




# Thubelisha Consolidated EMPR

## Vegetation Types - Trichardtfontein

### Legend

-  Trichardtfontein Mining Right
-  Secondary Town
-  Other Town
-  Power Line
-  National / Arterial Route
-  Main Road
-  Minor Route
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream

### Vegetation Types (Geoterra Image, 2013-2014)

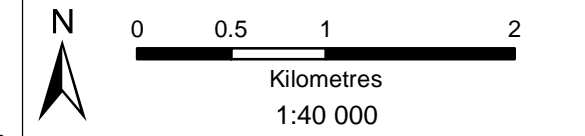
-  Agriculture
-  Grassland
-  Wetland




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Projection: Transverse Mercator      Ref #: kwt.SAS3869.201708.161  
 Datum: WGS 1984                              Revision Number: 1  
 Central Meridian: 29°E                        Date: 06/10/2017



# Thubelisha Consolidated EMPR

## Land Capability

### Legend

- Project Area
- Major Town
- Secondary Town
- Other Town
- Power Line
- National / Arterial Route
- Main Road
- Minor Route
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Non-Perennial Pan
- Perennial Pan

### Land Capability

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

- Class II - Intensive Cultivation
- Class III - Moderate Cultivation
- Class IV - Light Cultivation / Intensive Grazing

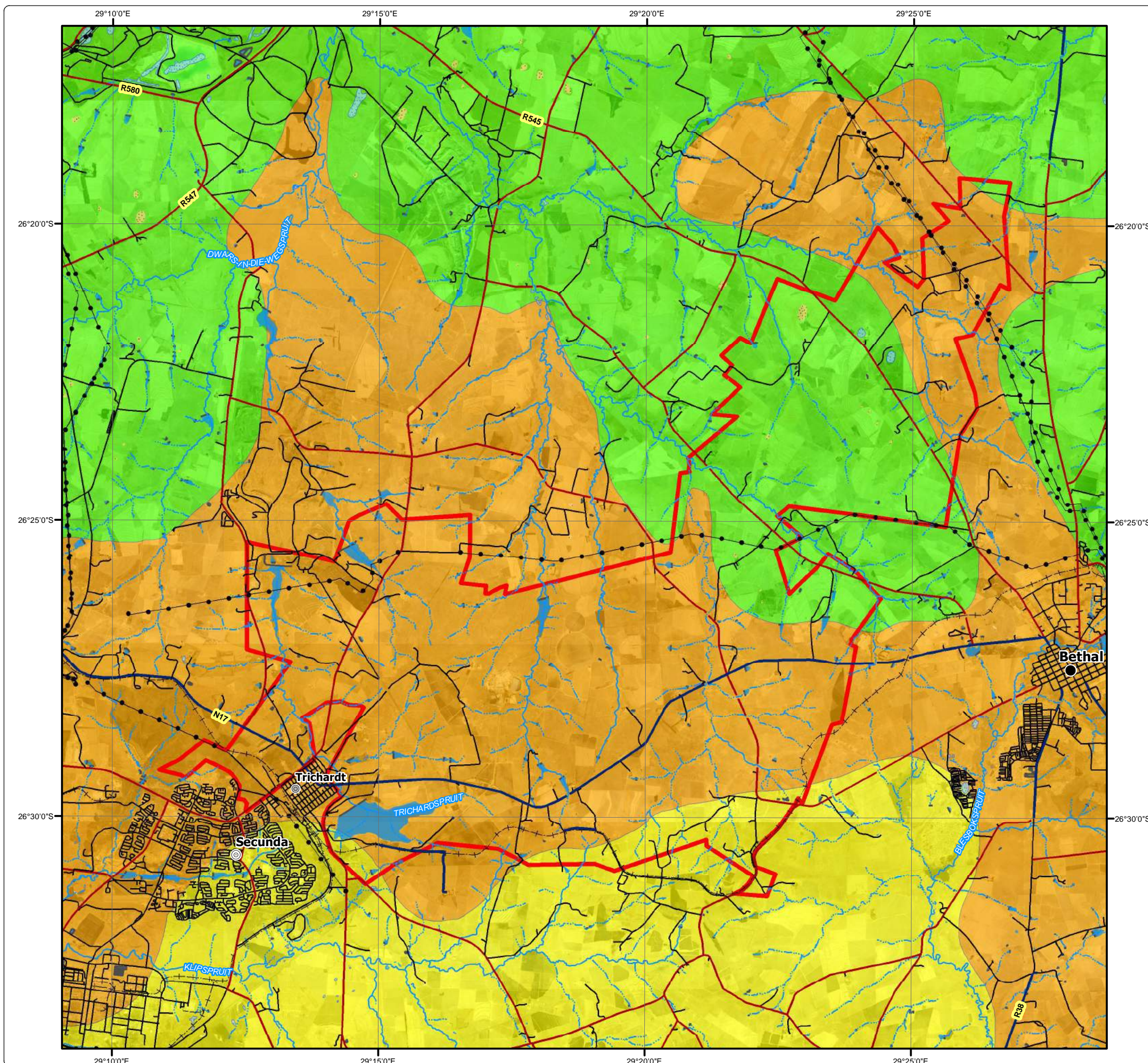
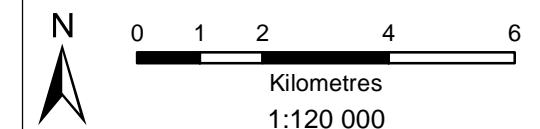


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Projection: Transverse Mercator  
Datum: WGS 1984  
Central Meridian: 29°E









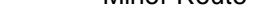
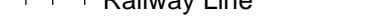
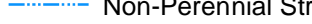
Ref #: kwt.SAS3869.201607.085  
Revision Number: 1  
Date: 06/10/2017



# Thubelisha Consolidated EMPR








## Land Use

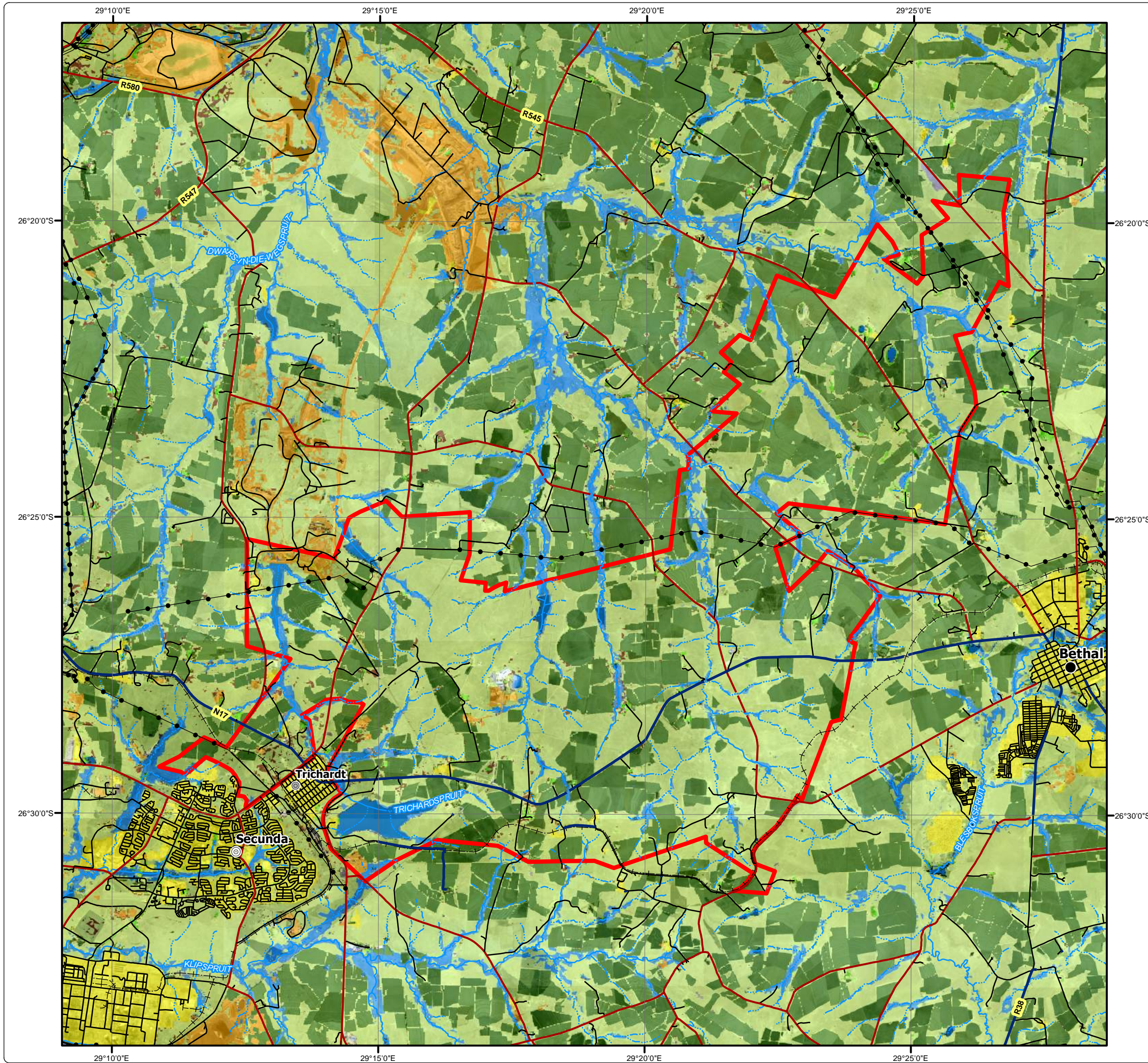
### Legend

-  Project Area
-  Major Town
-  Secondary Town
-  Other Town
-  Power Line
-  National / Arterial Route
-  Main Road
-  Minor Route
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream

### Land Use

(Geoterra Image, 2013-2014)

-  Cultivated Field / Plantation
-  Grassland / Low Shrubland
-  Mine Area
-  Thicket / Dense Bush
-  Urban / Built Area
-  Water Body
-  Woodland / Open Bush











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Projection: Transverse Mercator      Ref #: kwt.SAS3869.201607.108  
 Datum: WGS 1984                          Revision Number: 1  
 Central Meridian: 29°E                      Date: 06/10/2017






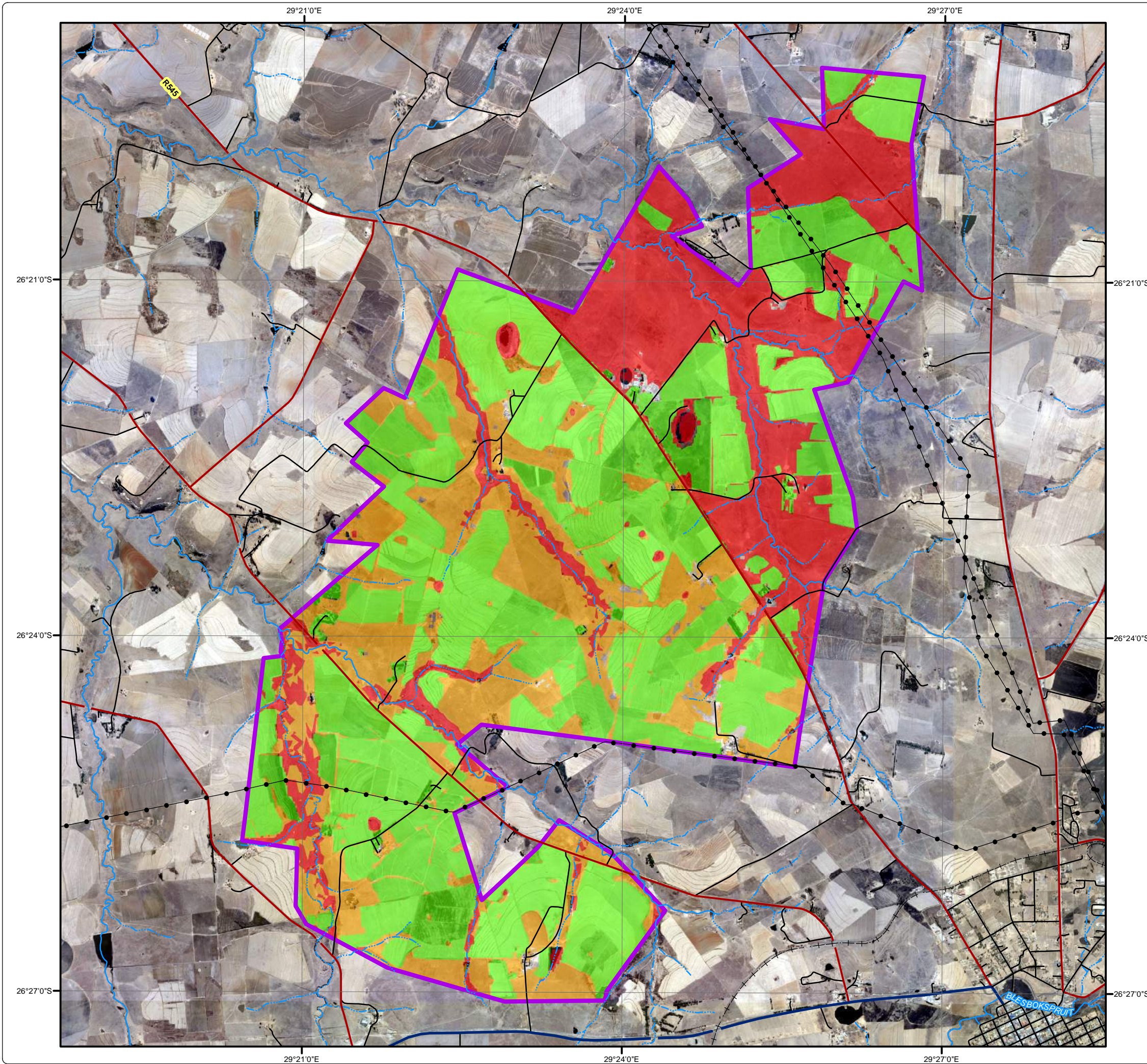
# Thubelisha Consolidated EMPR Vegetation Sensitivity - Vaalkop

## Legend

-  Vaalkop Mining Right
-  Power Line
-  National / Arterial Route
-  Main Road
-  Minor Route
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream

## Vegetation Sensitivity - Vaalkop

-  Low
-  Medium
-  High

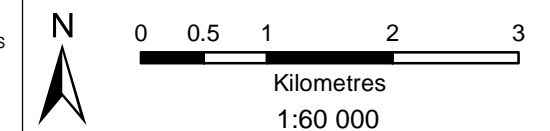


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Projection: Transverse Mercator  
Datum: WGS 1984  
Central Meridian: 29°E

Ref #: kwt.SAS3869.201708.077  
Revision Number: 1  
Date: 06/10/2017

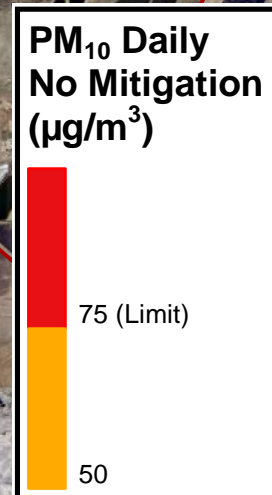
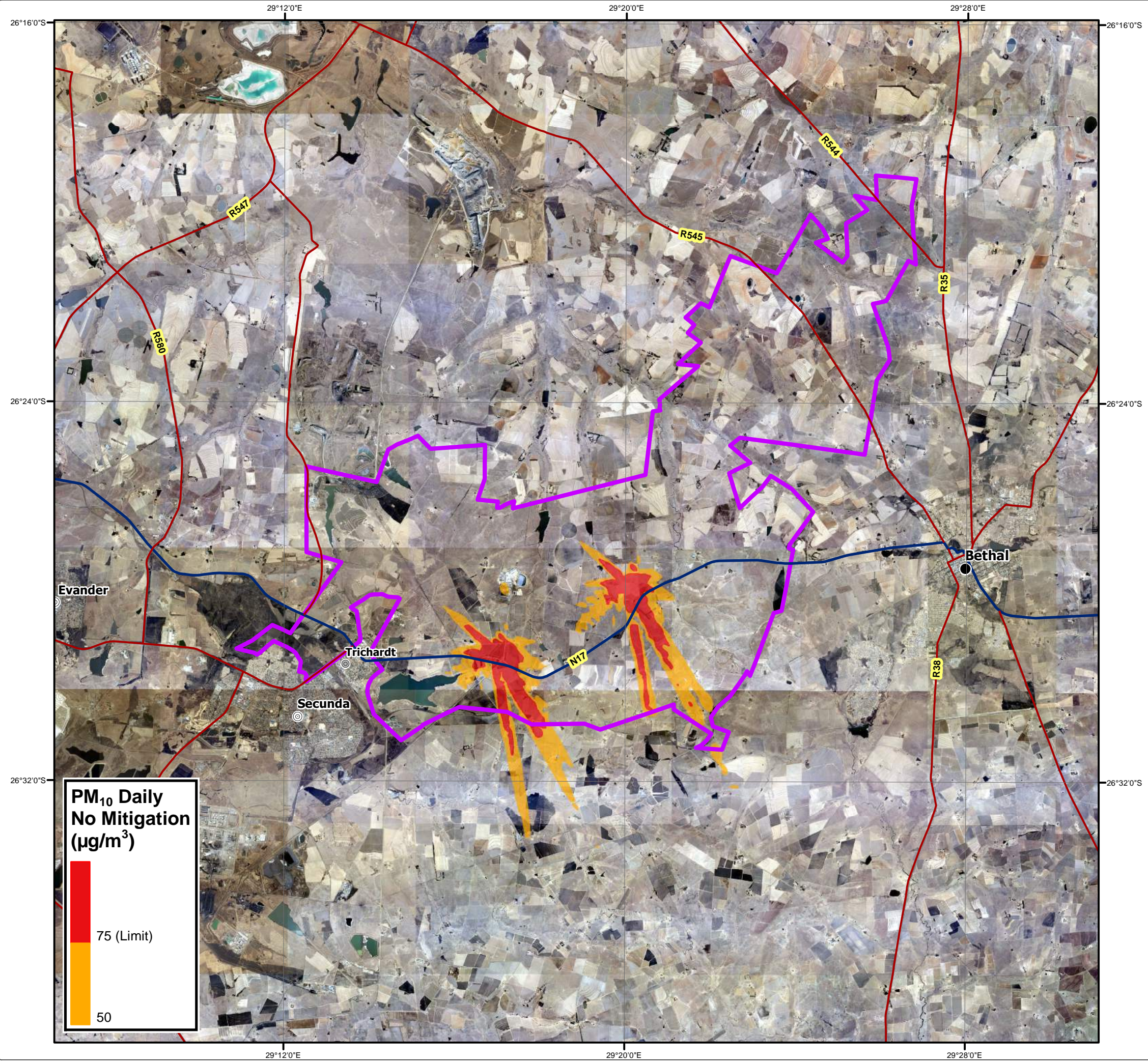


# Thubelisha Consolidated EMPR

## PM<sub>10</sub> Daily No Mitigation

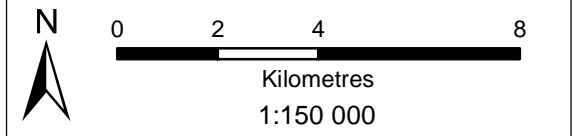
### Legend

-  Project Area
-  Major Town
-  Secondary Town
-  Other Town
-  Main Road
-  National Road



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Projection: Transverse Mercator Ref #: kwt.SAS3869.201708.096  
 Datum: WGS 1984 Revision Number: 1  
 Central Meridian: 29°E Date: 06/10/2017

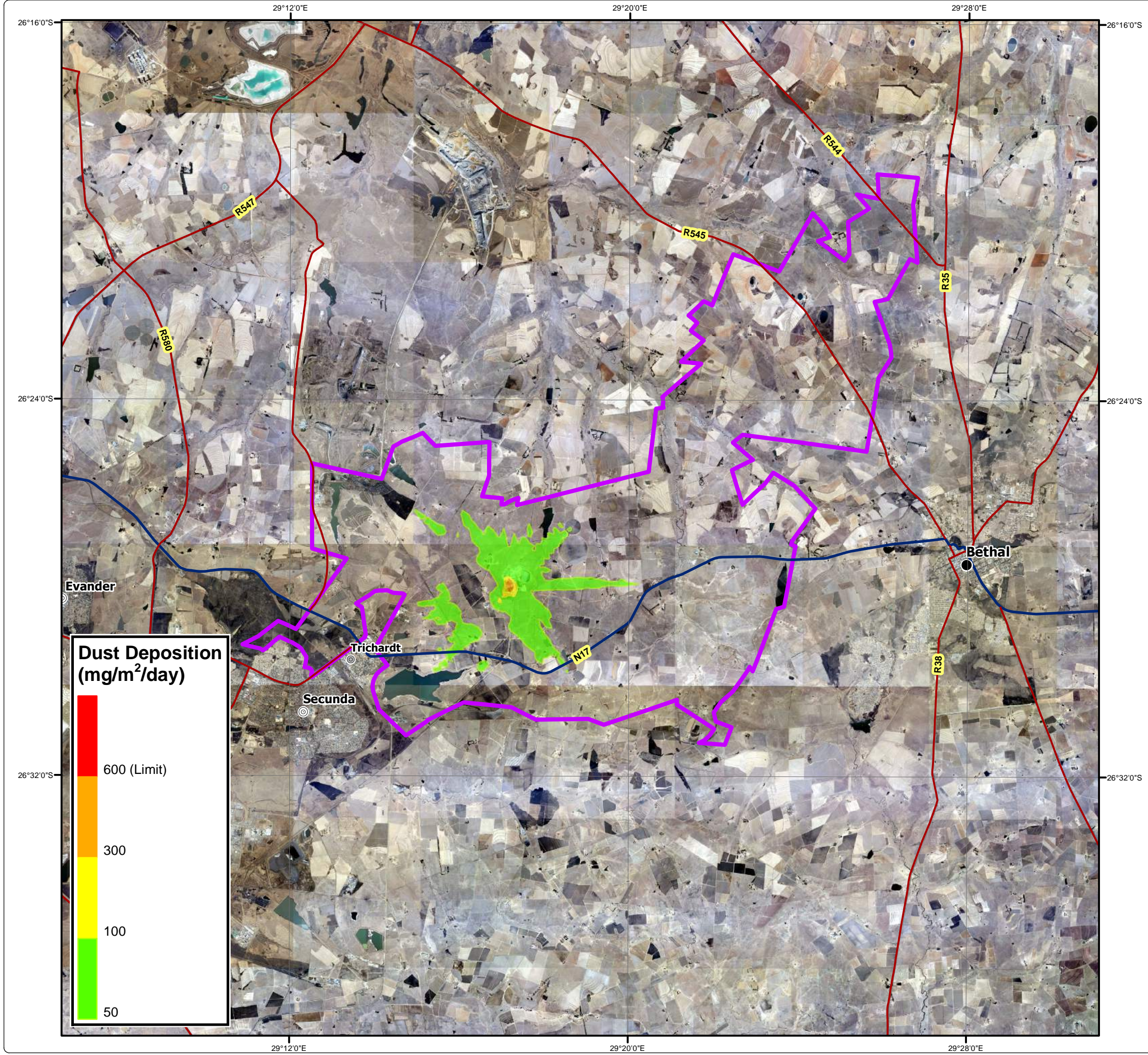
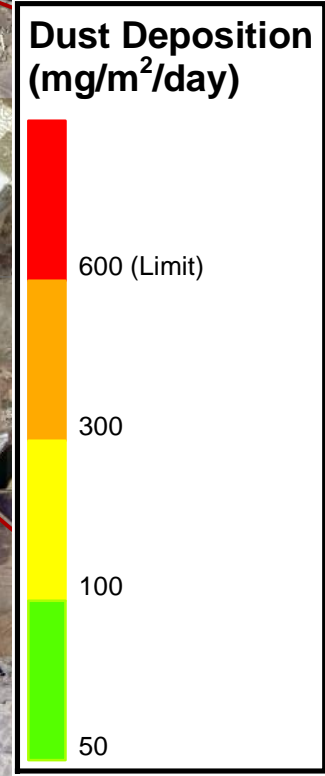


# Thubelisha Consolidated EMPR

## Dust Deposition No Mitigation

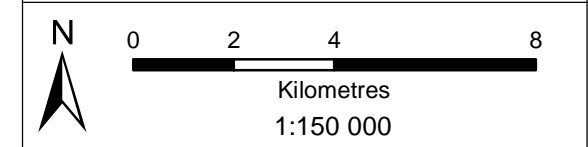
### Legend

-  Project Area
-  Major Town
-  Secondary Town
-  Other Town
-  Main Road
-  National Road



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









Projection: Transverse Mercator Ref #: kwt.SAS3869.201708.089  
 Datum: WGS 1984 Revision Number: 1  
 Central Meridian: 29°E Date: 06/10/2017



# Thubelisha Consolidated EMPR

## Development Impact

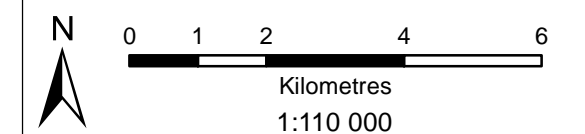
### Legend

-  Project Area
  -  Major Town
  -  Secondary Town
  -  Other Town
  -  Power Line
  -  National / Arterial Route
  -  Main Road
  -  Minor Route
  -  Railway Line
  -  Non-Perennial Stream
  -  Perennial Stream
  -  Life of Mine
- ### Wetland Delineation
-  Delineated Wetlands
  -  Delineated Wetlands (Desktop Study)



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Projection: Transverse Mercator      Ref #: kwt.SAS3869.201708.040  
 Datum: WGS 1984                              Revision Number: 1  
 Central Meridian: 29°E                        Date: 06/10/2017



# Thubelisha Consolidated EMPR

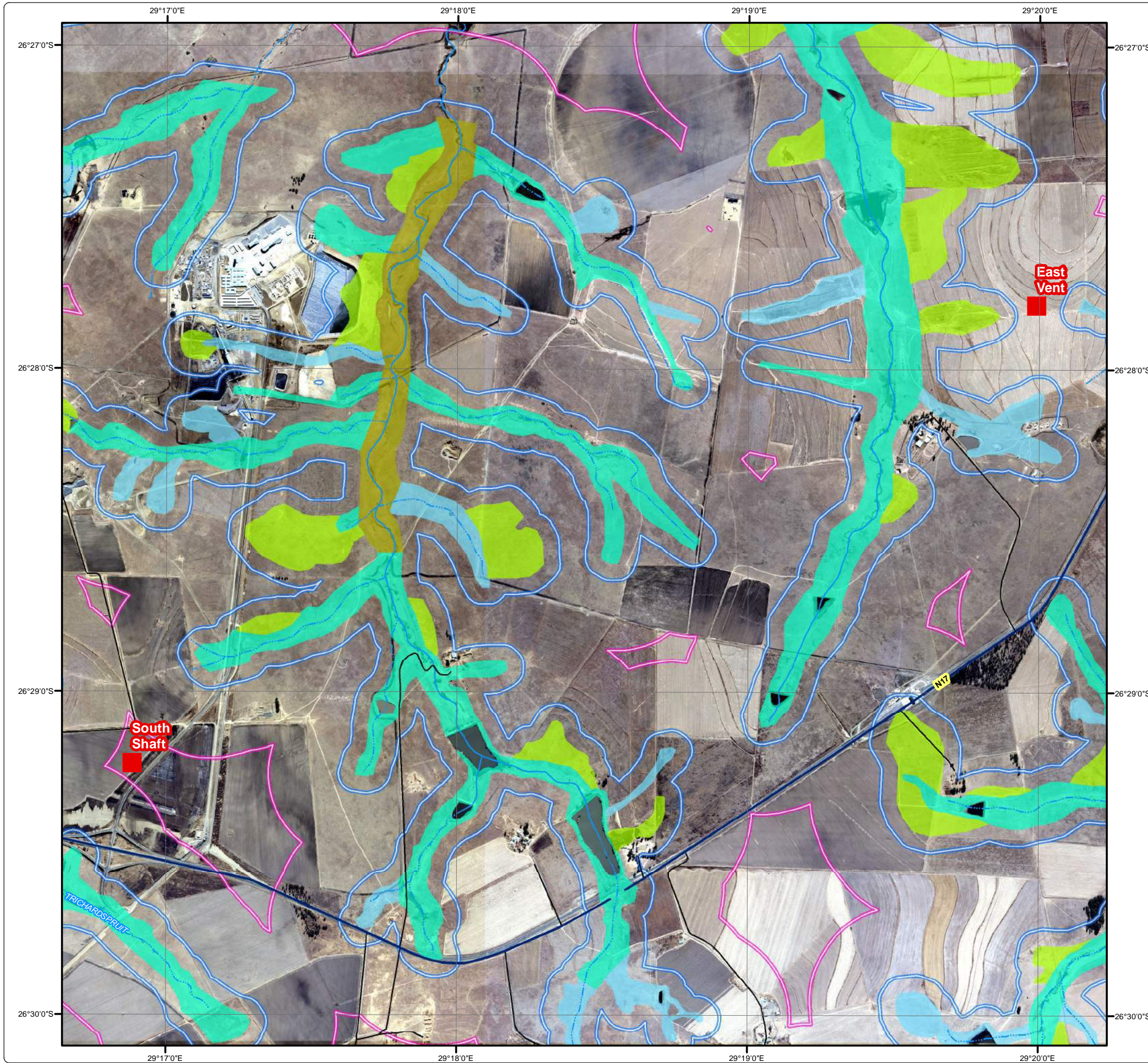
## Vent Shaft Locations

### Legend

- Vent Shaft Location
- National / Arterial Route
- Minor Route
- - - Non-Perennial Stream
- Perennial Stream

### Wetland Delineation

- Channelled Valley Bottom
- Flood Plain
- Hillslope Seep
- Unchannelled Valley Bottom
- 100m Buffer of Wetland Delineation
- 500m Buffer of Wetland Delineation



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Projection: Transverse Mercator	Ref #: kwt.SAS3869.201708.041
Datum: WGS 1984	Revision Number: 1
Central Meridian: 29°E	Date: 06/10/2017





# Thubelisha Consolidated EMPR Composite Map

**Vegetation Sensitivity**

- High
- Medium
- Low

**Legend**

- Project Area
- Shaft Location
- Major Town
- Secondary Town
- Other Town
- Power Line
- National / Arterial Route
- Main Road
- Minor Route
- Railway Line
- Non-Perennial Stream
- Perennial Stream

**Identified Heritage Resources**

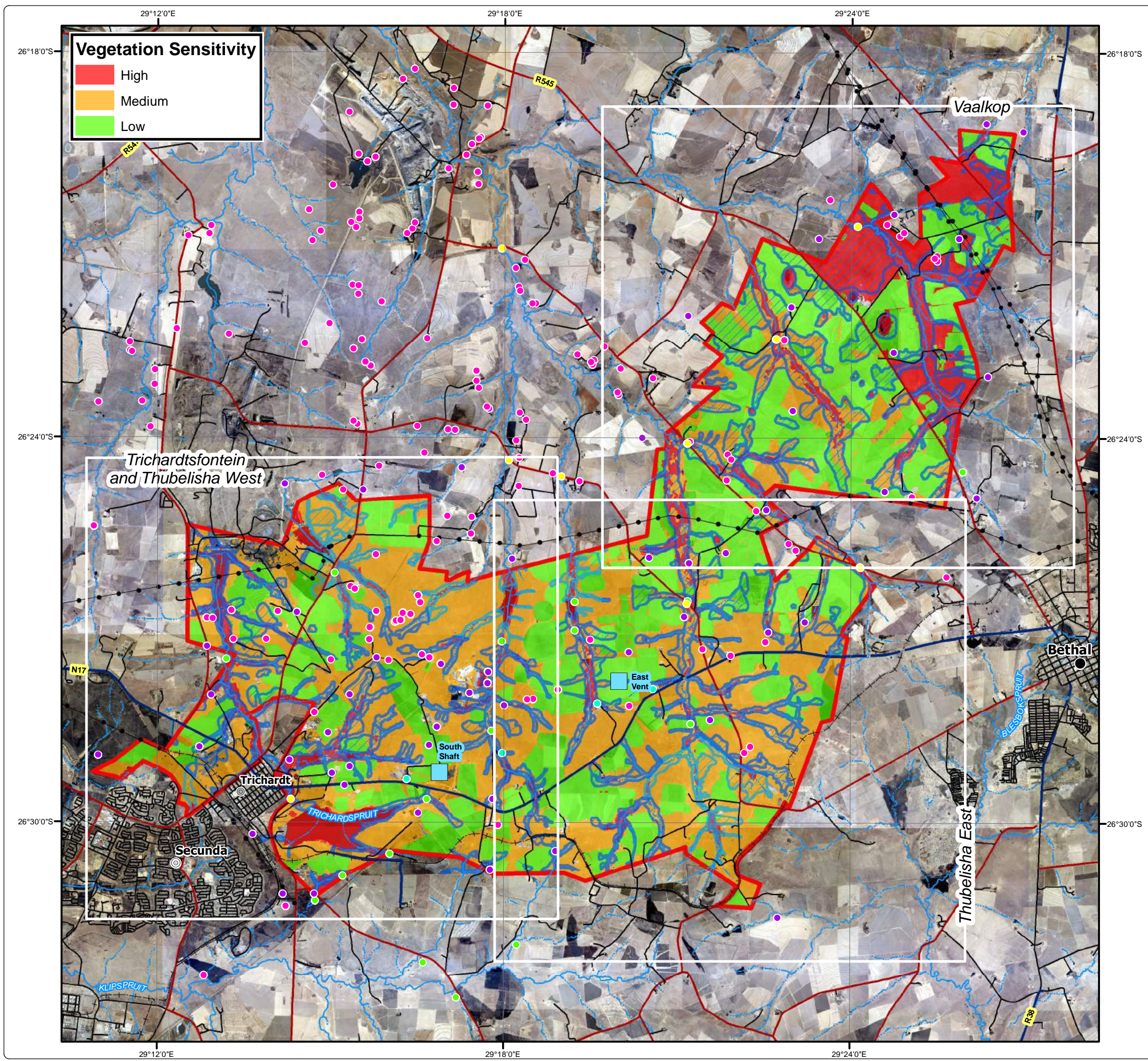
- Identified Heritage Resource

**Monitoring Locations**

- Surface Water Monitoring Location
- Aquatic Monitoring Location
- Noise Monitoring location
- Groundwater Monitoring Location

**Wetland Delineation**

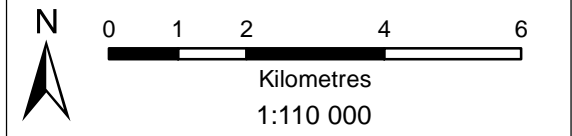
- Delineated Wetlands
- Delineated Wetlands (Desktop Study)



  
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















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 Datum: WGS 1984                              Revision Number: 1  
 Central Meridian: 29°E                        Date: 06/10/2017



# Thubelisha Consolidated EMPR Composite Map - Vaalkop Zoom

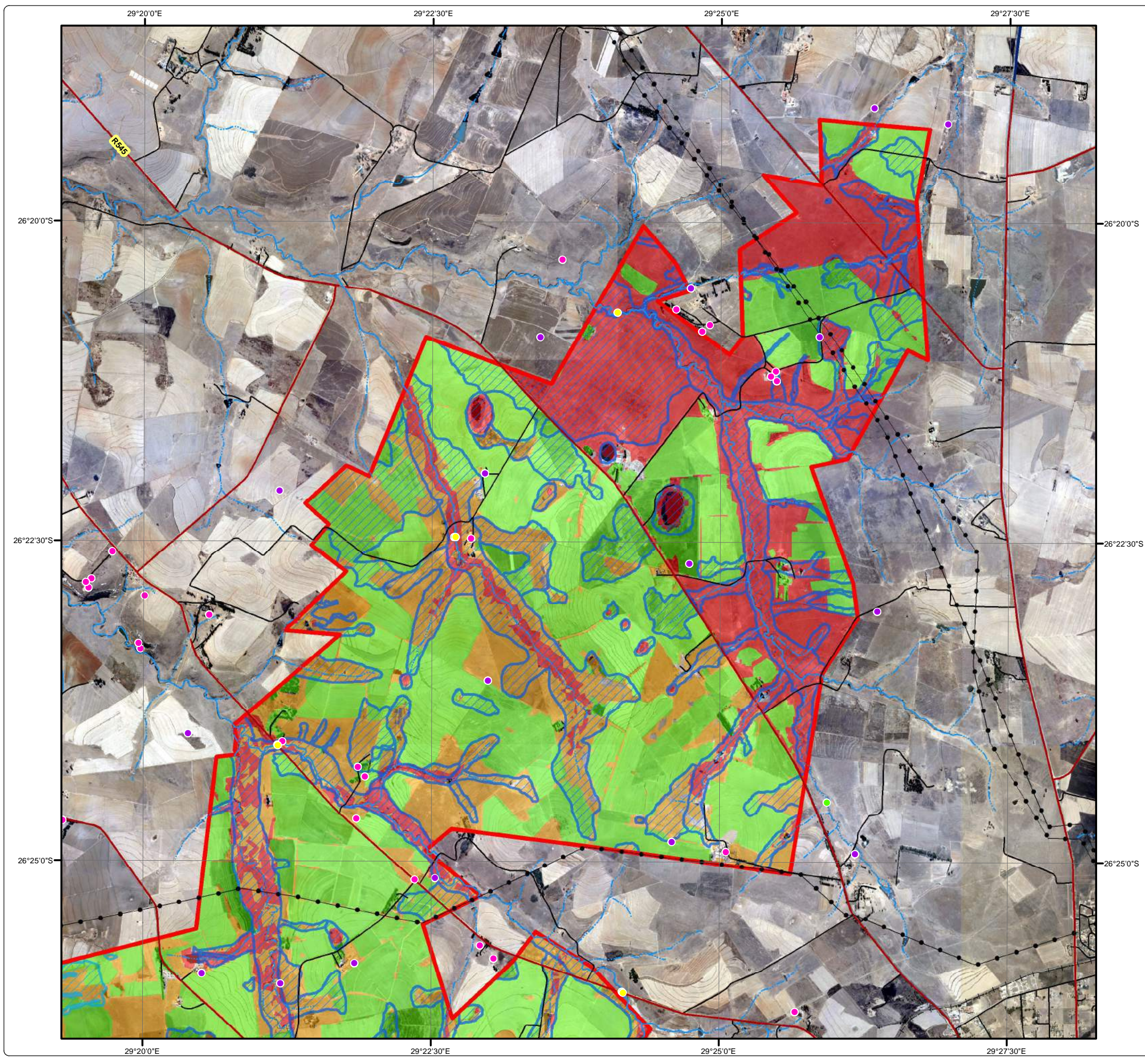
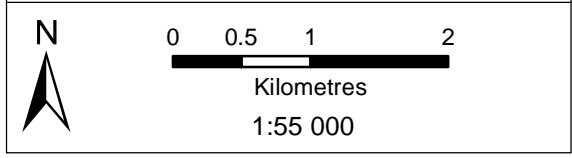
## Legend

-  Project Area
-  Power Line
-  National / Arterial Route
-  Main Road
-  Minor Route
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream
- Identified Heritage Resources**
-  Identified Heritage Resource
- Monitoring Locations**
-  Surface Water Monitoring Location
-  Aquatic Monitoring Location
-  Groundwater Monitoring Location
- Wetland Delineation**
-  Delineated Wetlands
-  Delineated Wetlands (Desktop Study)
- Vegetation Sensitivity**
-  High
-  Medium
-  Low



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Projection: Transverse Mercator Ref #: kwt.SAS3869.201710.013  
 Datum: WGS 1984 Revision Number: 1  
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# Thubelisha Consolidated EMPR

## Composite Map - Trichardtsfontein and Thubelisha West Zoom





### Legend

-  Project Area
-  Shaft Location
-  Secondary Town
-  Other Town
-  Power Line
-  National / Arterial Route
-  Main Road
-  Minor Route
-  Railway Line
-  Non-Perennial Stream
-  Perennial Stream



### Identified Heritage Resources

-  Identified Heritage Resource




### Monitoring Locations

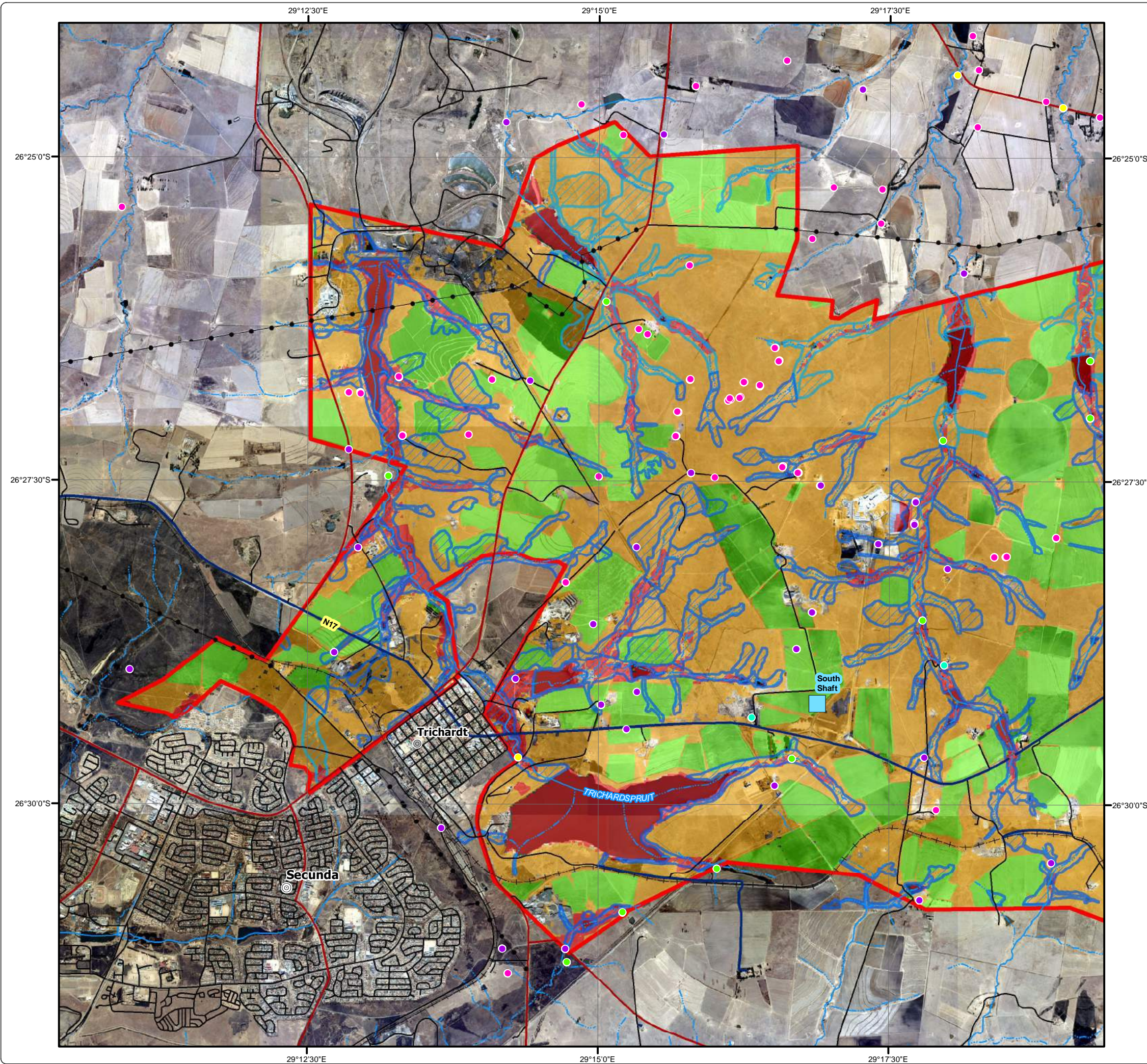
-  Surface Water Monitoring Location
-  Aquatic Monitoring Location
-  Noise Monitoring location
-  Groundwater Monitoring Location

### Wetland Delineation

-  Delineated Wetlands
-  Delineated Wetlands (Desktop Study)

### Vegetation Sensitivity

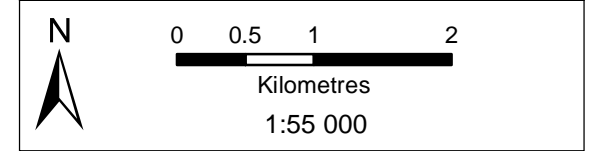
-  High
-  Medium
-  Low



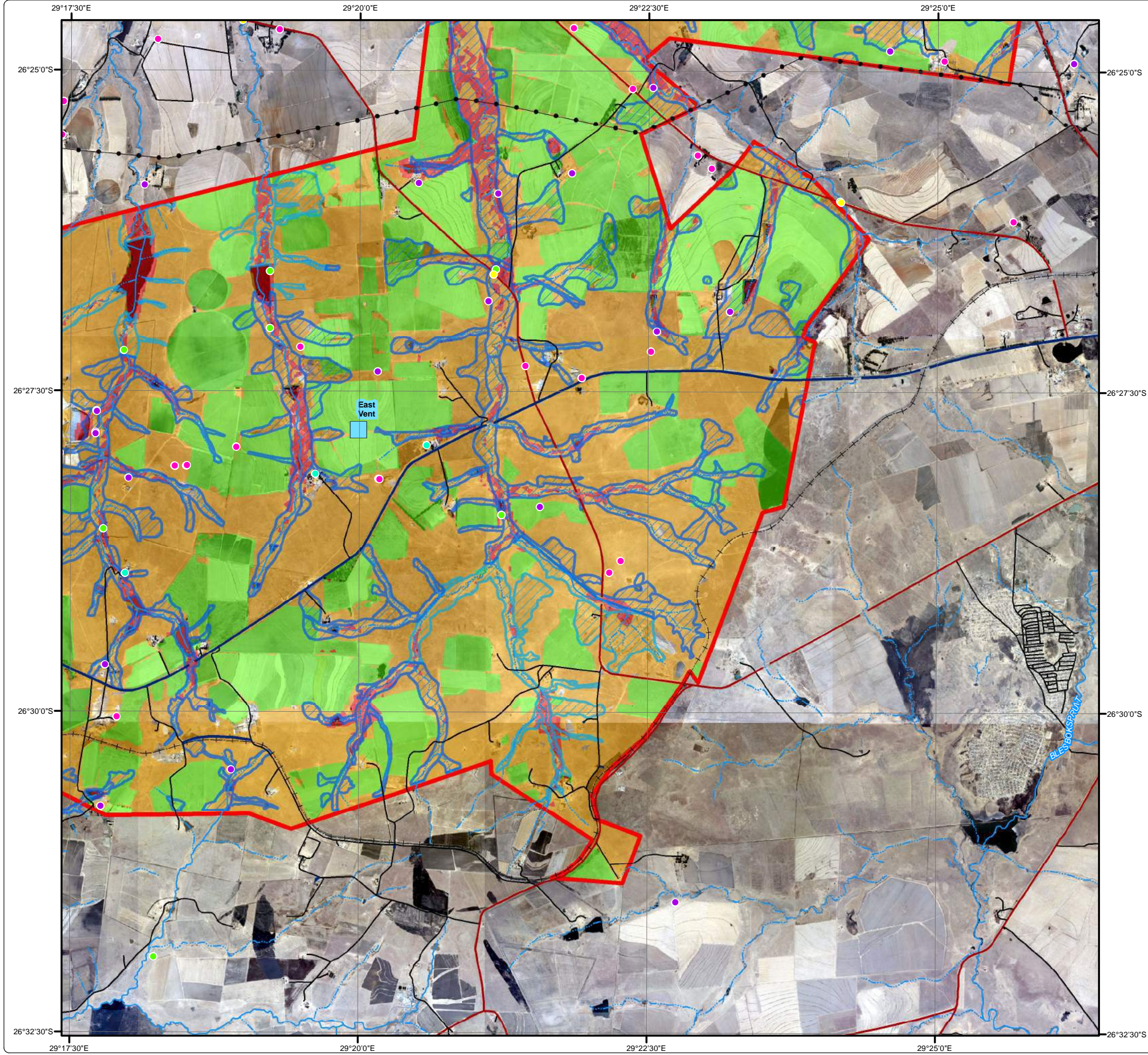
  
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Projection: Transverse Mercator      Ref #: kwt.SAS3869.201710.011  
 Datum: WGS 1984                              Revision Number: 1  
 Central Meridian: 29°E                        Date: 06/10/2017



# Thubelisha Consolidated EMPR Composite Map - Thubelisha East Zoom



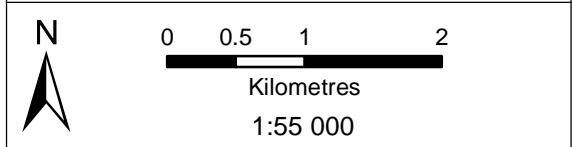
### Legend

- Project Area
  - Shaft Location
  - Power Line
  - National / Arterial Route
  - Main Road
  - Minor Route
  - Railway Line
  - Non-Perennial Stream
  - Perennial Stream
- Identified Heritage Resources**
- Identified Heritage Resource
- Monitoring Locations**
- Surface Water Monitoring Location
  - Aquatic Monitoring Location
  - Noise Monitoring location
  - Groundwater Monitoring Location
- Wetland Delineation**
- Delineated Wetlands
  - Delineated Wetlands (Desktop Study)
- Vegetation Sensitivity**
- High
  - Medium
  - Low



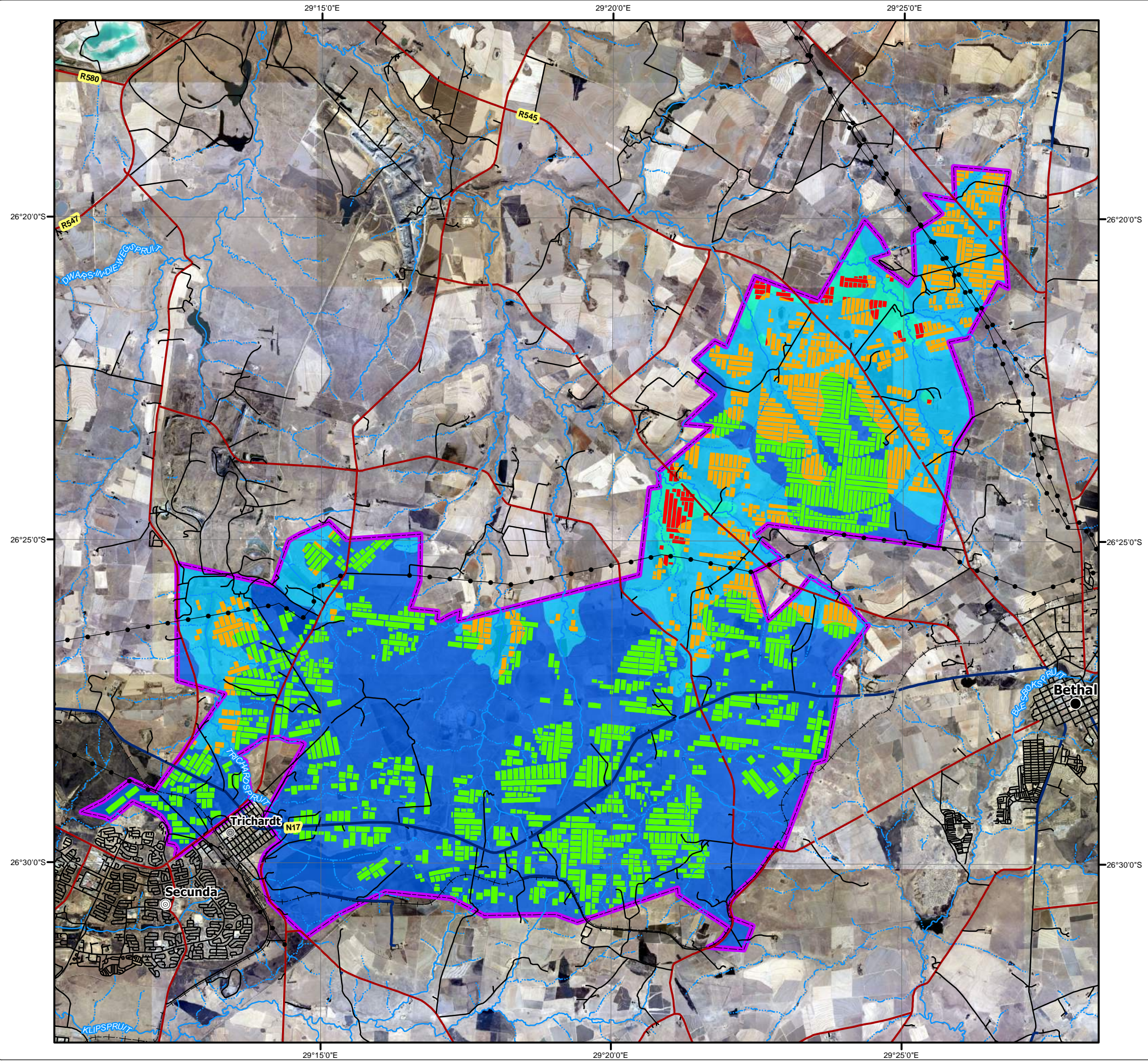
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 Datum: WGS 1984      Revision Number: 1  
 Central Meridian: 29°E      Date: 06/10/2017



# Thubelisha Consolidated EMPR

## Subsidence Risk



### Legend

- Project Area
- Major Town
- Secondary Town
- Other Town
- Power Line
- National / Arterial Route
- Main Road
- Minor Route
- Railway Line
- Non-Perennial Stream
- Perennial Stream

### Subsidence Risk

- Definite Risk
- High Risk
- Low Risk

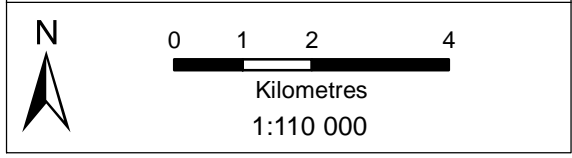
### Depth To Coal Height (m)

- 30 - 50
- 50 - 100
- >100



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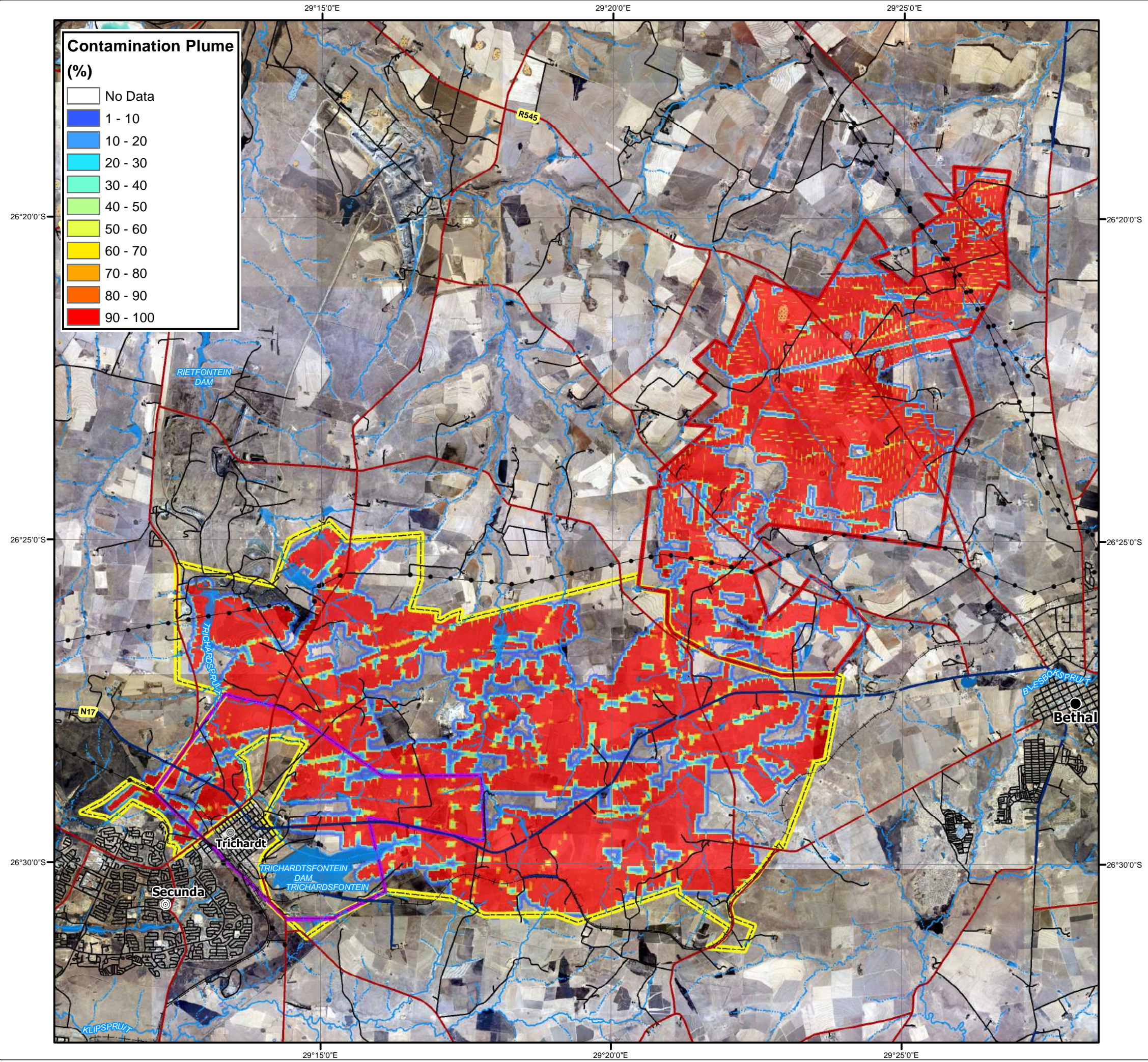
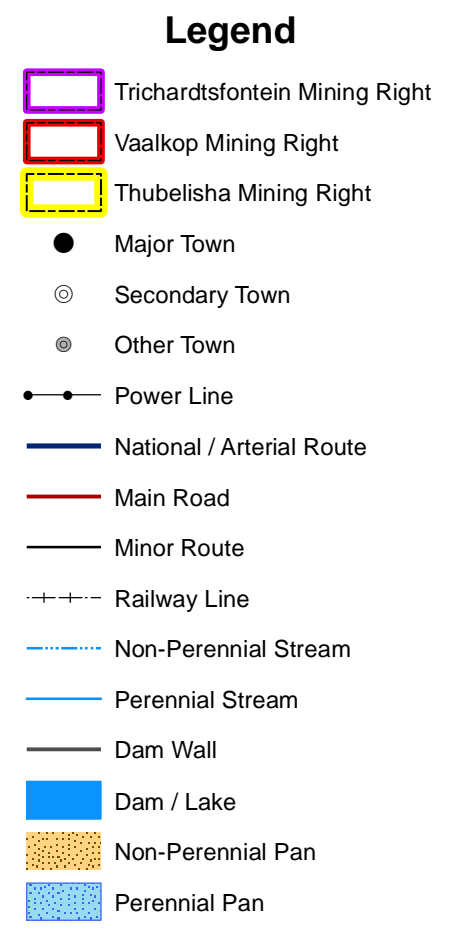
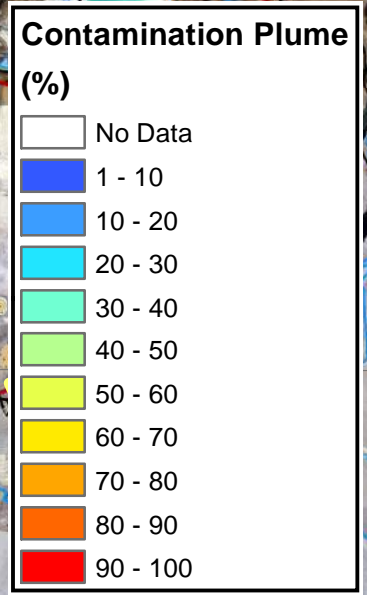
Projection: Transverse Mercator Ref #: kwt.SAS3869.201712.034  
Datum: WGS 1984 Revision Number: 1  
Central Meridian: 29°E Date: 08/12/2017





# Thubelisha Consolidated EMPR

## Contamination Plume In The Deep Fractured Aquifer At The End Of Operation



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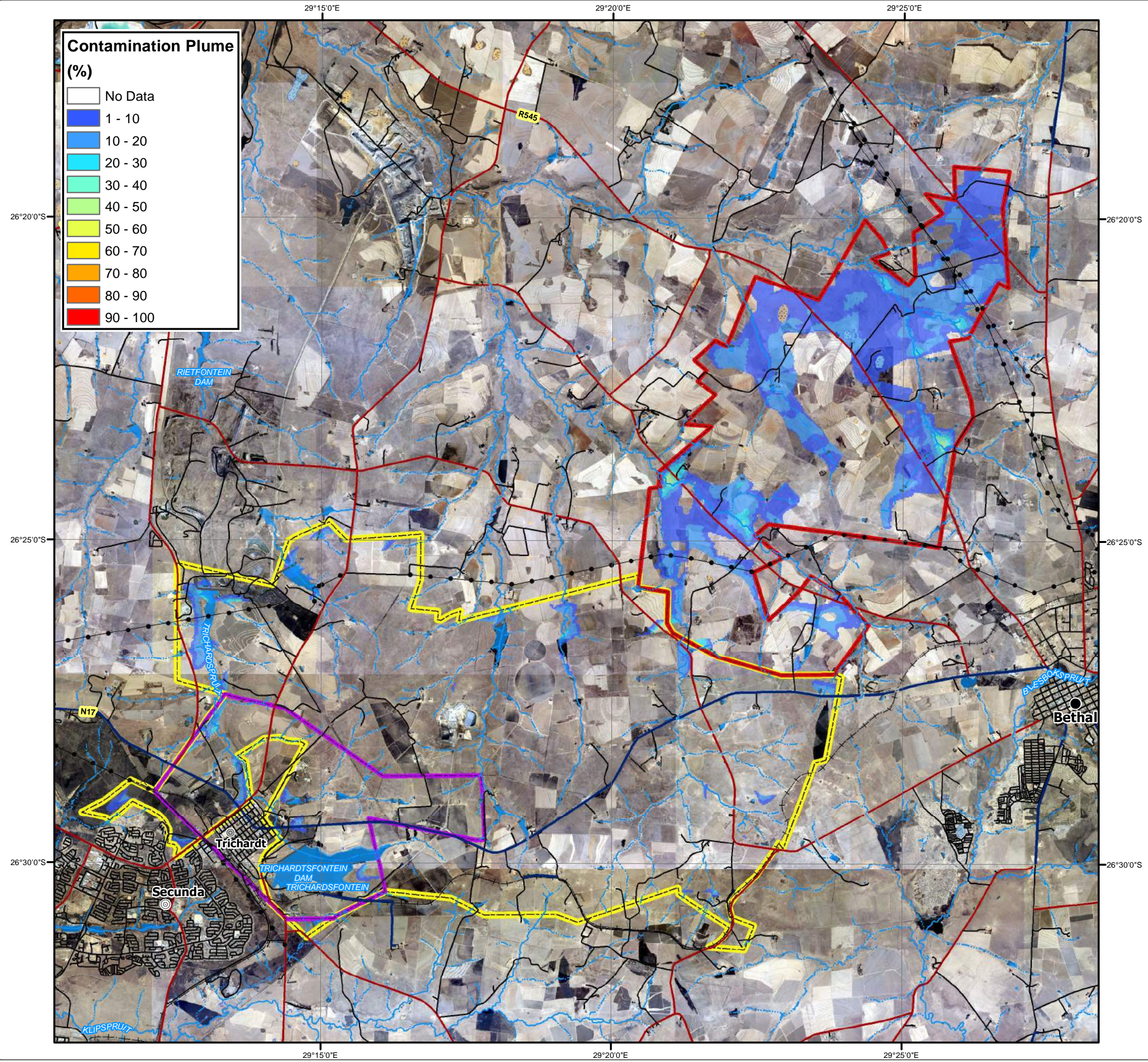
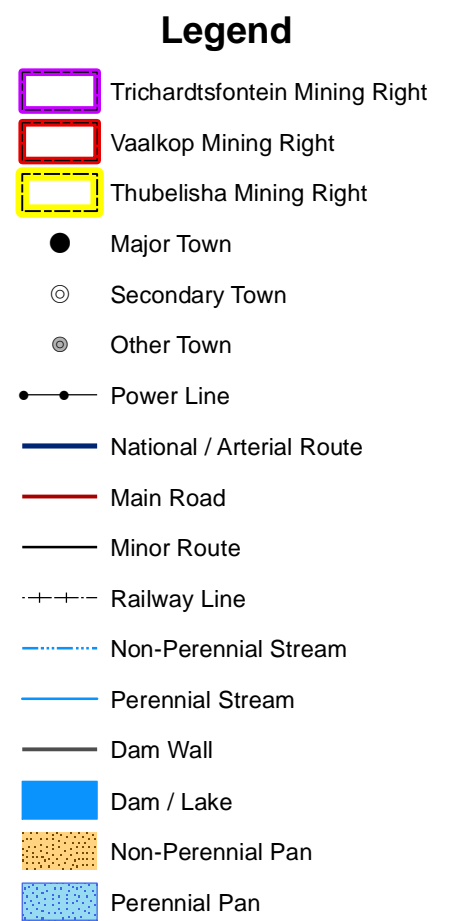
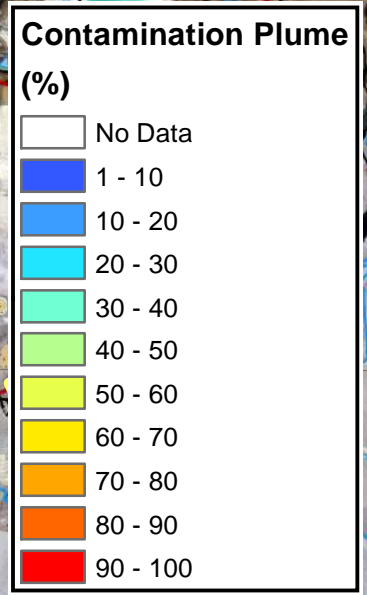
Projection: Transverse Mercator    Ref #: kwt.SAS3869.201712.034  
 Datum: WGS 1984    Revision Number: 1  
 Central Meridian: 29°E    Date: 15/01/2018

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 0 1 2 4  
 Kilometres  
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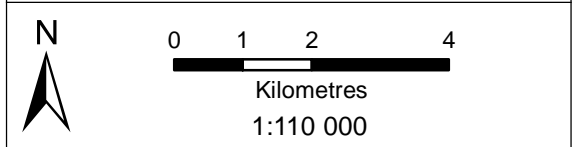
# Thubelisha Consolidated EMPR

## Contamination Plume In The Weathered Aquifer 100 Years Post Closure



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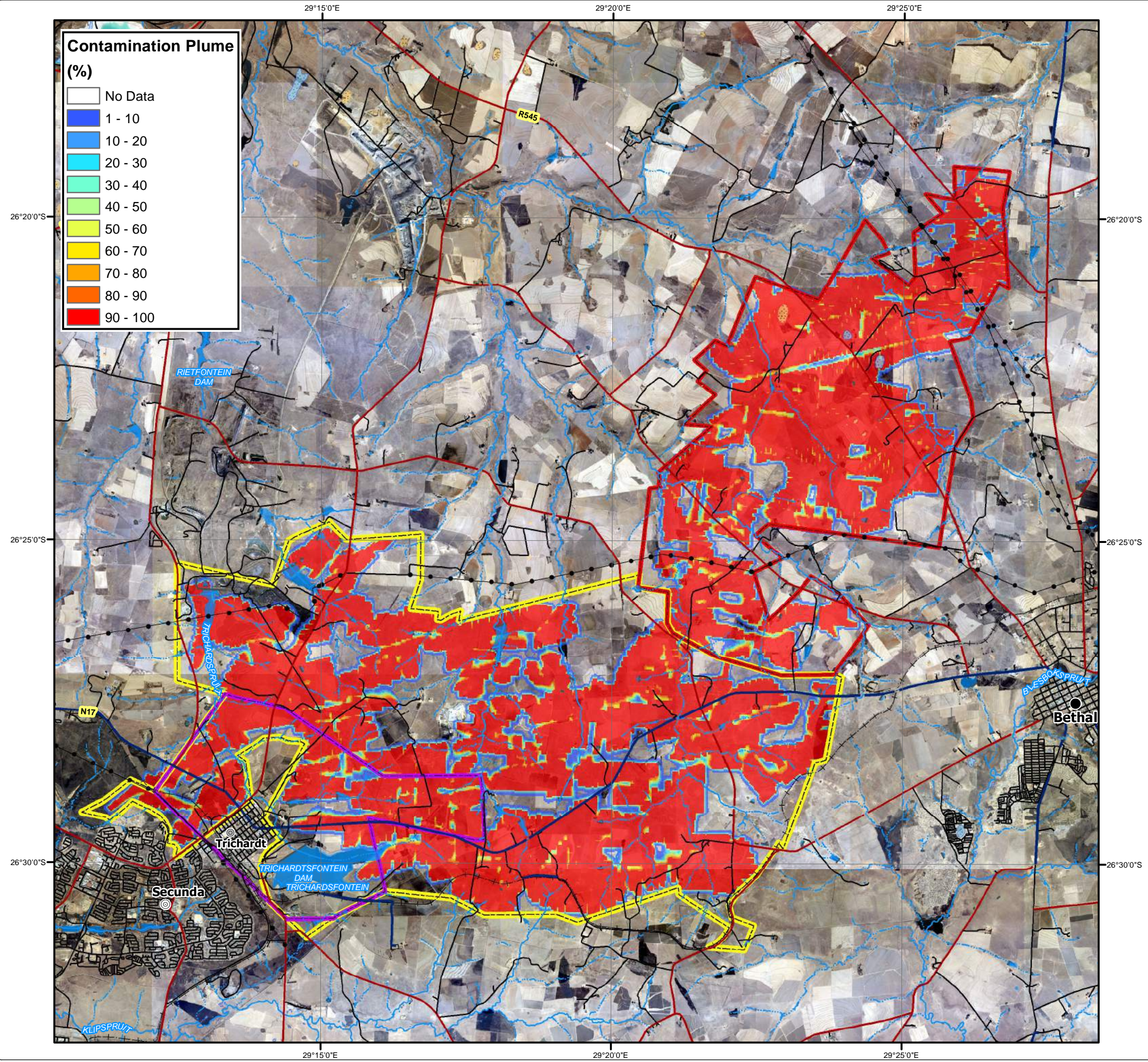
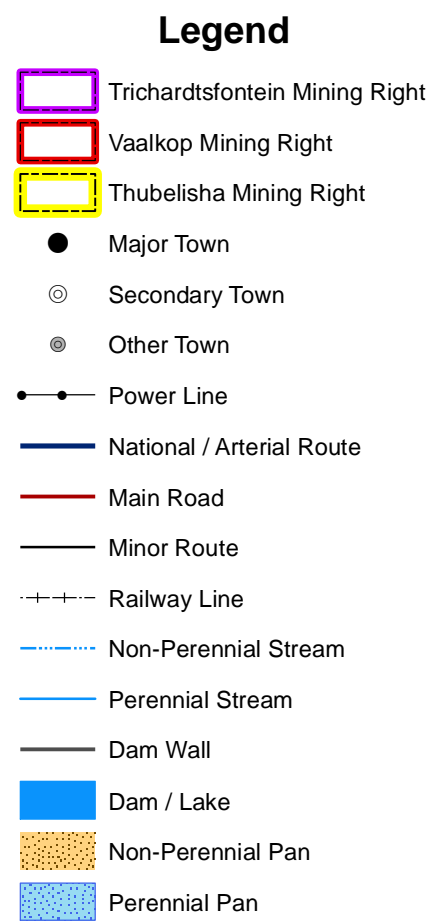
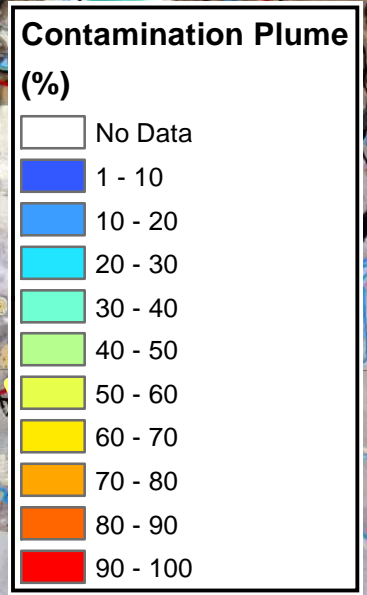
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 Central Meridian: 29°E      Date: 15/01/2018





# Thubelisha Consolidated EMPR

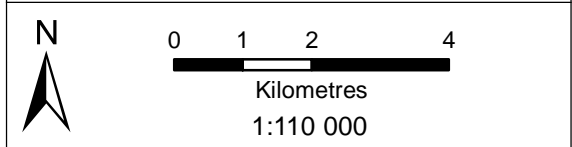
## Contamination Plume In The Deep Fractured Aquifer 100 Years Post Closure



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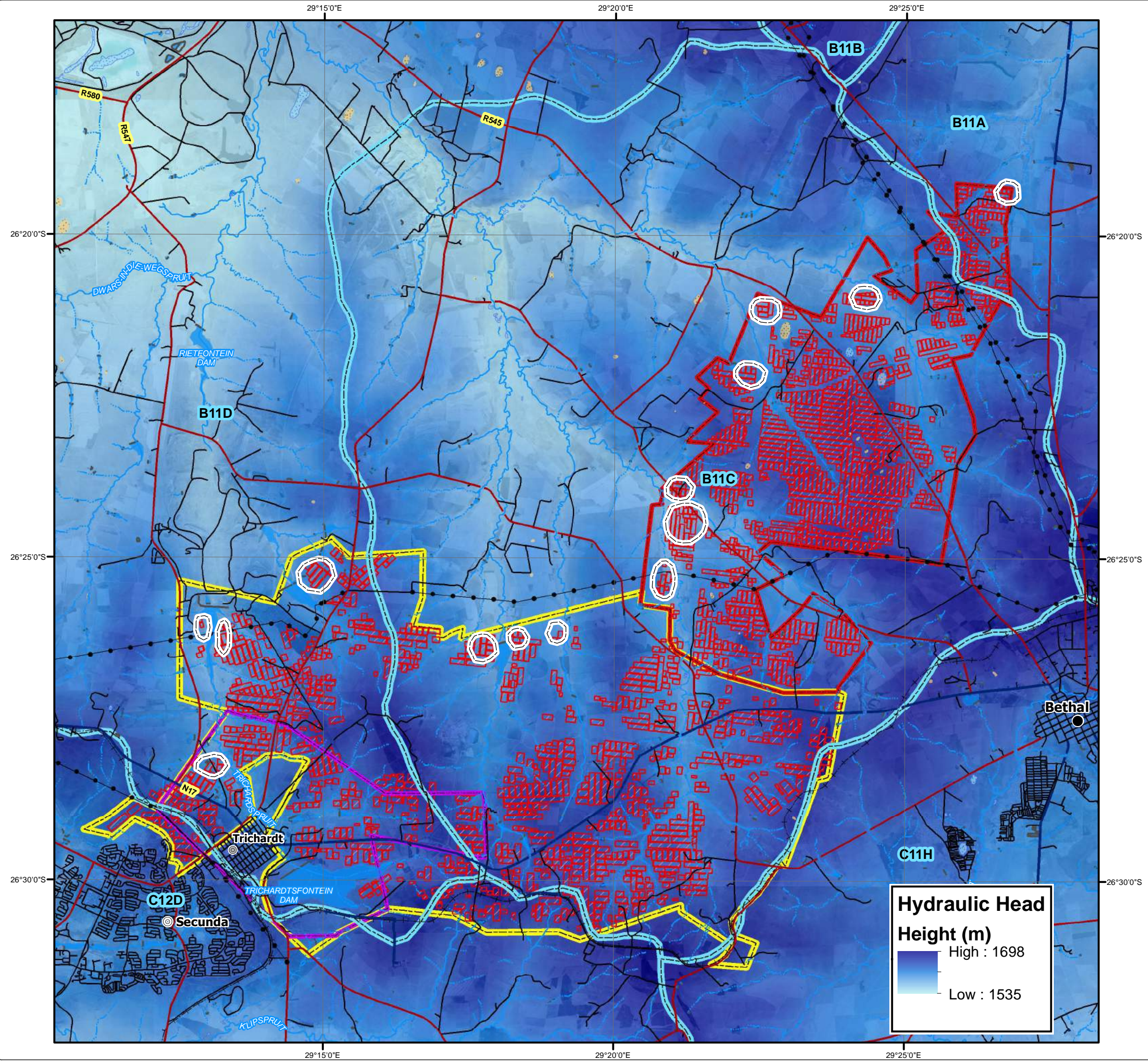
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Projection: Transverse Mercator      Ref #: kwt.SAS3869.201712.034  
 Datum: WGS 1984                          Revision Number: 1  
 Central Meridian: 29°E                      Date: 15/01/2018



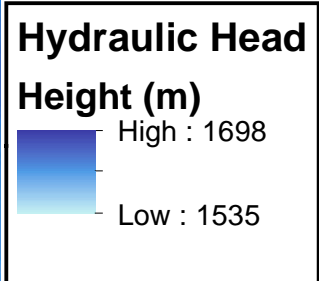
# Thubelisha Consolidated EMPR

## Potential Decant Locations



### Legend

- Potential Decant Locations
- Trichardtfontein Mining Right
- Vaalkop Mining Right
- Thubelisha Mining Right
- Major Town
- Secondary Town
- Other Town
- Power Line
- National / Arterial Route
- Main Road
- Minor Route
- Railway Line
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Non-Perennial Pan
- Perennial Pan
- Quaternary Catchment Boundary
- Underground Mining High Risk of Subsidence



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Projection: Transverse Mercator Ref #: kwt.SAS3869.201801.035  
 Datum: WGS 1984 Revision Number: 2  
 Central Meridian: 29°E Date: 23/01/2018

