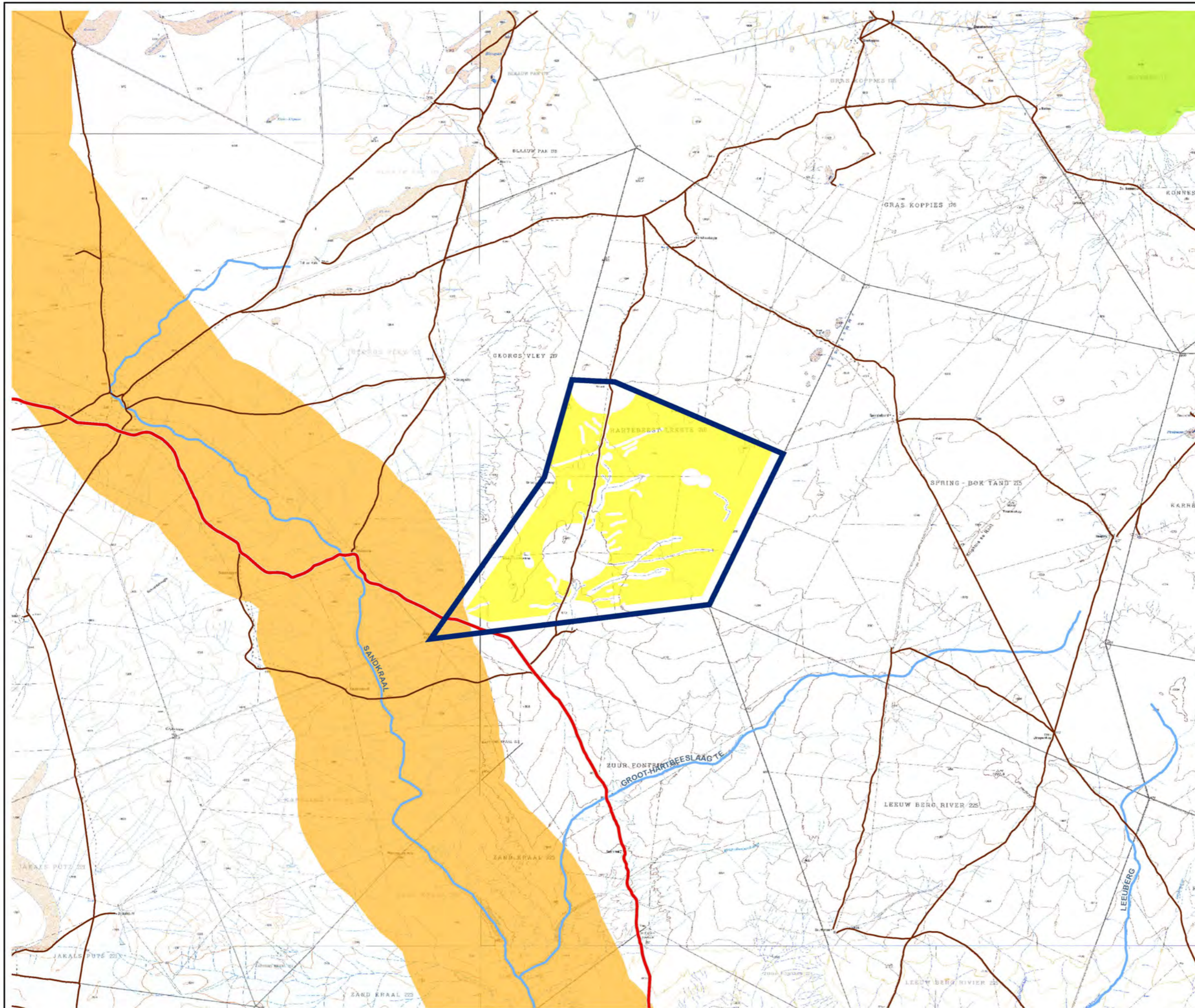
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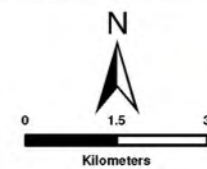
**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM**
**NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE**
**CRITICAL BIODIVERSITY AREAS
(TERRESTRIAL)**

Legend

-  Secondary Roads
 -  Local Access Roads
 -  Main Watercourses
 -  Hartebeest Leegte Wind Farm Application Site
 -  Buildable Area
- Critical Biodiversity Areas**
-  CBA2
 -  ESA



SOURCE:
NGI, 2014
SANBI, 2012
NAMAKWA DISTRICT BIODIVERSITY SECTOR PLAN, 2008



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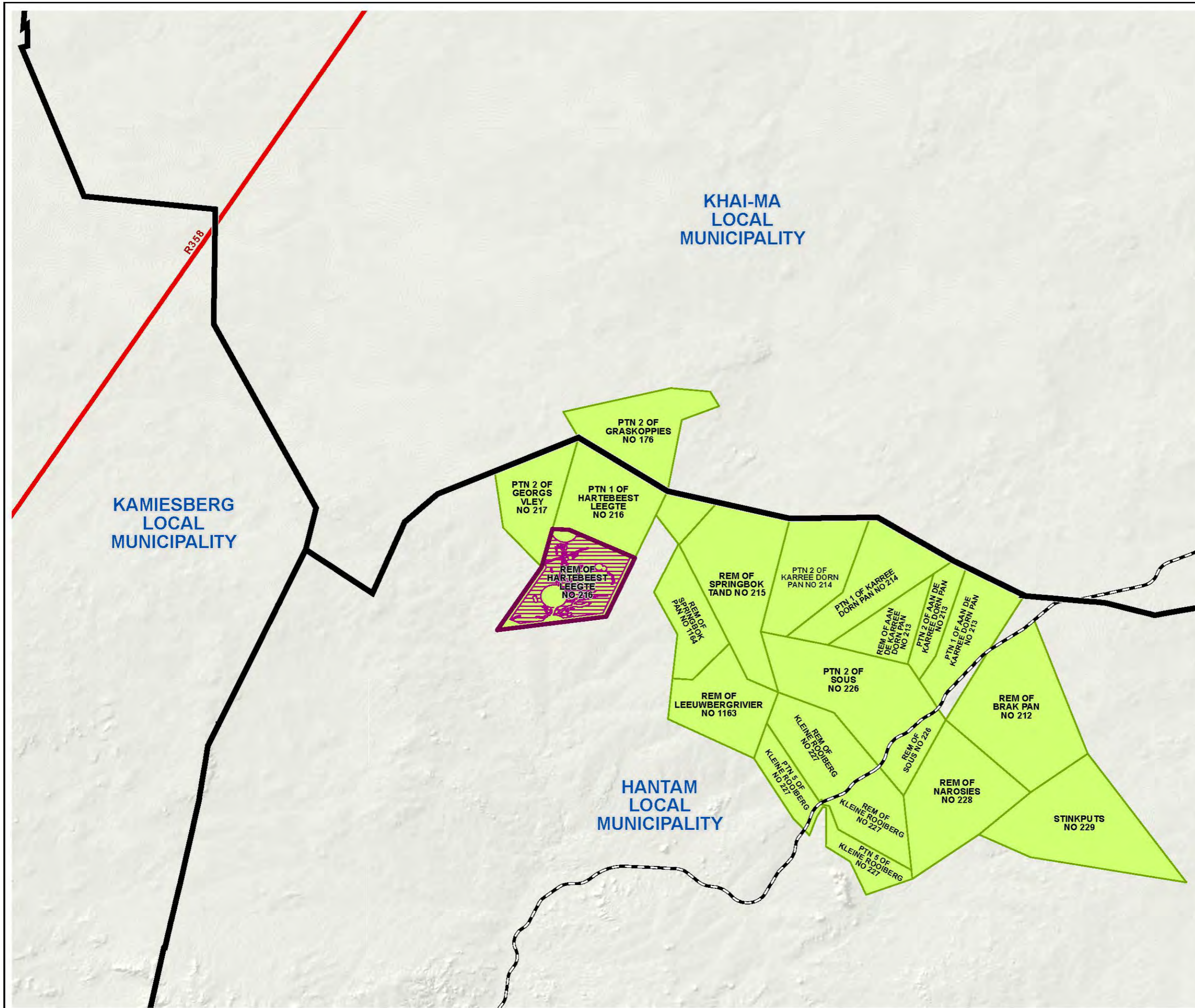
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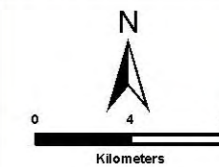
**PROPOSED
CONSTRUCTION OF THE
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WIND FARM**
**NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE**
**OTHER PROPOSED RENEWABLE
ENERGY DEVELOPMENTS**

Legend

-  Local Municipal Boundaries
-  Main Arterial Routes
-  Railways
-  Hartebeest Leegte Wind Farm Application Site
-  Buildable Area
-  Renewable Energy Application Sites



SOURCE: MUNICIPAL DEMARCATION BOARD, 2011
NGI, 2014



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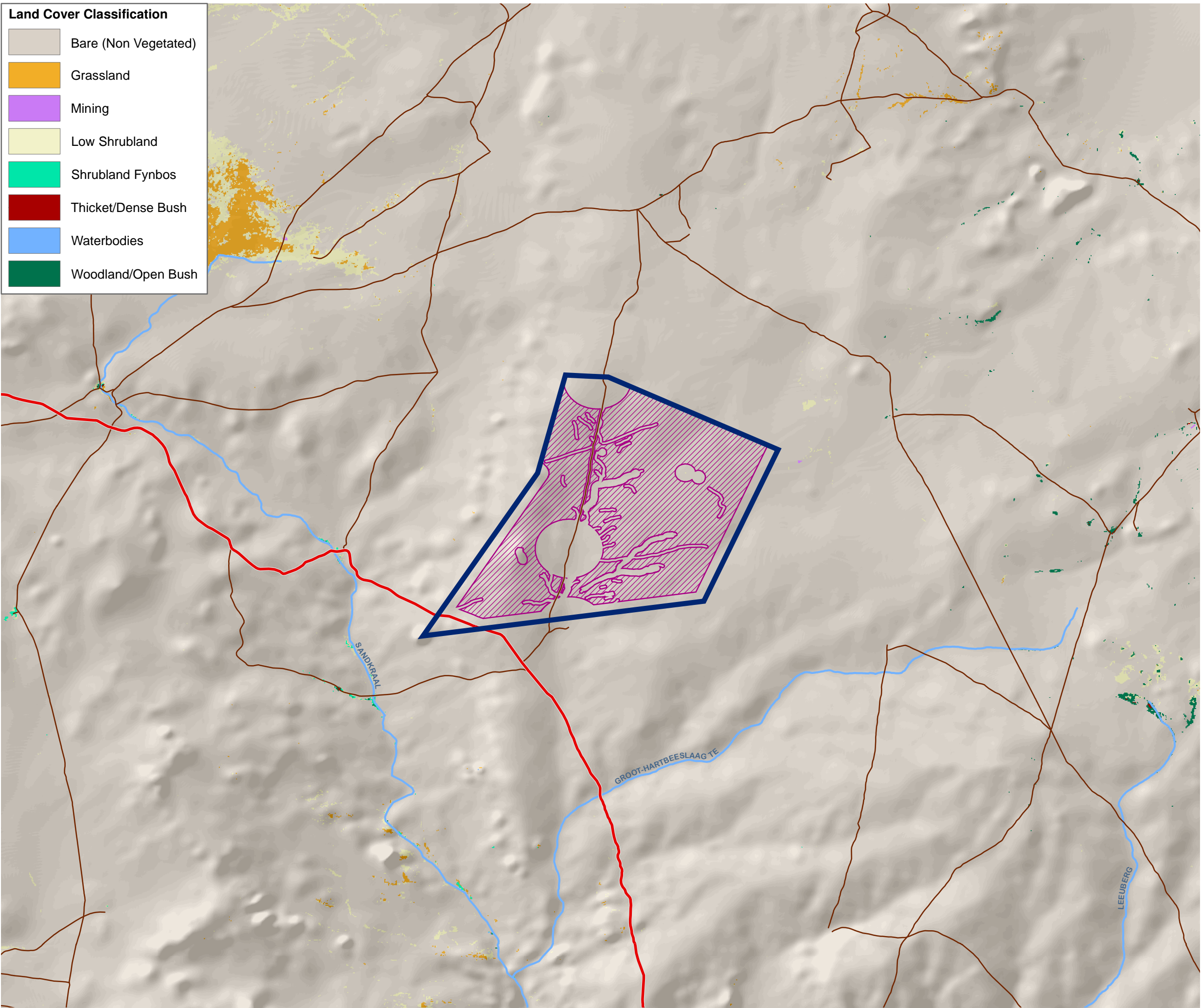
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Land Cover Classification

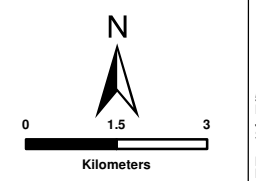
-  Bare (Non Vegetated)
-  Grassland
-  Mining
-  Low Shrubland
-  Shrubland Fynbos
-  Thicket/Dense Bush
-  Waterbodies
-  Woodland/Open Bush



**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM
NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE
BROAD LAND COVER
CLASSIFICATION**

- Legend**
-  Secondary Roads
 -  Local Access Roads
 -  Main Watercourses
 -  Hartebeest Leegte Wind Farm Application Site
 -  Buildable Area

SOURCE:
2013-2014 SA NATIONAL LAND COVER
(© GEOTERRAIMAGE - 2014)



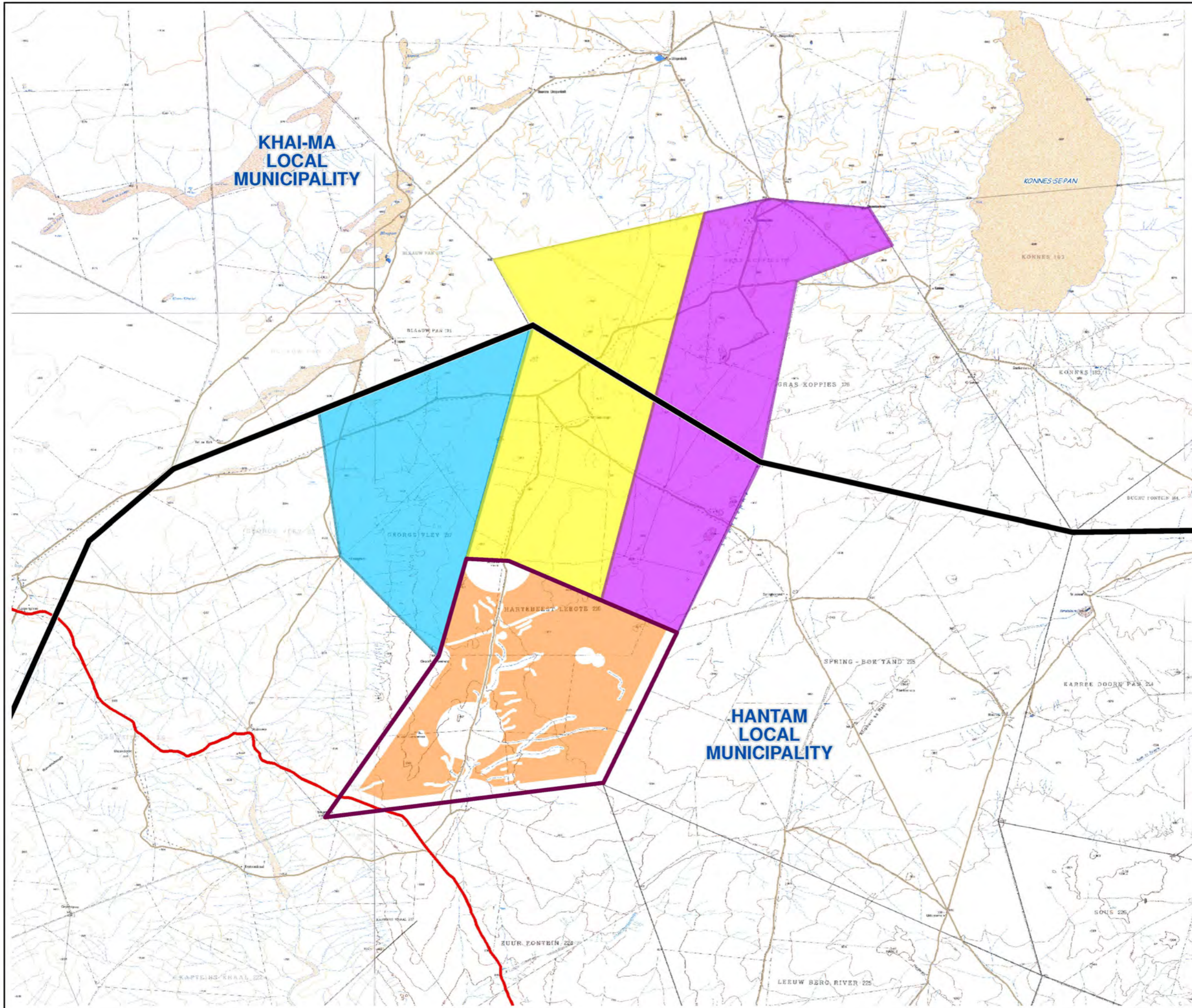
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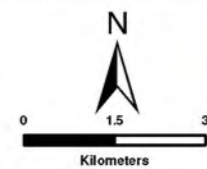
**PROPOSED
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HARTEBEEST LEEGTE
WIND FARM**
**NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE**
**ADJACENT MAINSTREAM
WIND FARM PROJECTS**



Legend

-  Local Municipal Boundaries
 -  Secondary Roads
 -  Local Access Roads
 -  Hartebeest Leegte Wind Farm Application Site
 -  Buildable Area
- Adjacent Mainstream Wind Farm Projects**
-  Graskoppies Wind Farm Application Site
 -  Ithemba Wind Farm Application Site
 -  Xha! Boom Wind Farm Application Site

SOURCE:
MUNICIPAL DEMARCATION BOARD, 2011
NGI, 2014



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**PROPOSED
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HARTEBEEST LEEGTE
WIND FARM
NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE
'NO-GO' AREAS**


Legend

-  Secondary Roads
-  Local Access Roads
-  Hartebeest Leegte Wind Farm Application Site
-  Buildable Area
-  Preferred Hartebeest Leegte Substation Site Alternative
-  Proposed Turbine Positions

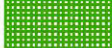
Avifaunal 'No-Go' Areas

-  Turbines and Infrastructure


Bat 'No-Go' Areas

-  Turbines Only


Ecological 'No-Go' Areas

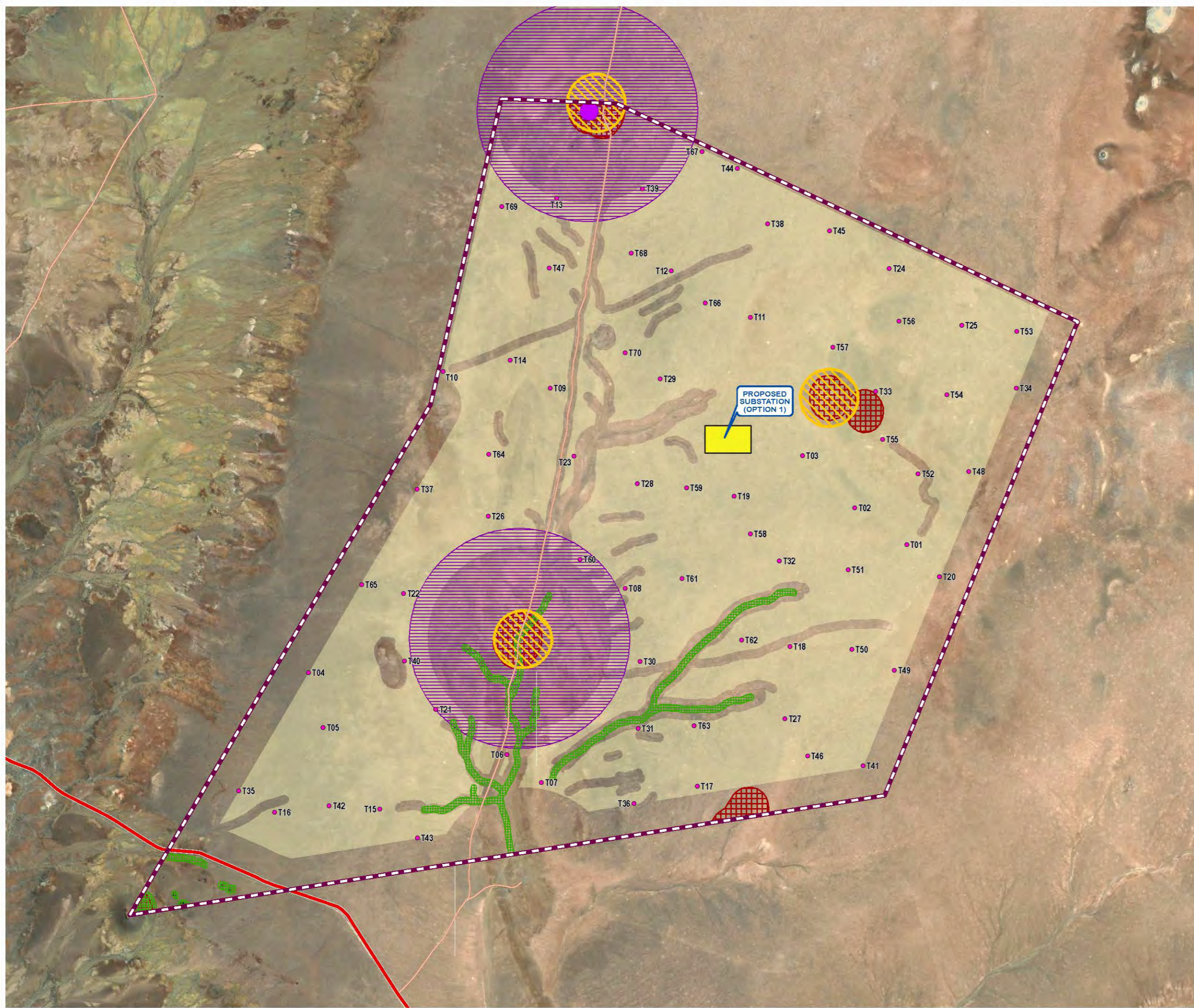
-  Turbines Only

Heritage 'No-Go' Areas

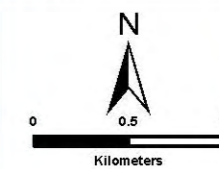
-  Turbines and Infrastructure

Noise 'No-Go' Areas

-  Turbines Only



SOURCE:
GOOGLE EARTH, 2017
NGI, 2014

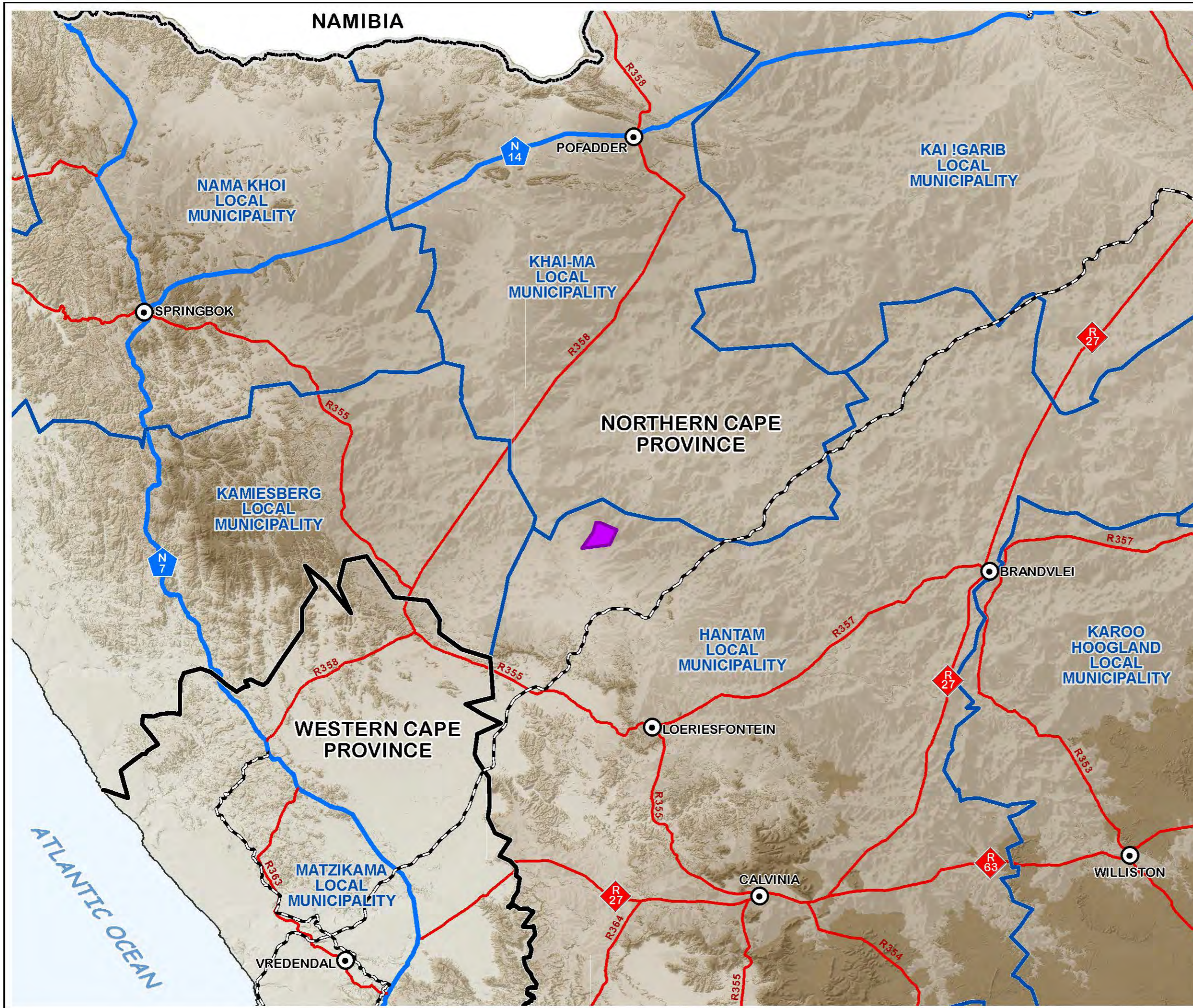


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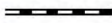


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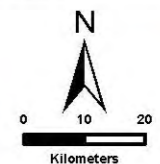


**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM
NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE
REGIONAL CONTEXT**

Legend

-  National Boundary
-  Provincial Boundaries
-  Local Municipal Boundaries
-  National Routes
-  Main Arterial Routes
-  Railways
-  Main Towns
-  Hartbeest Leegte Wind Farm Application Site

SOURCE: MUNICIPAL DEMARCATION BOARD, 2011
NGI, 2014



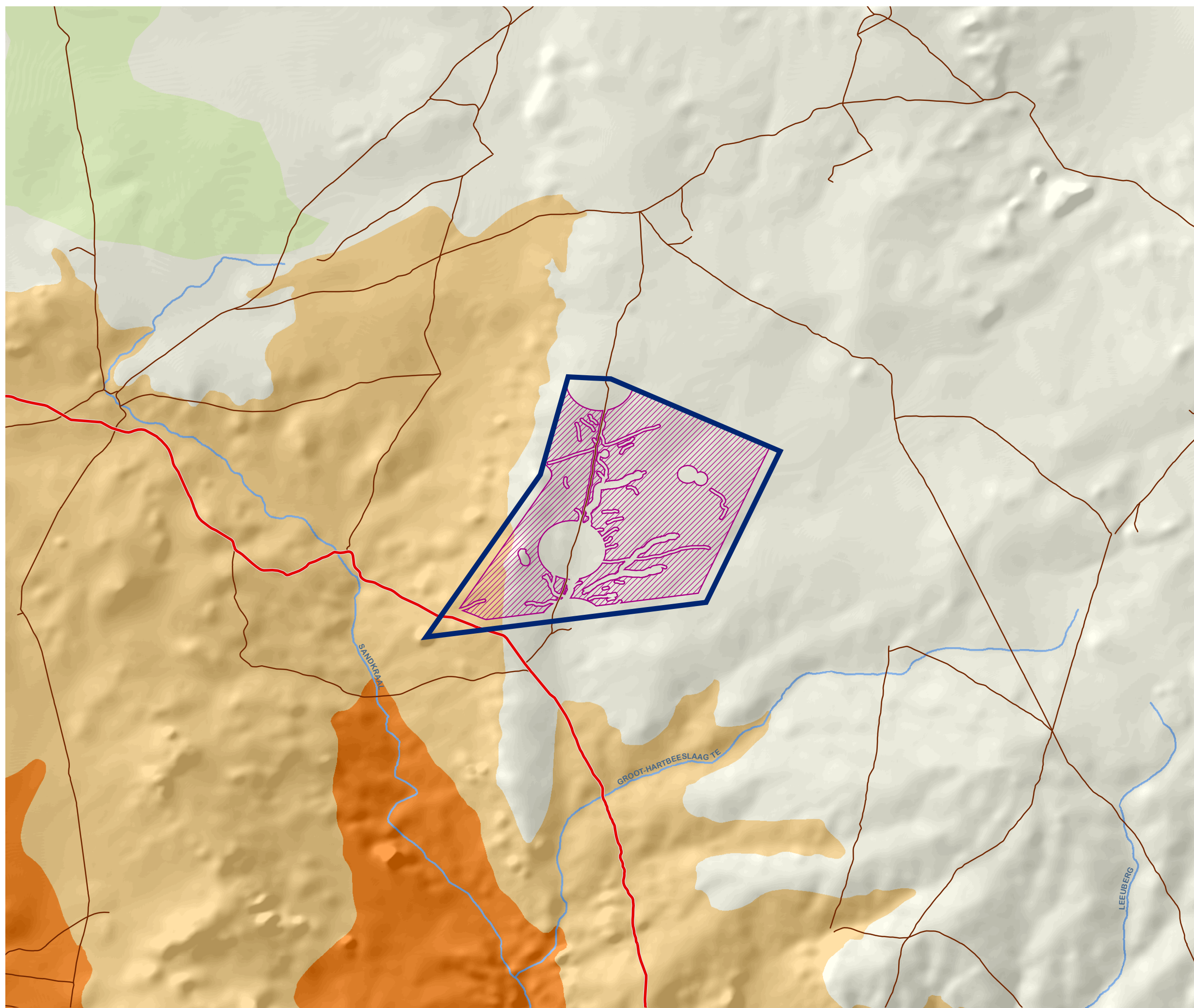
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**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM
NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE
VEGETATION CLASSIFICATION**



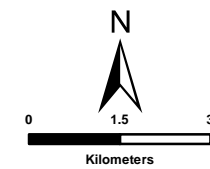
Legend

- Secondary Roads
- Local Access Roads
- Main Watercourses
- Hartebeest Leegte Wind Farm Application Site
- Buildable Area

Vegetation Classification

- Bushmanland Arid Grassland
- Bushmanland Basin Shrubland
- Bushmanland Vloere
- Western Bushmanland Klipveld
- Namaqualand Blomveld

SOURCE:
NGI, 2014
SANBI, 2012













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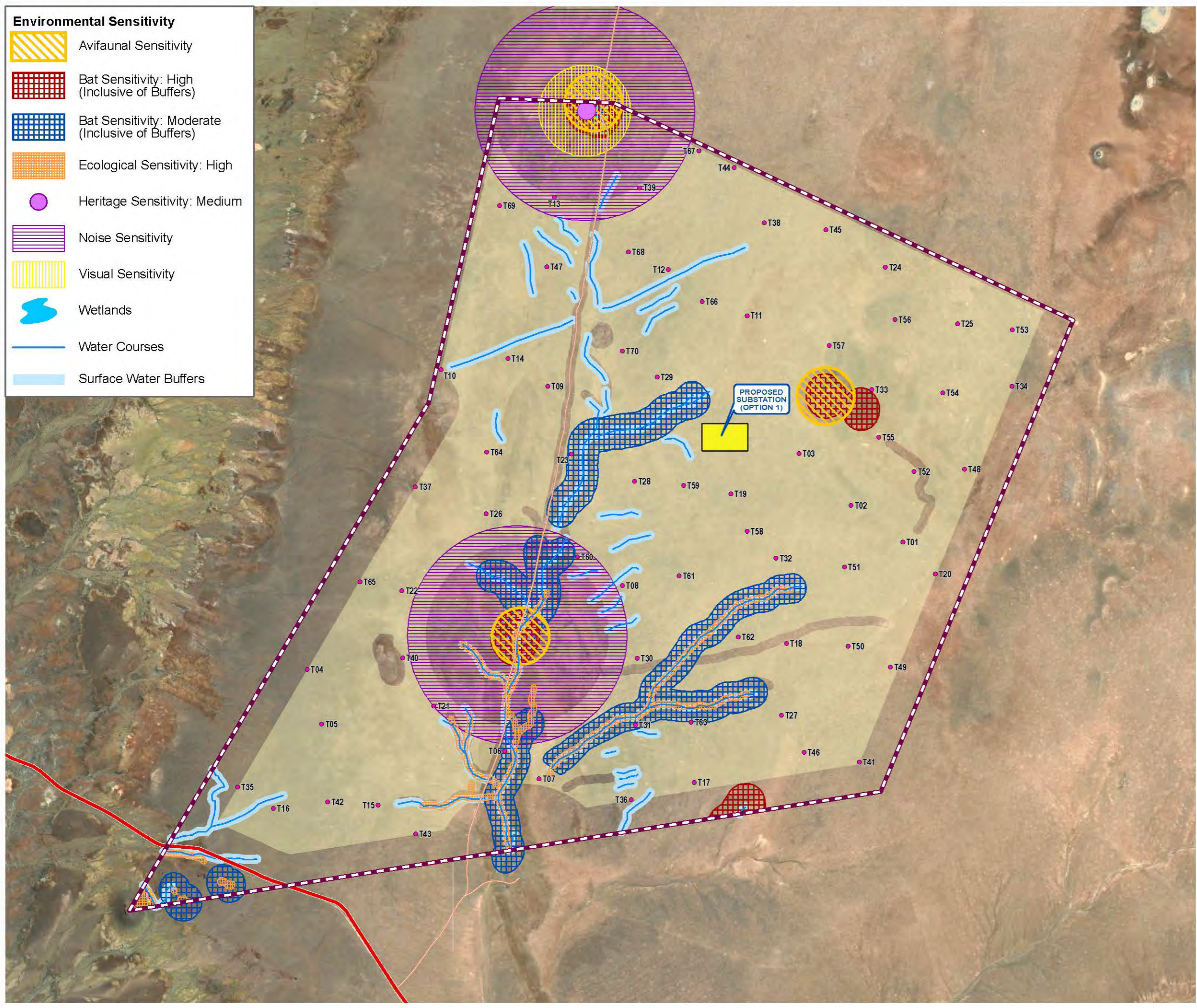
Environmental Sensitivity

-  Avifaunal Sensitivity
-  Bat Sensitivity: High (Inclusive of Buffers)
-  Bat Sensitivity: Moderate (Inclusive of Buffers)
-  Ecological Sensitivity: High
-  Heritage Sensitivity: Medium
-  Noise Sensitivity
-  Visual Sensitivity
-  Wetlands
-  Water Courses
-  Surface Water Buffers

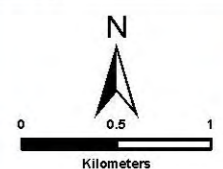
**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM
NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE
ENVIRONMENTAL SENSITIVITY**

Legend

-  Secondary Roads
-  Local Access Roads
-  Hartebeest Leegte Wind Farm Application Site
-  Buildable Area
-  Preferred Hartebeest Leegte Substation Site Alternative
-  Proposed Turbine Positions



SOURCE:
GOOGLE EARTH, 2017
NGI, 2014



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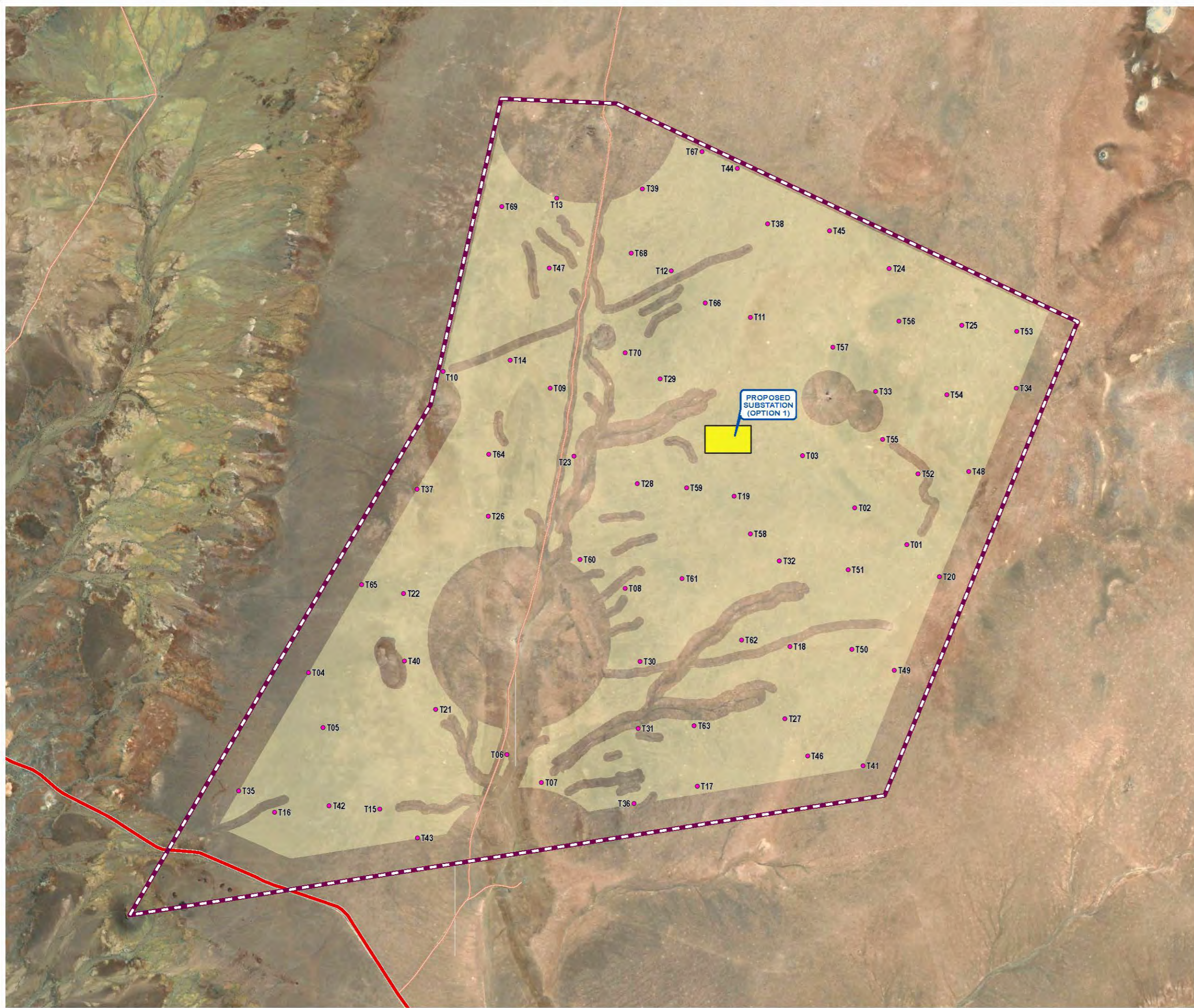
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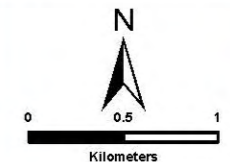
**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM
NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE
PROPOSED SITE LAYOUT**

Legend

-  Secondary Roads
-  Local Access Roads
-  Hartebeest Leegte Wind Farm Application Site
-  Buildable Area
-  Preferred Hartebeest Leegte Substation Site Alternative
-  Proposed Turbine Positions



SOURCE:
GOOGLE EARTH, 2017
NGI, 2014



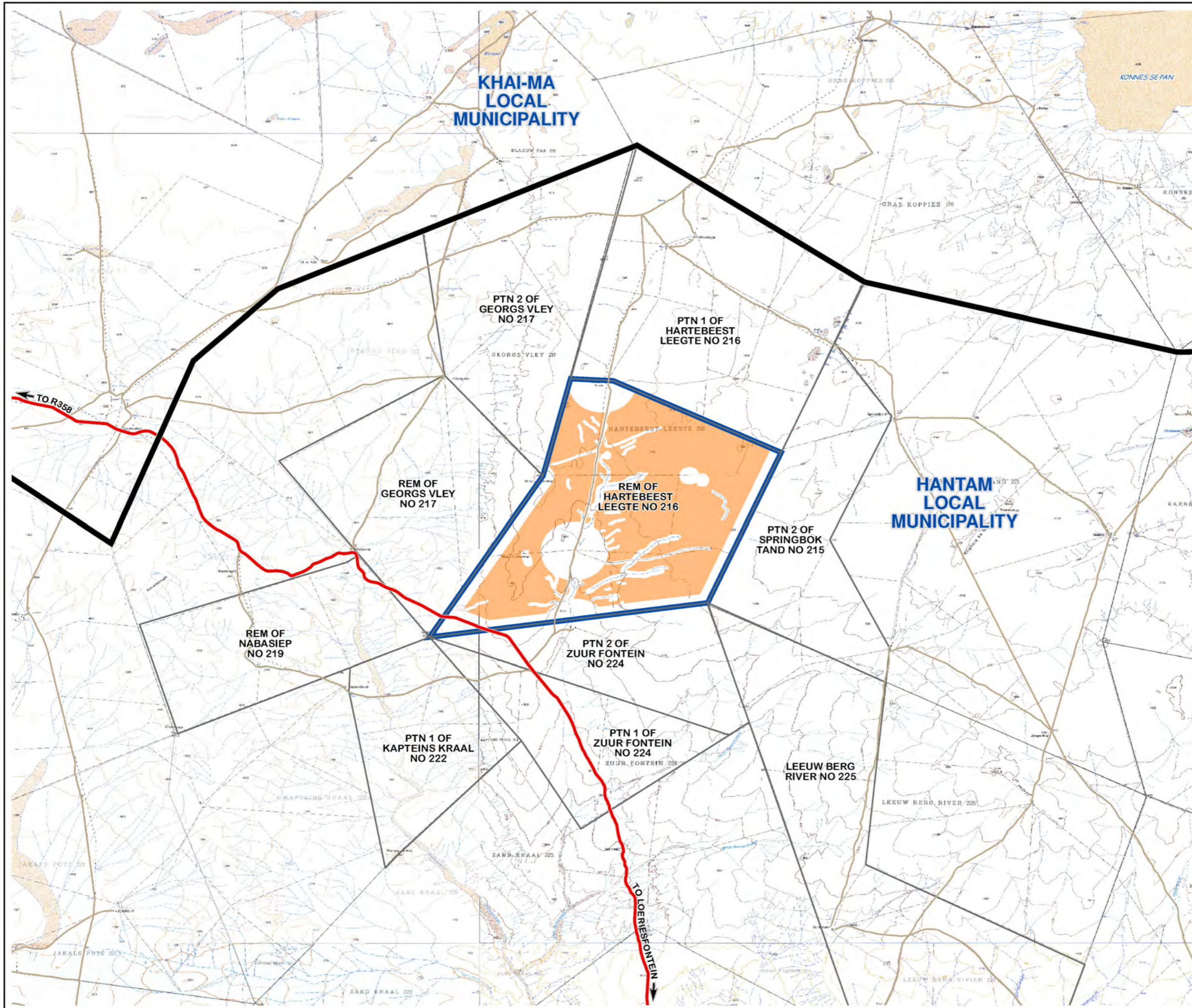
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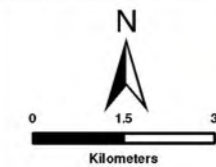
**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM**
**NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE**
SITE LOCALITY



Legend

-  Local Municipal Boundaries
-  Secondary Roads
-  Local Access Roads
-  Adjoining Farm Boundaries
-  Hartebeest Leegte Wind Farm Application Site
-  Buildable Area

SOURCE:
MUNICIPAL DEMARCATION BOARD, 2011
NGI, 2014



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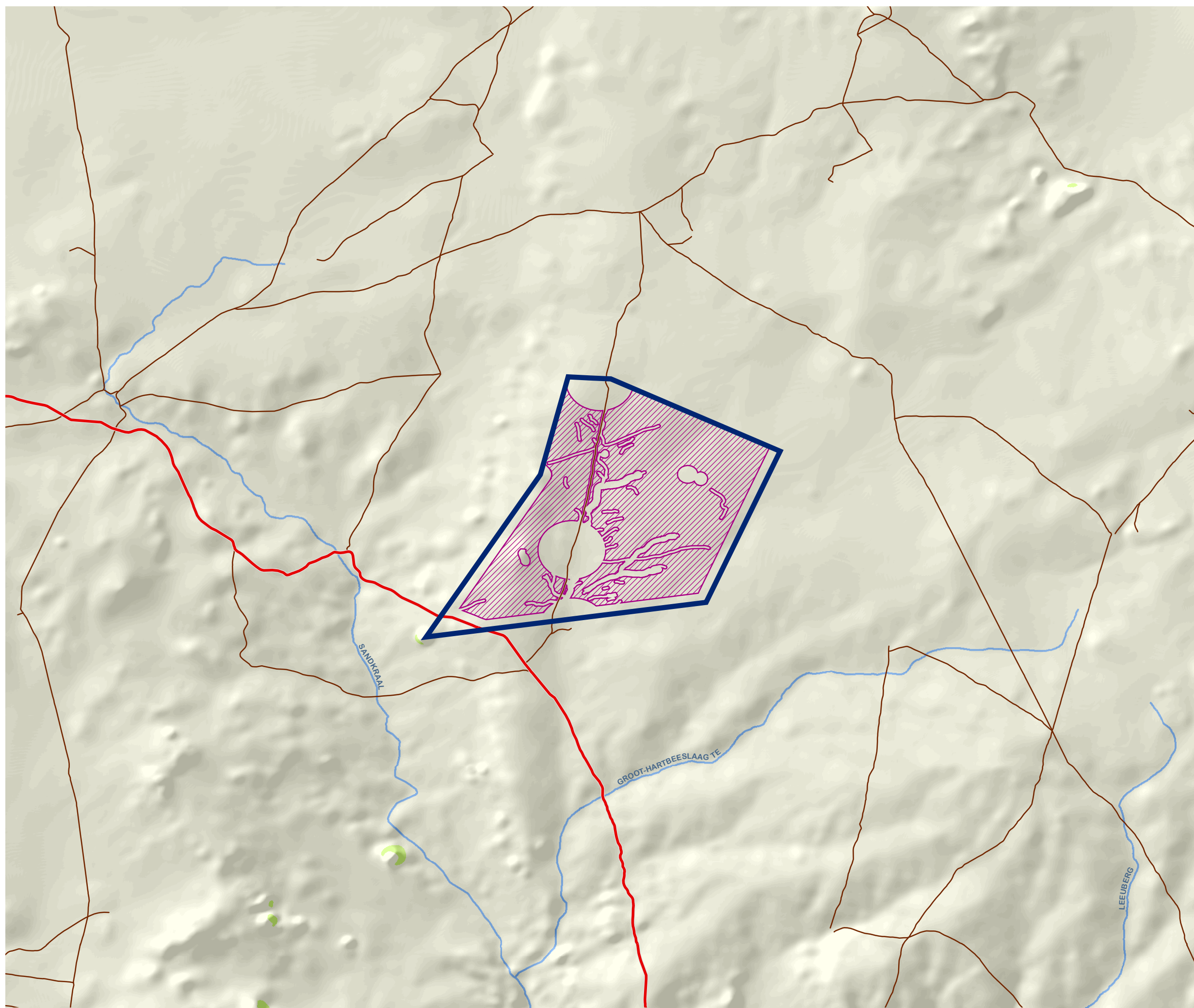
**PROPOSED
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WIND FARM
NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE
SLOPE CLASSIFICATION**

Legend

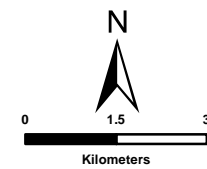
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-  Local Access Roads
-  Main Watercourses
-  Hartebeest Leegte Wind Farm Application Site
-  Buildable Area

**Slope Classification
(Percent Rice)**

-  <= 8%
-  8.01 - 12%



SOURCE:
NGI, 2014



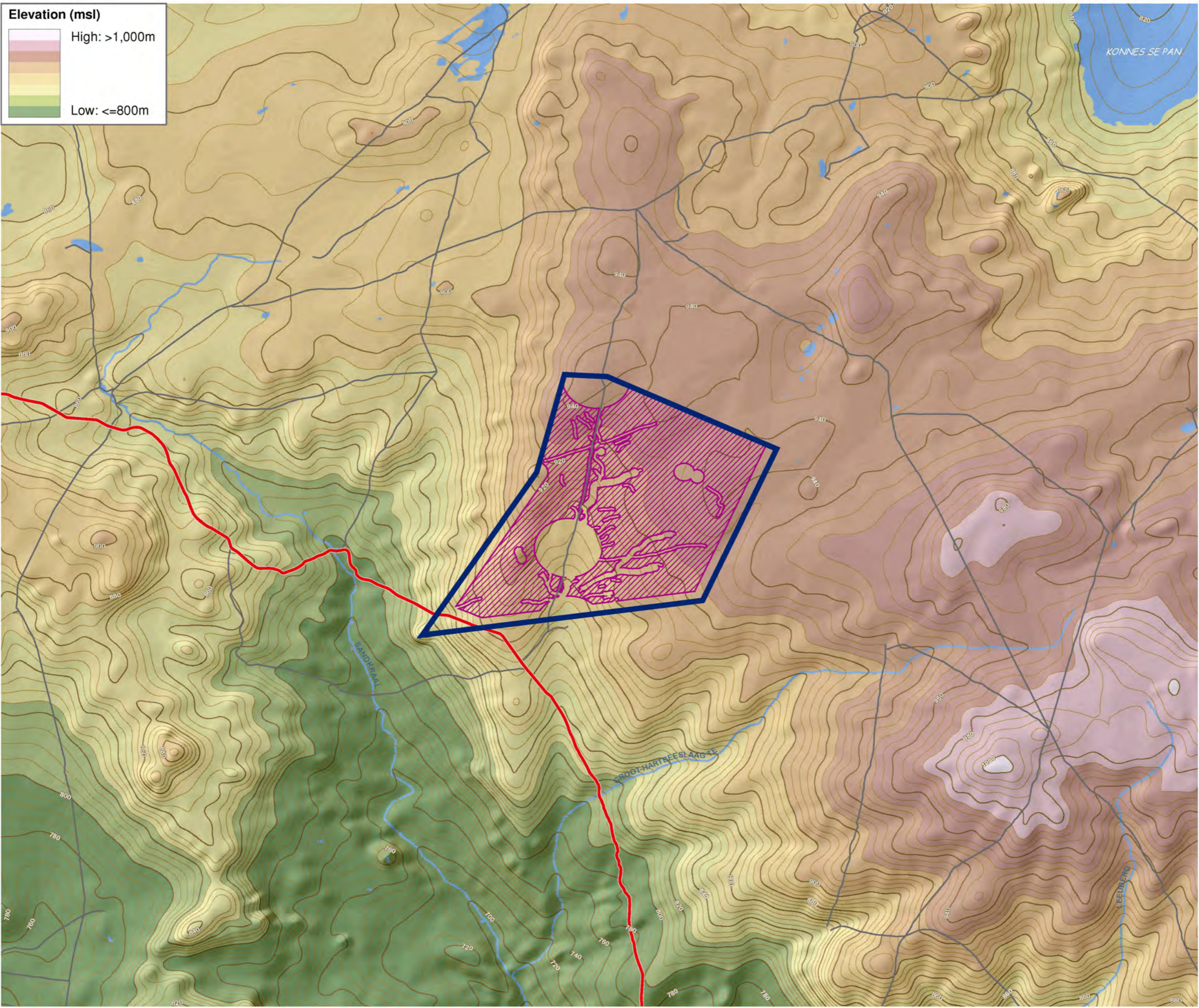
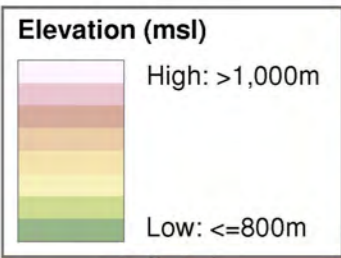
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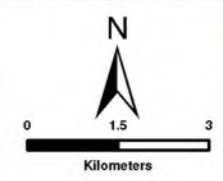
**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM**

**NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE**

TOPOGRAPHY

- Legend**
- Secondary Roads
 - Local Access Roads
 - Main Watercourses
 - Contours (20m Interval)
 - Contours (5m Interval)
 - Pans/Wetlands/Waterbodies
 - Hartebeest Leegte Wind Farm Application Site
 - Buildable Area

SOURCE:
NGI, 2014



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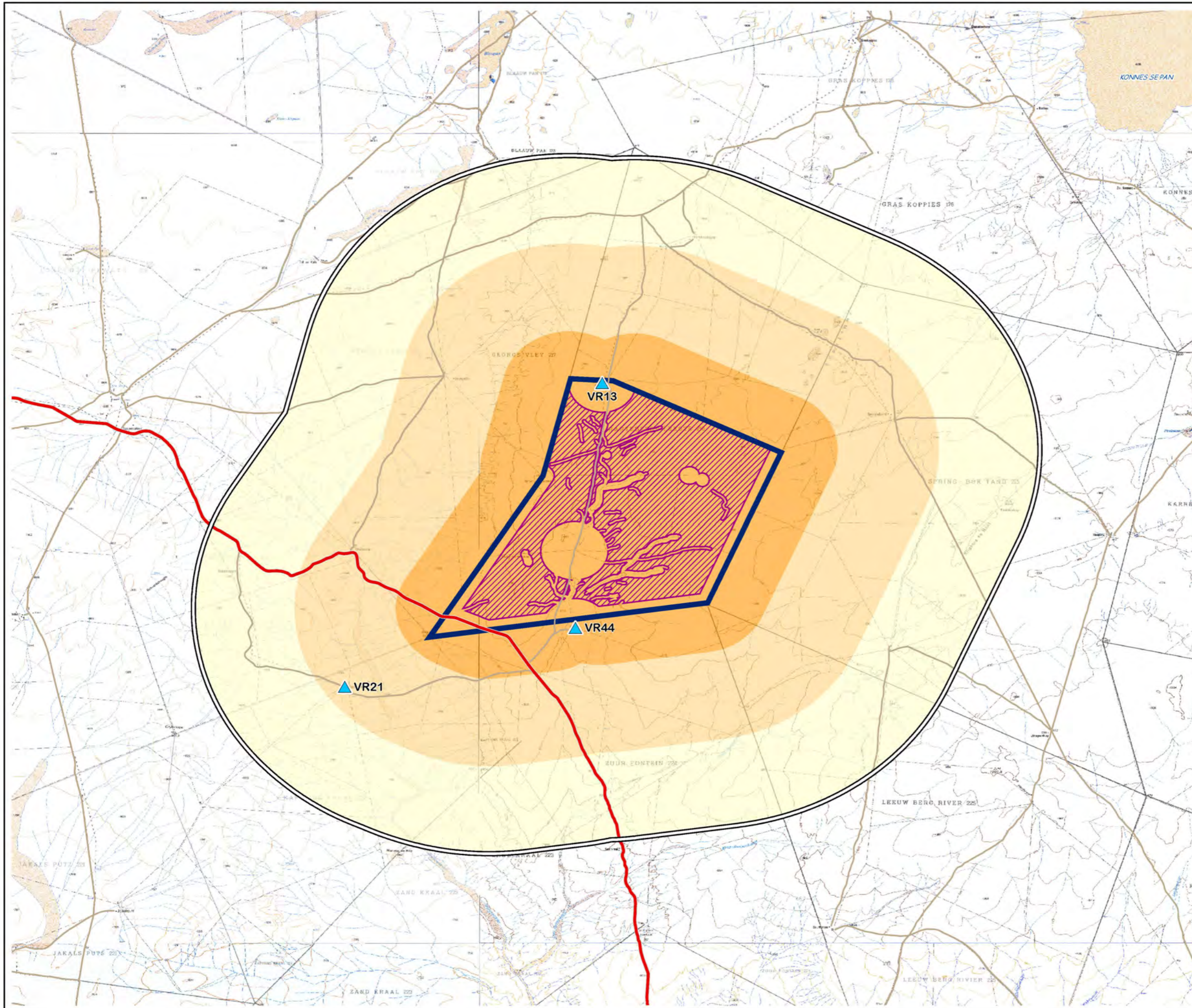
**PROPOSED
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WIND FARM**
**NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE**
**VISUAL ASSESSMENT:
POTENTIALLY SENSITIVE
VISUAL RECEPTOR LOCATIONS**

Legend

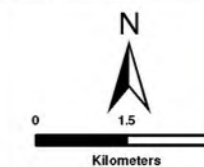
-  Secondary Roads
-  Local Access Roads
-  Hartebeest Leegte Wind Farm Application Site
-  8km Visual Assessment Zone
-  Buildable Area
-  Potentially Sensitive Receptor Locations

Zones of Potential Visual Impact

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



SOURCE:
NGI, 2014



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SOUTH AFRICA

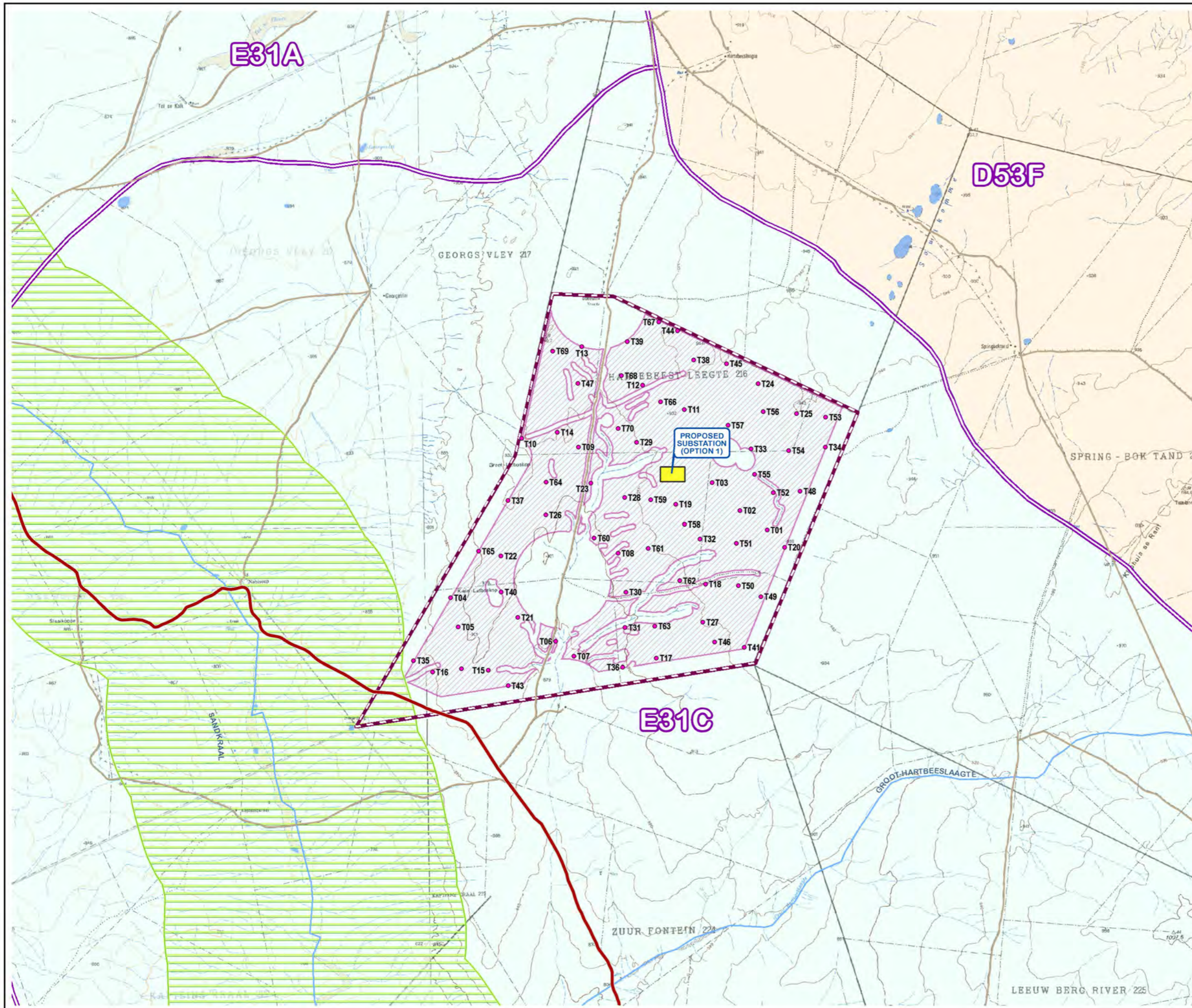
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Project No 13622	Prepared By KLS	Date 04/07/2017
Map Ref No 13622/EAV_H07	Revision 0	Date

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**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM**
**NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE**
**SURFACE WATER ASSESSMENT:
DATABASE SURFACE WATER
OCCURRENCE**



Legend

- Secondary Roads
- Local Access
- Hartebest Leegte Wind Farm Application Site
- Buildable
- Preferred Hartebest Leegte Substation Site Alternative
- Proposed Turbine Positions

Surface Water Features

- Quaternary Catchment Boundaries
- Rivers
- Wetlands

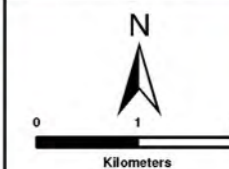
Water Management Areas (2004)

- 14 - Lower Orange
- 17 - Olifants/Doorn

**Critical Biodiversity Areas
(Terrestrial)**

- Ecological Support Area

SOURCE:
DWS, 2004
NFEPA, 2011
NAMAKWA DISTRICT BIODIVERSITY SECTOR PLAN, 2008



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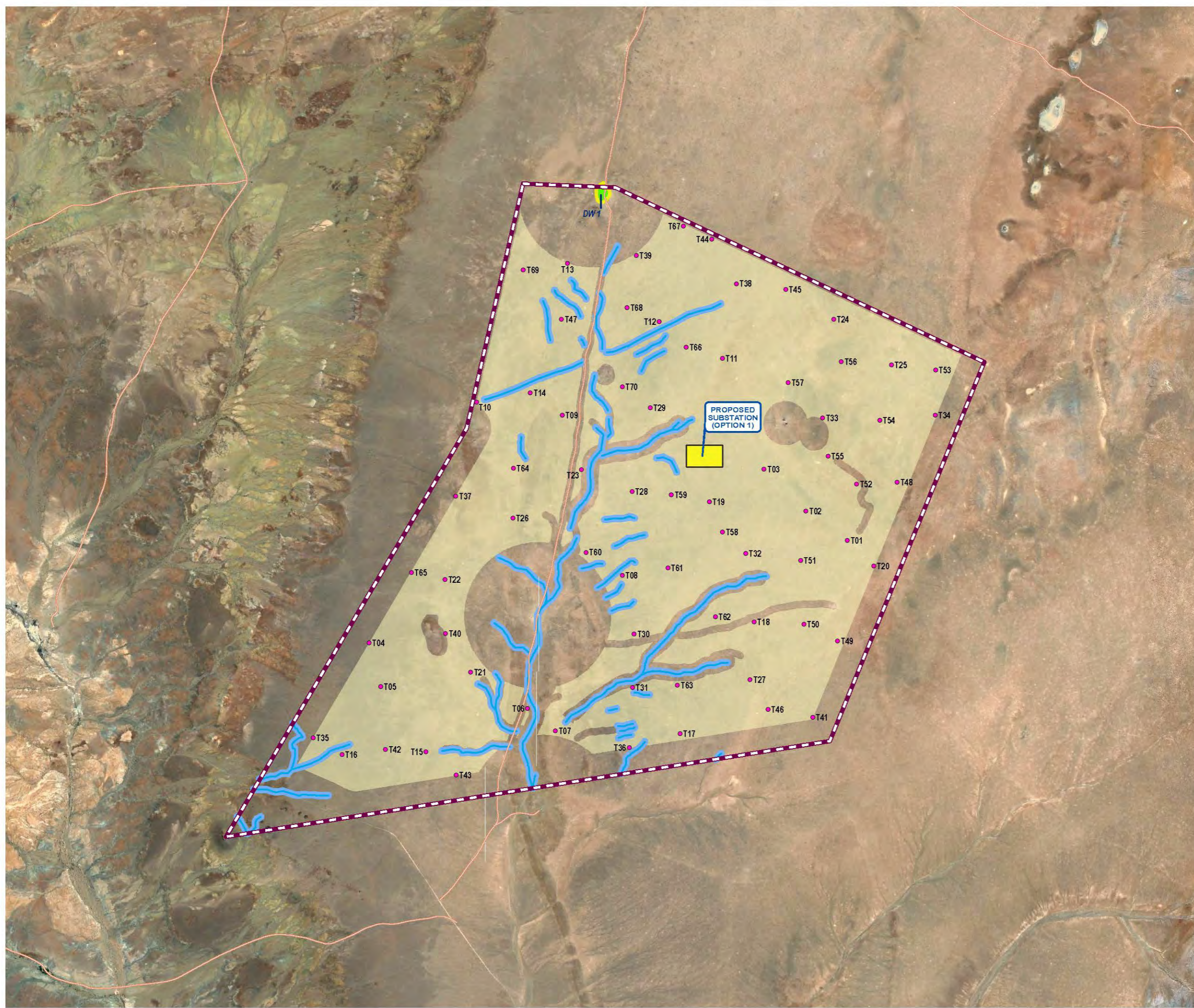
**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM**
**NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE**
**SURFACE WATER ASSESSMENT:
GROUND TRUTHED FIELDWORK
DELINEATIONS**

Legend

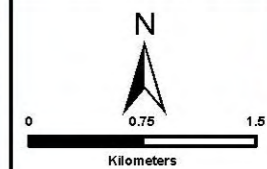
-  Local Access Roads
-  Hartebeest Leegte Wind Farm Application Site
-  Buildable Area
-  Preferred Hartebeest Leegte Substation Site Alternative
-  Proposed Turbine Positions

Surface Water Features

-  Depression Wetland
-  Wetland Buffer (50m)
-  Drainage Lines
-  Drainage Line Buffers (50m)



SOURCE:
GOOGLE EARTH, 2016



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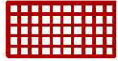






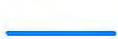

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
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Environmental Sensitivity

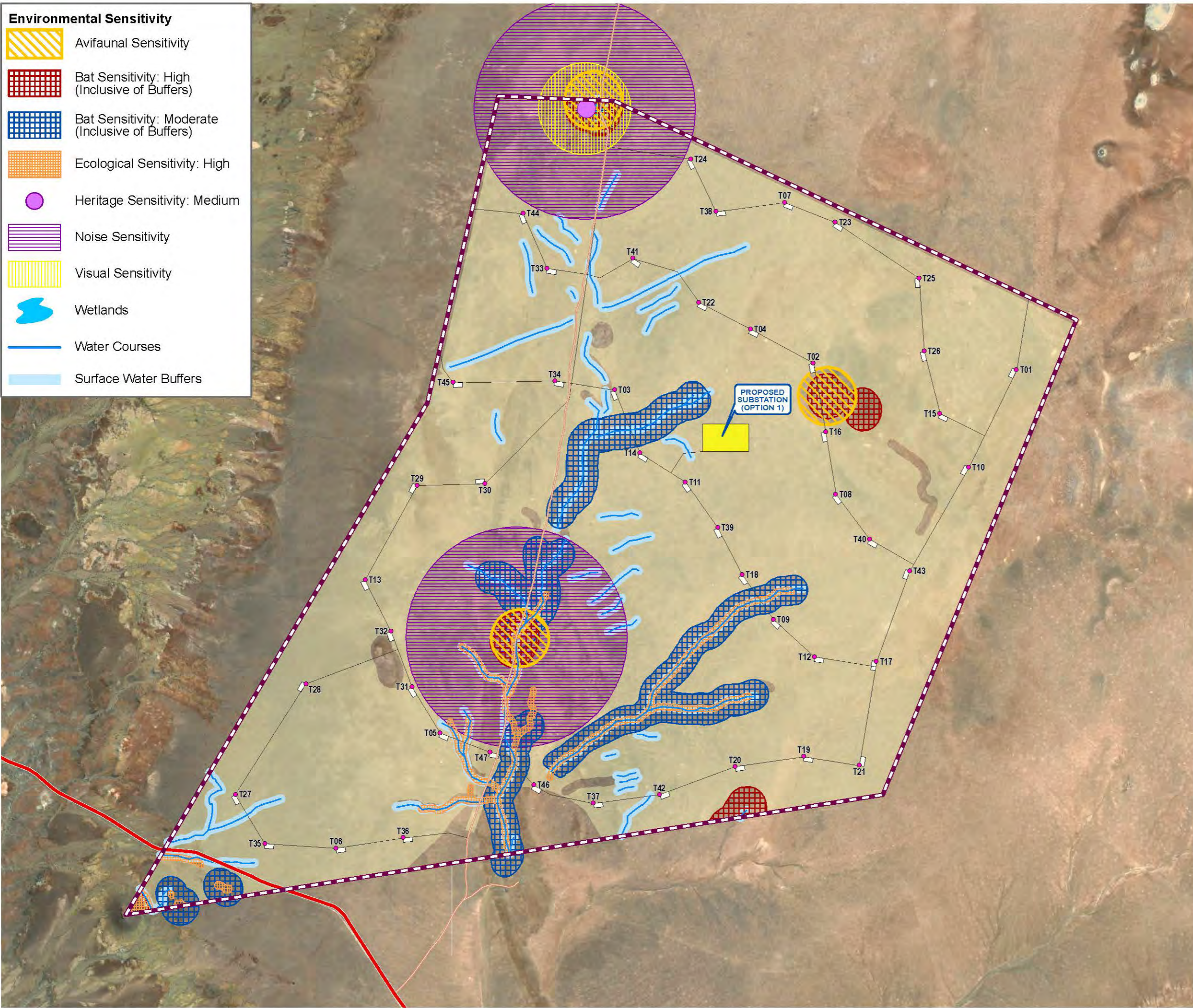
-  Avifaunal Sensitivity
-  Bat Sensitivity: High (Inclusive of Buffers)
-  Bat Sensitivity: Moderate (Inclusive of Buffers)
-  Ecological Sensitivity: High
-  Heritage Sensitivity: Medium
-  Noise Sensitivity
-  Visual Sensitivity
-  Wetlands
-  Water Courses
-  Surface Water Buffers

**PROPOSED
CONSTRUCTION OF THE
HARTEBEEST LEEGTE
WIND FARM
NEAR LOERIESFONTEIN,
NORTHERN CAPE PROVINCE
SENSITIVITY OVERLAY
(PREFERRED LAYOUT)**

Legend

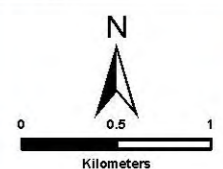
-  Secondary Roads
-  Local Access Roads
-  Hartebeest Leegte Wind Farm Application Site
-  Buildable Area
-  Preferred Hartebeest Leegte Substation Site Alternative*
-  Proposed Turbine Positions
-  Proposed Internal Road Network
-  Proposed Hardstand Areas

Layout Components



*500m x 300m Footprint to include:
Hartebeest Leegte Substation
Operation & Maintenance Buildings
Construction Laydown Area

SOURCE:
GOOGLE EARTH, 2017
NGI, 2014




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Map Ref No 13622/EA_H13	Revision 0	Date

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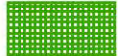
Avifaunal 'No-Go' Areas

 Turbines and Infrastructure


Bat 'No-Go' Areas

 Turbines Only


Ecological 'No-Go' Areas

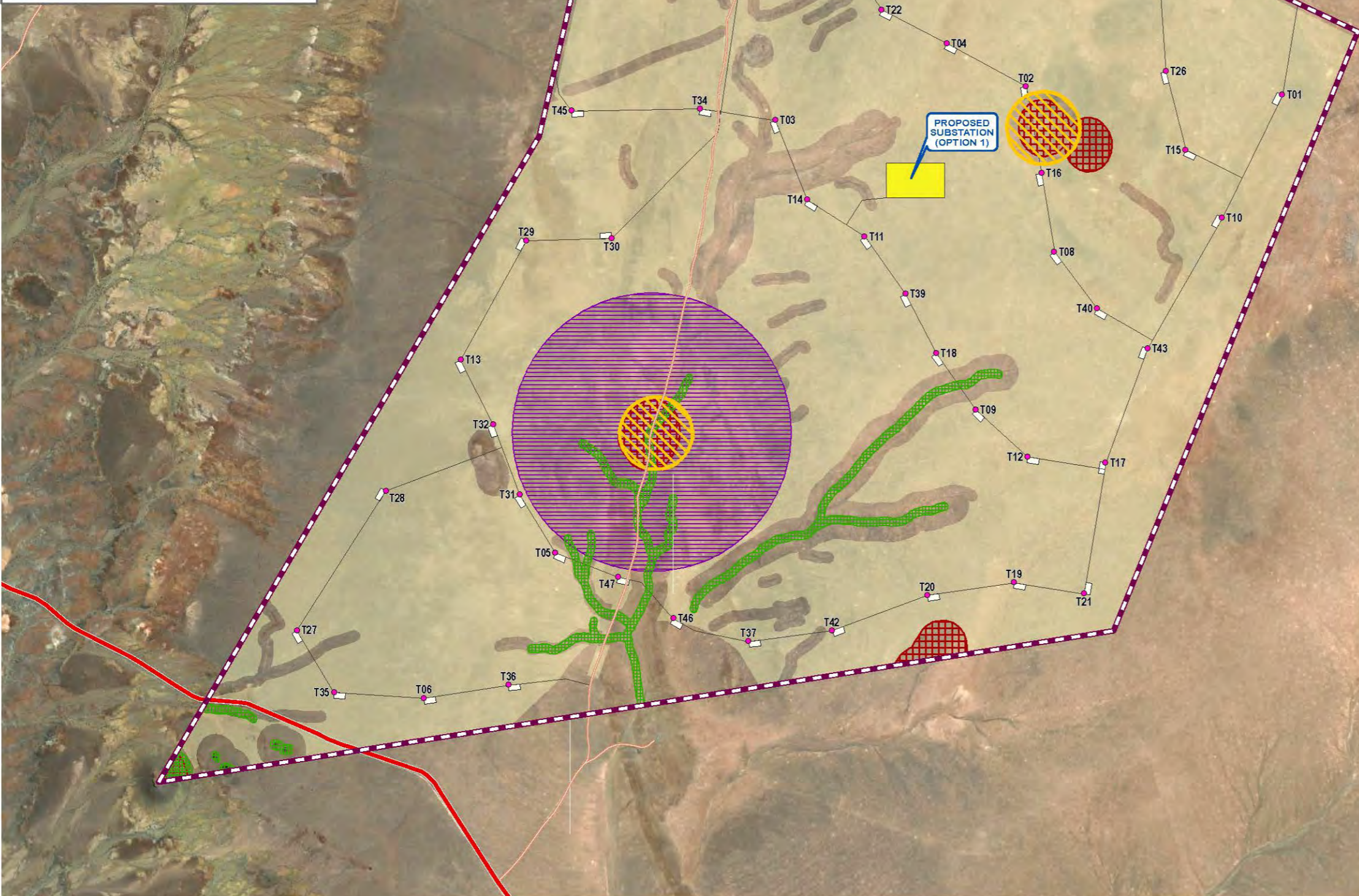
 Turbines Only

Heritage 'No-Go' Areas

 Turbines and Infrastructure



Noise 'No-Go' Areas

 Turbines Only








PROPOSED CONSTRUCTION OF THE HARTEBEEST LEEGTE WIND FARM
NEAR LOERIESFONTEIN, NORTHERN CAPE PROVINCE
'NO-GO' AREAS (PREFERRED LAYOUT)

Legend

-  Secondary Roads
-  Local Access Roads

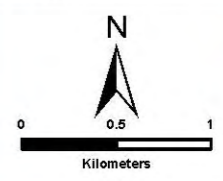
 Hartebeest Leegte Wind Farm Application Site

Layout Components

-  Buildable Area
-  Preferred Hartebeest Leegte Substation Site Alternative*
-  Proposed Turbine Positions
-  Proposed Hardstand Areas
-  Proposed Internal Road Network

*500m x 300m Footprint to include:
 Hartebeest Leegte Substation
 Operation & Maintenance Buildings
 Construction Laydown Area

SOURCE:
 GOOGLE EARTH, 2017
 NGI, 2014



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