




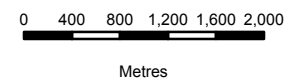


**BIOTERM ENERGY
(PTY) LTD**
STATUS QUO
MARALLA WEST

Legend

-  Eskom Powelines
-  Non-Perennial Rivers
-  Maralla East Wind Facility
-  NFEPA Wetlands
- Heritage**
-  No-Go Areas
- Protected Vegetation**
-  Western Karoo



DATA SOURCE:
CHIEF DIRECTORATE: NATIONAL GEO-
SPATIAL INFORMATION
NFEPA, SANBI

PROJECTION: WGS HARTEBEEHOEK 94

PROJECT TITLE: WIND AND SOLAR RENEWABLES

PROJECT NO: 47579

SCALE: 1:63,000 AT A4 DATE: 08/12/2016










DRAWN BY: SABELO DUBE FIGURE NO:

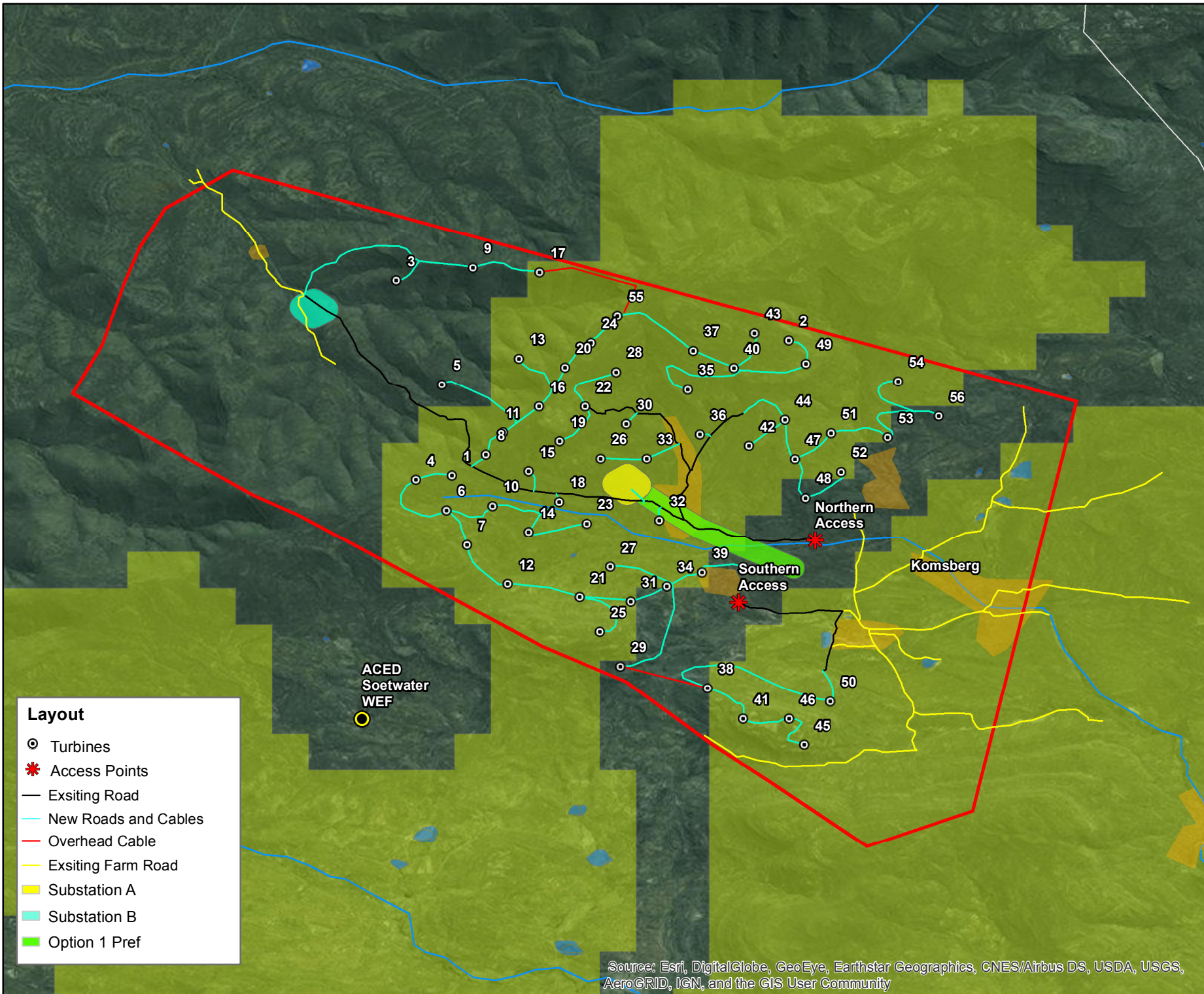
REVIEWED BY: ASHLEA STRONG



DISCLAIMER

The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided 'as is' and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

- Layout**
-  Turbines
 -  Access Points
 -  Existing Road
 -  New Roads and Cables
 -  Overhead Cable
 -  Existing Farm Road
 -  Substation A
 -  Substation B
 -  Option 1 Pref



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**BIOTERM ENERGY
(PTY) LTD**
SLOPE ANALYSIS
MARALLA WEST

Legend

Maralla West Wind Facility

Slope

- 0 - 9%
- 15 - 25%
- 9 - 15%
- > 25%



0 1,300 2,600 3,900 5,200 6,500

Metres

DATA SOURCE:
CHIEF DIRECTORATE: NATIONAL GEO-
SPATIAL INFORMATION
NFEPA, SANBI

PROJECTION: WGS HARTEBEEHOCK 94

PROJECT TITLE: WIND AND SOLAR RENEWABLES

PROJECT NO: 47579

SCALE: 1:200,000 AT A4 DATE: 09/12/2016

DRAWN BY: SABELO DUBE FIGURE NO:

REVIEWED BY: ASHLEA STRONG



WWW.WSP-PB.COM

DISCLAIMER

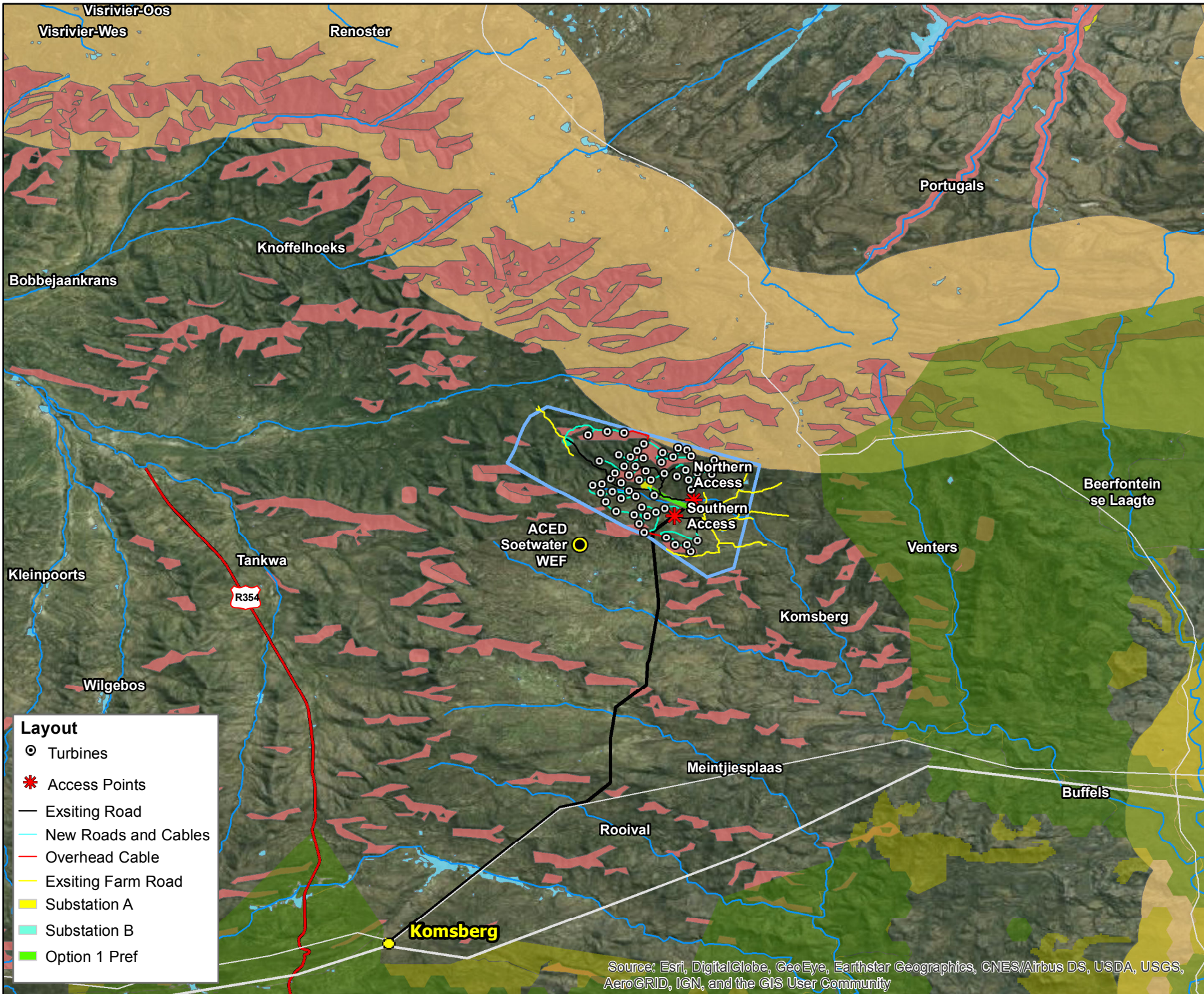
The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided "as is" and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

Layout

- ⊙ Turbines
- * Access Points
- Exsiting Road
- New Roads and Cables
- Overhead Cable
- Exsiting Farm Road
- Substation A
- Substation B
- Option 1 Pref

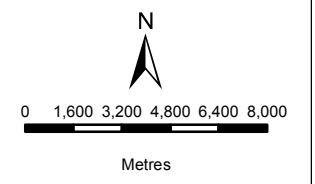
ACED
Soetwater
WEF

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



BIOTERM ENERGY (PTY) LTD
 REGIONAL MAP
 MARALLA WEST

- Legend**
- Eskom Powelines
 - Non-Perrenial Rivers
 - Regional Road
 - Powerlines (Preffered)
 - Maralla West Wind Facility
 - NFEPA Wetlands
- CBA Terrestrial**
- CBA Type**
- ESA_T
 - T1
 - T2
- CBA & ESA CentralKaroo**
- CBA Category**
- CBA
 - CBA (known agric landuse)
 - ESA



DATA SOURCE:
 CHIEF DIRECTORATE: NATIONAL GEO-
 SPATIAL INFORMATION
 NFEPA, SANBI

PROJECTION: WGS HARTBEESHOEK 94

PROJECT TITLE: WIND AND SOLAR RENEWABLES

PROJECT NO: 47579

SCALE: 1:250,000 AT A4 DATE: 30/01/2017

DRAWN BY: SABELO DUBE | FIGURE NO:

REVIEWED BY: ASHLEA STRONG



DISCLAIMER

The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided 'as is' and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

- Layout**
- ⊙ Turbines
 - * Access Points
 - Exsiting Road
 - New Roads and Cables
 - Overhead Cable
 - Exsiting Farm Road
 - Substation A
 - Substation B
 - Option 1 Pref

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

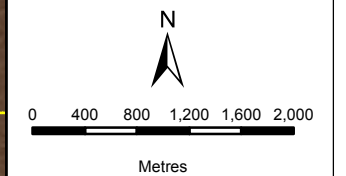
**BIOTERM ENERGY
(PTY) LTD**
LAYOUT MAP
MARALLA WEST

Legend

- Non-Perennial Rivers
- Maralla West Wind Facility
- NFEPA Wetlands

SANBI Wetland Vegetation

- Karoo Shale Renosterveld
- Rainshadow Valley Karoo (Skv)



DATA SOURCE:
CHIEF DIRECTORATE: NATIONAL GEO-
SPATIAL INFORMATION
NFEPA, SANBI

PROJECTION: WGS HARTEBEEHOCK 94

PROJECT TITLE: WIND AND SOLAR RENEWABLES

PROJECT NO: 47579

SCALE: 1:58,000 AT A4 DATE: 30/01/2017

DRAWN BY: SABELO DUBE FIGURE NO:

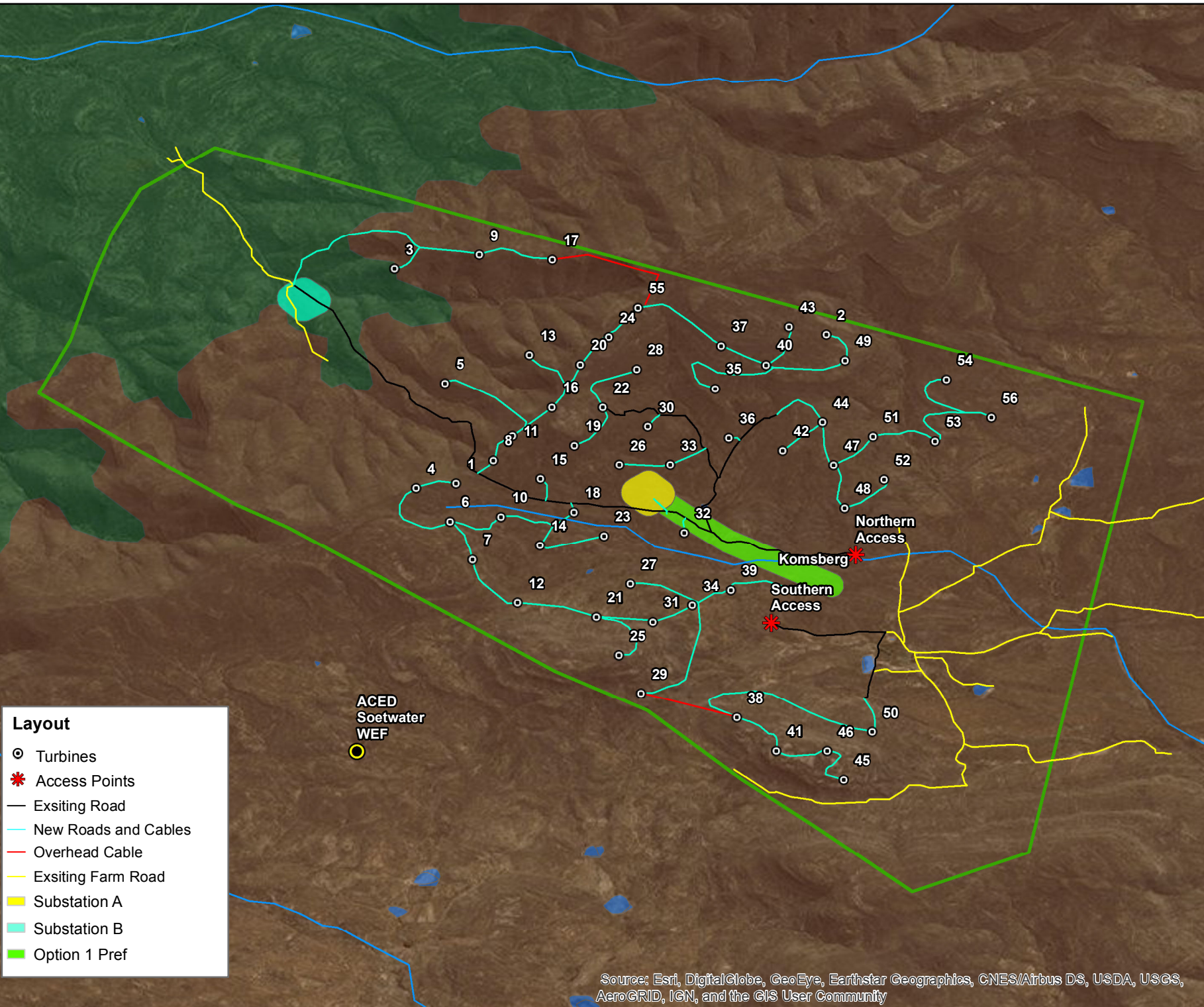
REVIEWED BY: ASHLEA STRONG



DISCLAIMER
The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided 'as is' and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

- Layout**
- Turbines
 - * Access Points
 - Existing Road
 - New Roads and Cables
 - Overhead Cable
 - Existing Farm Road
 - Substation A
 - Substation B
 - Option 1 Pref

ACED
Soetwater
WEF



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**BIO THERM ENERGY
(PTY) LTD**
COMBINED SENSITIVITY
MAP

Legend

- ▲ Ridgelines
- Homesteads
- == Wolwenhoek Pass
- ⌞ Homesteads Buffers
- ▭ Esizayo Wind Facility

Biodiversity

- Medium Low Sensitivity
- Medium Sensitivity
- Medium High Sensitivity
- High Sensitivity
- Very High Sensitivity



0 450 900 1,350 1,800 2,250

Metres

DATA SOURCE:

CHIEF DIRECTORATE: NATIONAL GEO-SPATIAL INFORMATION

PROJECTION: WGS 21 HARTEBEEHOCK 94

PROJECT TITLE: WIND AND SOLAR RENEWABLES

PROJECT NO: 47579

SCALE: 1:70,000 AT A4 DATE: 16 /01/2017

DRAWN BY: SABELO DUBE FIGURE NO: 6

REVIEWED BY: ASHLEA STRONG



WWW.WSP-PB.COM

DISCLAIMER

The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided 'as is' and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

SENSITIVITY

▭ Visually Sensitive Zones: 500 m around Komsberg Pass

Bat Sensitivity

- High sensitivity areas
- ▭ High sensitivity buffer
- Moderate sensitivity areas
- ▭ Moderate sensitivity buffer

Heritage and Palaeontology Sensitivity

■ No-Go Areas

Avifauna Sensitivity

■ Avifauna

Visually Sensitive Zones: Klein Roggeveld Rd

- Highly Sensitive Zone: 250 m
- Moderately Sensitive Zone: 500 m

Esizayo Slope

Gridcode

- < 20 %
- > 20 % (1:5)

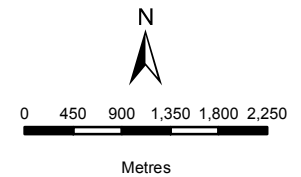
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BIOTHERM ENERGY (PTY) LTD

COMBINED SENSITIVITY MAP

Legend

- Turbines
- Ridgelines
- Homesteads
- Wolvenhoek Pass
- Existing Farm Roads
- Existing Road
- New Roads and Cables
- Overhead Cable
- Homesteads Buffers
- Maralla West Wind Facility
- On Site IPP Substations
- Option 2
- Option 1
- Biodiversity**
- Medium Low Sensitivity
- Medium Sensitivity
- Medium High Sensitivity
- High Sensitivity
- Very High Sensitivity



DATA SOURCE:
CHIEF DIRECTORATE: NATIONAL GEO-SPATIAL INFORMATION
PROJECTION: WGS 21 HARTEBEEHSHOEK 94
PROJECT TITLE: WIND AND SOLAR RENEWABLES

PROJECT NO: 47579
SCALE: 1:70,000 AT A4 DATE: 16/01/2017
DRAWN BY: SABELO DUBE FIGURE NO:
REVIEWED BY: ASHLEA STRONG



DISCLAIMER
The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided "as is" and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

SENSITIVITY

Visually Sensitive Zones: 500 m around Komsberg Pass

Bat Sensitivity

- High sensitivity areas
- High sensitivity buffer
- Moderate sensitivity areas
- Moderate sensitivity buffer

Heritage and Palaeontology Sensitivity

No-Go Areas

Avifauna Sensitivity

Avifauna

Visually Sensitive Zones: Klein Roggeveld Rd

- Highly Sensitive Zone: 250 m
- Moderately Sensitive Zone: 500 m

Esizayo Slope

Gridcode

- < 20 %
- > 20 % (1:5)














ACED
Soetwater
WEF

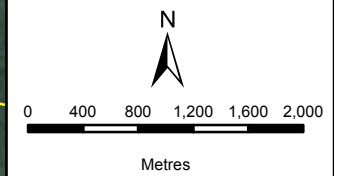
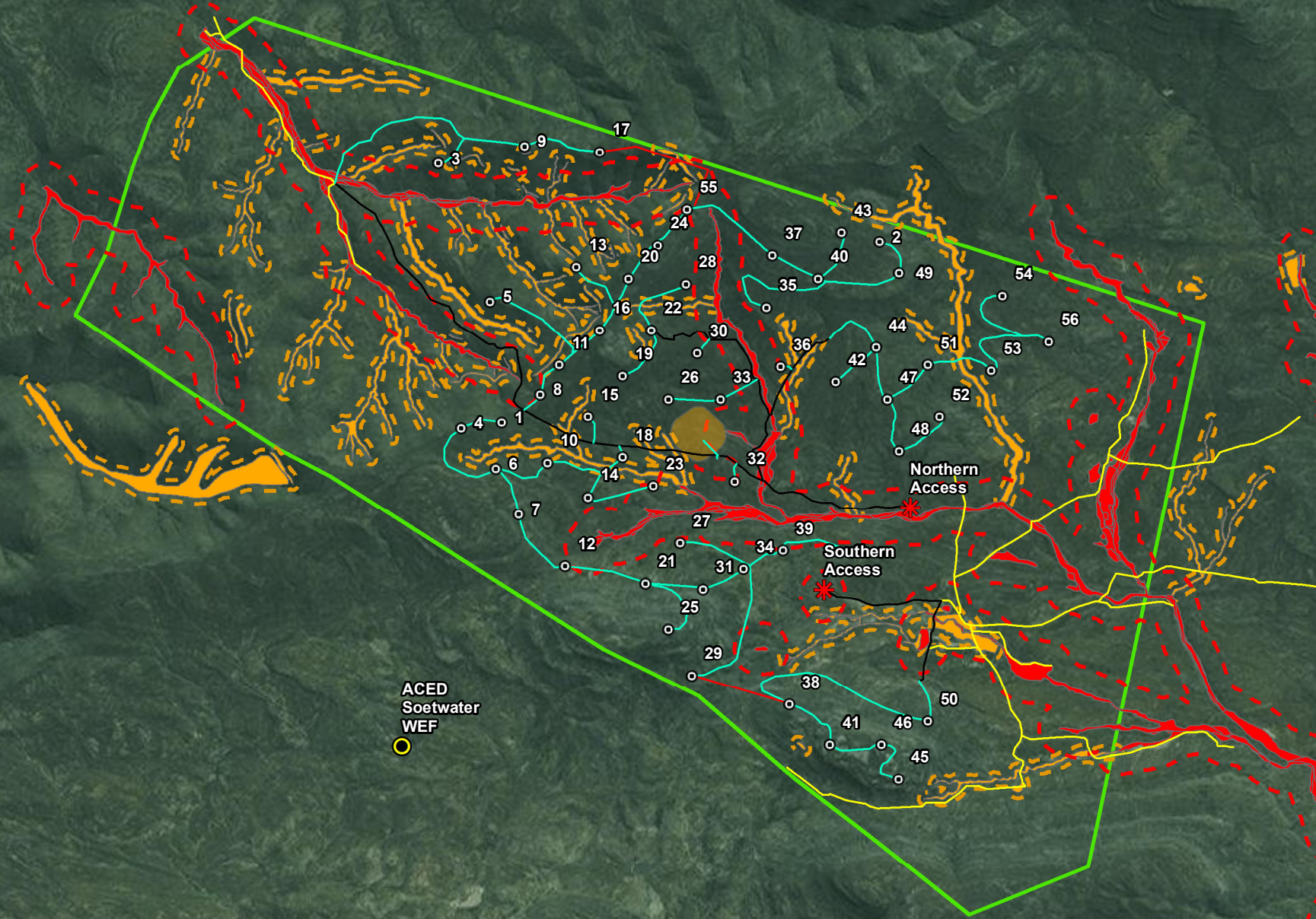
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**BIOTERM ENERGY
(PTY) LTD**

**BAT SENSITIVITY
MAP**

Legend

-  Turbines
-  Access Points
-  Exsiting Farm Road
-  Exsiting Road
-  New Roads and Cables
-  Overhead Cable
-  On Site IPP Substation
-  Option 2
-  High sensitivity areas
-  High sensitivity buffer 200m
-  Moderate sensitivity areas
-  Moderate sensitivity buffer
-  Maralla West Wind Facility



DATA SOURCE:	
CHIEF DIRECTORATE: NATIONAL GEO-SPATIAL INFORMATION	
PROJECTION: WGS 21 HARTEBESHOEK 94	
PROJECT TITLE: WIND AND SOLAR RENEWABLES	
PROJECT NO: 47579	
SCALE: 1:55,000 AT A4	DATE: 17 / 01 / 2017
DRAWN BY: SABELO DUBE	FIGURE NO: 6
REVIEWED BY: ASHLEA STRONG	



DISCLAIMER
 The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided 'as is' and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

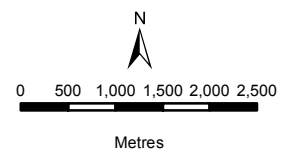
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BIOTERM ENERGY (PTY) LTD

VISUAL SENSITIVITY MAP

Legend

- Turbines
 - Access Points
 - Homesteads
 - Maralla Powerlines Routes
 - Maralla Ridgelines
 - Wolvenhoek Pass
 - Exsiting Road
 - New Roads and Cables
 - Overhead Cable
 - Exsiting Farm Road
 - Maralla Substations Footprints
 - Maralla East Wind Facility
 - Homesteads Buffers
 - On Site IPP Substation
 - Option 2
- Powerlines Routes**
- Route 1
 - Route 2
 - Route 3
 - Route 4



DATA SOURCE:
CHIEF DIRECTORATE: NATIONAL GEO-SPATIAL INFORMATION

PROJECTION: WGS HARTBEESHOEK 94

PROJECT TITLE: WIND AND SOLAR RENEWABLES

PROJECT NO: 47579

SCALE: 1:80,000 AT A4 DATE: 19/01/2017

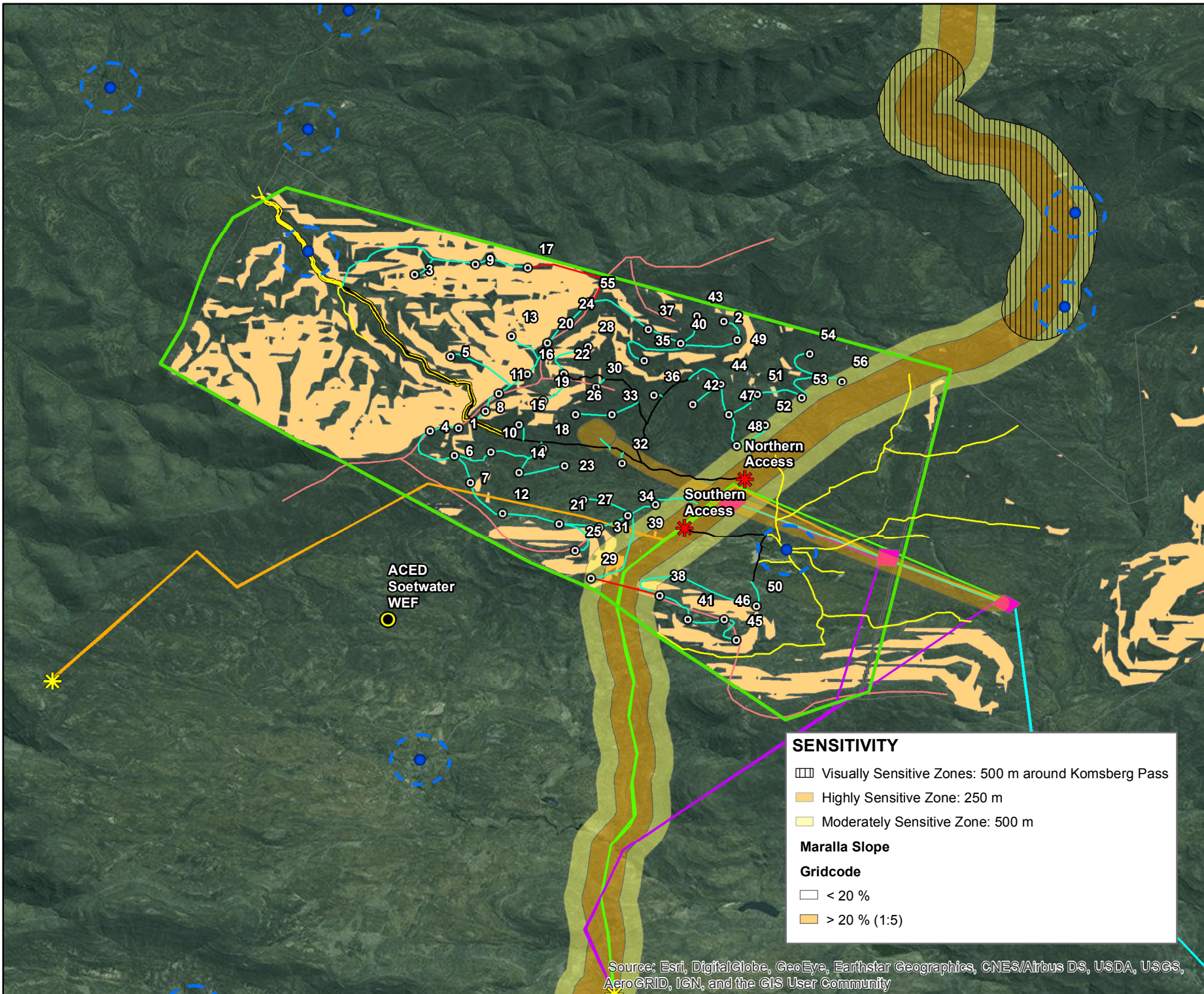
DRAWN BY: SABELO DUBE FIGURE NO:

REVIEWED BY: ASHLEA STRONG



DISCLAIMER

The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided 'as is' and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.



SENSITIVITY

- Visually Sensitive Zones: 500 m around Komsberg Pass
- Highly Sensitive Zone: 250 m
- Moderately Sensitive Zone: 500 m

Maralla Slope

- < 20 %
- > 20 % (1:5)

Gridcode

- < 20 %
- > 20 % (1:5)

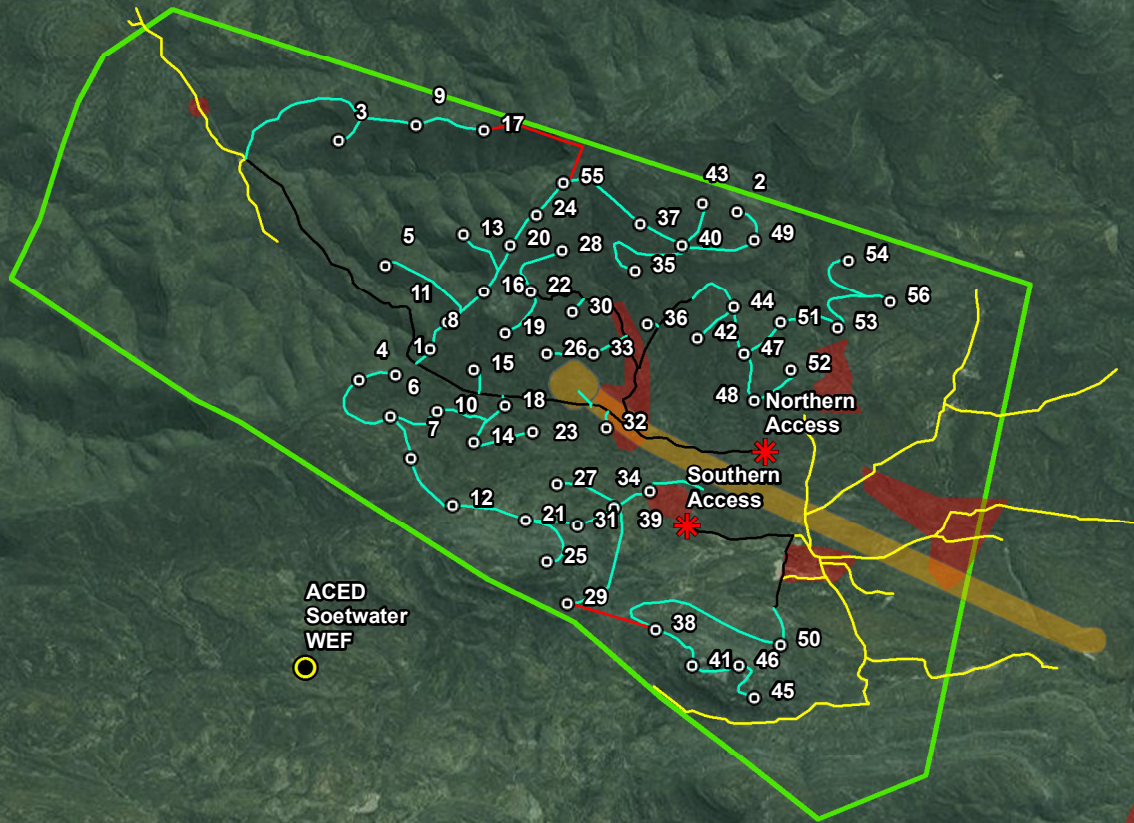
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**BIO THERM ENERGY
(PTY) LTD**

HERITAGE AND PALAEOONTOLOGY
SENSITIVITY MAP

Legend

- Preserved Tetrapod Trackways
- Anomaly 190 of Cole & Vorster 1999
- Turbines
- ✱ Access Points
- Existing Road
- New Roads and Cables
- Overhead Cable
- Existing Farm Road
- On Site IPP Substation
- Option 2
- Maralla West Wind Facility
- No-Go Areas



0 500 1,000 1,500 2,000 2,500

Metres

DATA SOURCE:

CHIEF DIRECTORATE: NATIONAL GEO-SPATIAL INFORMATION

PROJECTION: WGS 21 HARTEBEEHOCK 94

PROJECT TITLE: WIND AND SOLAR RENEWABLES

PROJECT NO: 47579

SCALE: 1:80,000 AT A4 DATE: 16/01/2017

DRAWN BY: SABELO DUBE FIGURE NO: 6

REVIEWED BY: ASHLEA STRONG











WWW.WSP-PB.COM

DISCLAIMER






The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided 'as is' and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

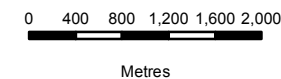
**BIOTERM ENERGY
(PTY) LTD**
BIODIVERSITY SENSITIVITY
MAP

Legend

-  Turbines
-  Existing Road
-  Existing Farm Road
-  New Roads and Cables
-  Overhead Cable
-  Option 2
-  On Site IPP Substation
-  Maralla West Wind Facility

Biodiversity

-  Medium Low Sensitivity
-  Medium Sensitivity
-  Medium High Sensitivity
-  High Sensitivity
-  Very High Sensitivity

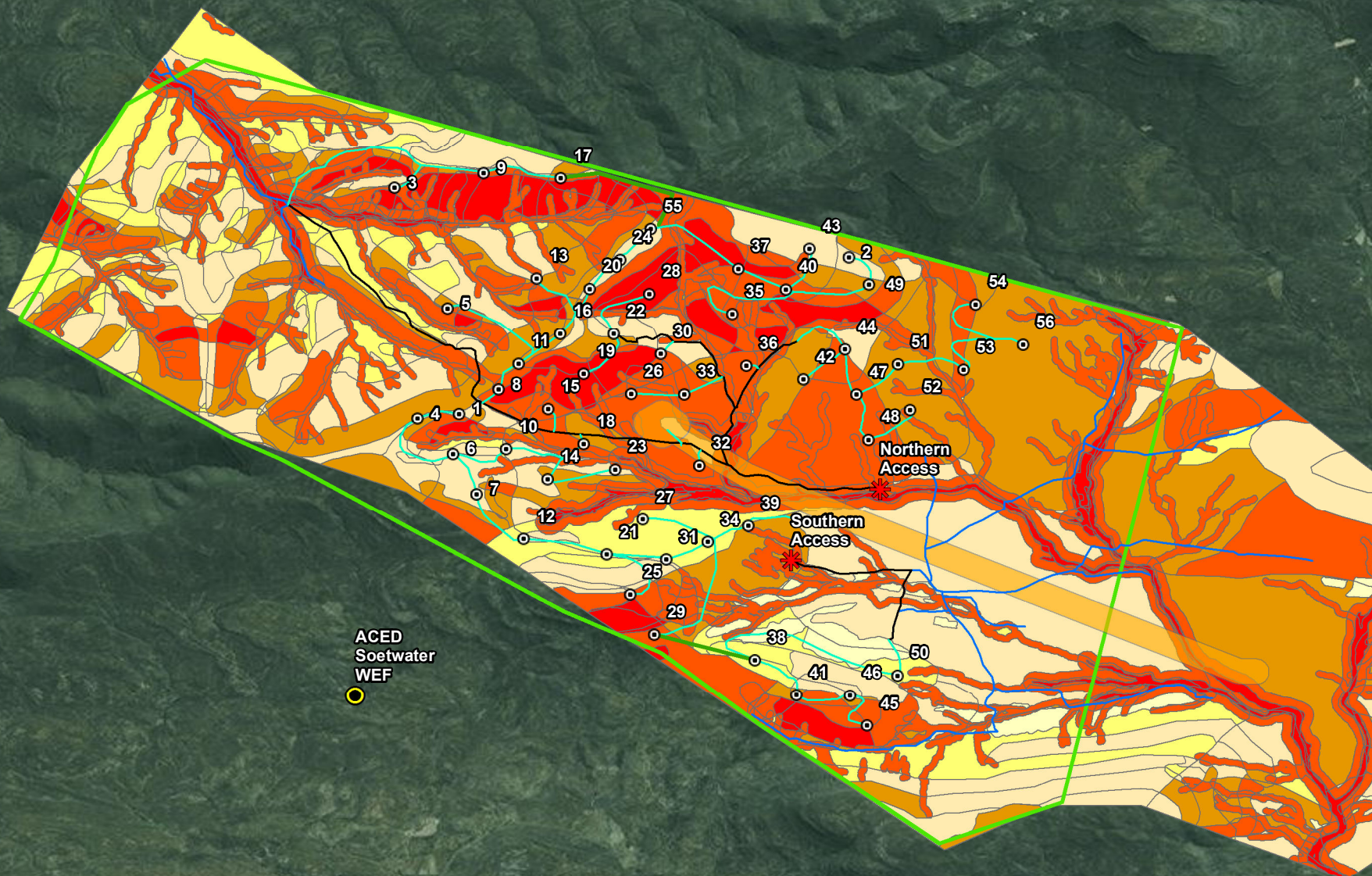


DATA SOURCE:	
CHIEF DIRECTORATE: NATIONAL GEO-SPATIAL INFORMATION	
PROJECTION: WGS 21 HARTEBEEHOCK 94	
PROJECT TITLE: WIND AND SOLAR RENEWABLES	
PROJECT NO: 47579	
SCALE: 1:65,000 AT A4	DATE: 16/01/2017
DRAWN BY: SABELO DUBE	FIGURE NO: 6
REVIEWED BY: ASHLEA STRONG	




DISCLAIMER
The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided 'as is' and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community













ACED
Soetwater
WEF

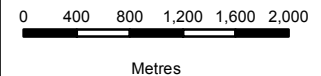
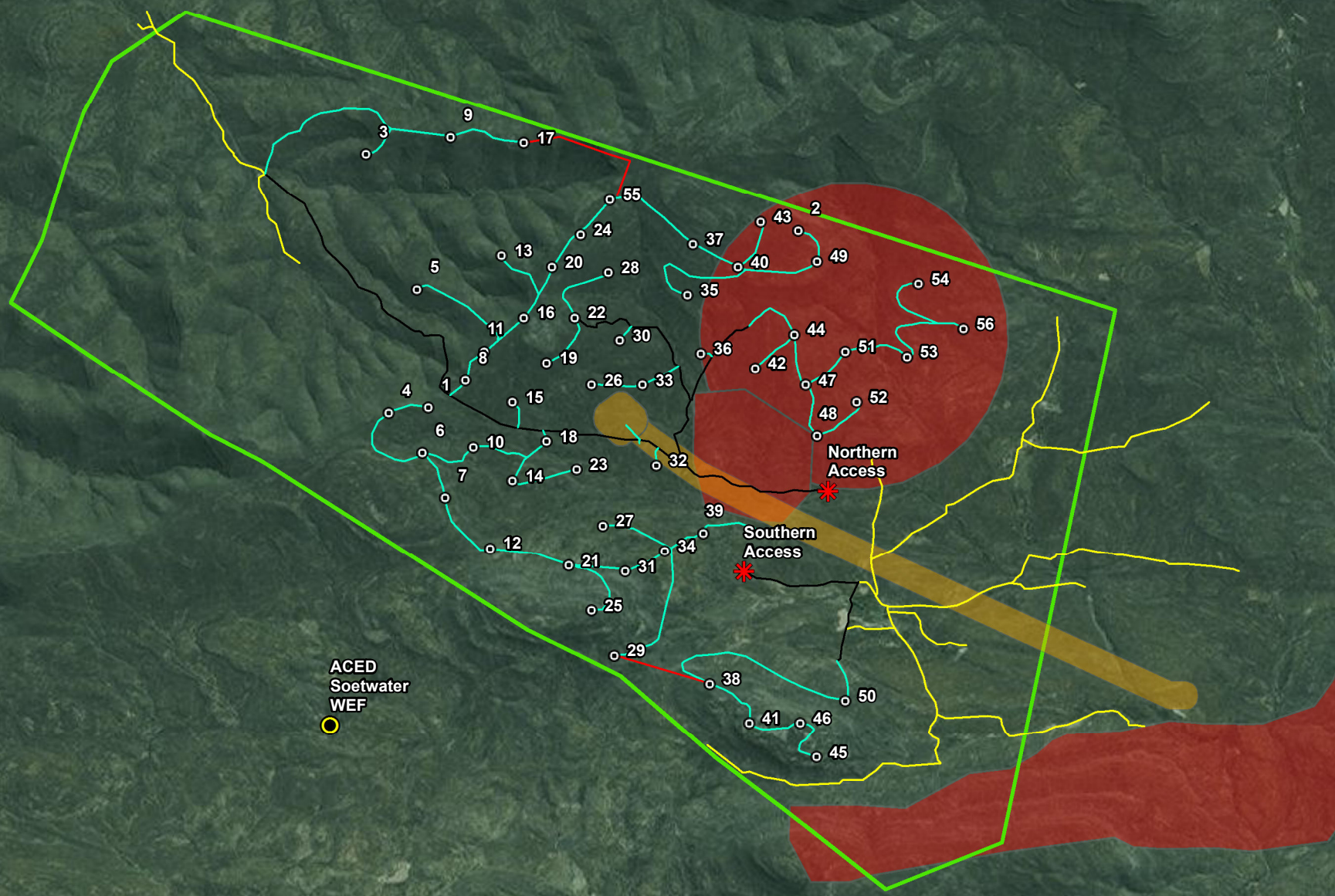


**BIOTHERM ENERGY
(PTY) LTD**

AVIFAUNA SENSITIVITY
56 TURBINE LAYOUT

Legend

-  Turbines
-  Access Points
-  Exsiting Road
-  New Roads and Cables
-  Overhead Cable
-  Exsiting Farm Road
-  On Site IPP Substation
-  Option 2
-  Maralla West Wind Facility
-  Avifauna



DATA SOURCE:	
CHIEF DIRECTORATE: NATIONAL GEO-SPATIAL INFORMATION	
PROJECTION: WGS 21 HARTEBESHOEK 94	
PROJECT TITLE: WIND AND SOLAR RENEWABLES	
PROJECT NO: 47579	
SCALE: 1:57,000 AT A4	DATE: 13 / 01 / 2017
DRAWN BY: SABELO DUBE	FIGURE NO: 6
REVIEWED BY: ASHLEA STRONG	



DISCLAIMER
The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided 'as is' and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community