












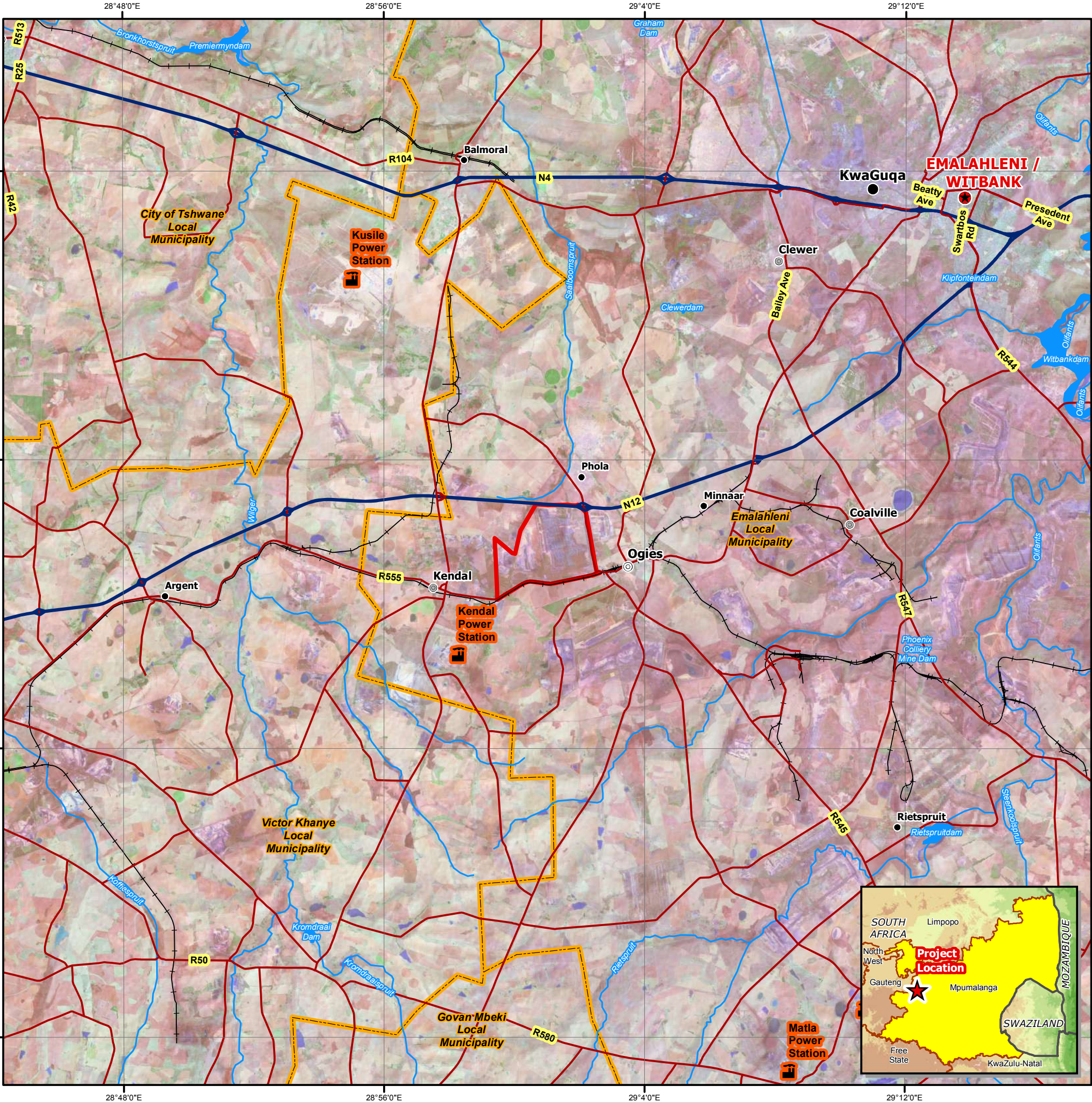


Klipspruit Colliery Water Treatment Plant Regional Setting

Legend


-  Klipspruit Mining Right
-  City
-  Major Town
-  Secondary Town
-  Other Town
-  Settlement
-  Power Station
-  Main Road
-  Arterial / National Route
-  Railway Line
-  Perennial Stream
-  Dam
-  Local Municipal Boundary



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Projection: Transverse Mercator Ref #: ajm.SOU5014.201805.099
 Datum: WGS 1994 Revision Number: 1
 Central Meridian: 29°E Date: 11/05/2018

 0 2.5 5 10
 Kilometres
 1:200 000

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Klipspruit Colliery Water Treatment Plant

Local Setting

Legend

- Klipspruit Mining Right
- Secondary Town
- Other Town
- Settlement
- Power Station
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Dam Wall
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Non-Perennial Pan / Stream
- Perennial Pan
- Zibulo Mining Area (Approximate)

Legend

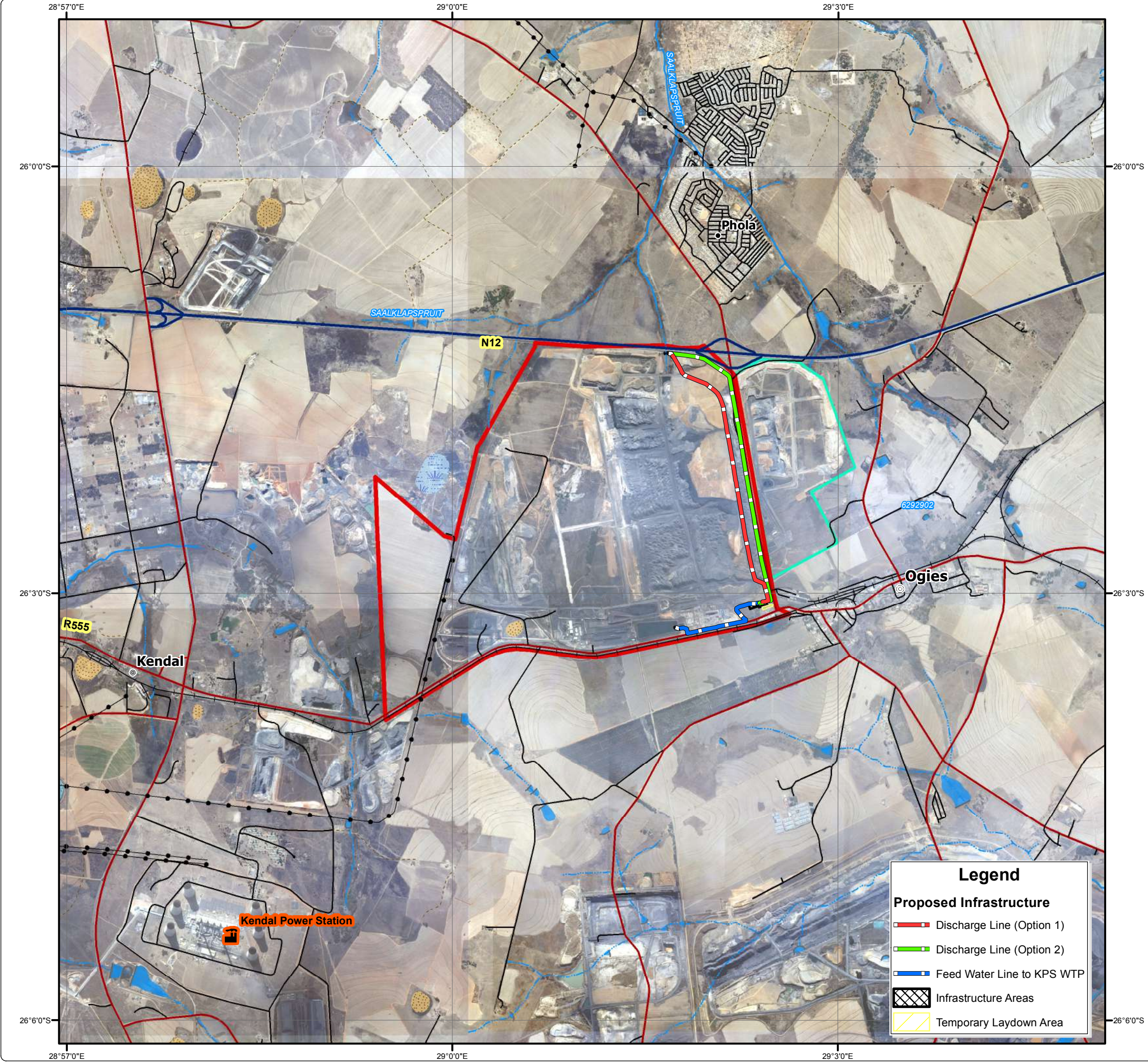
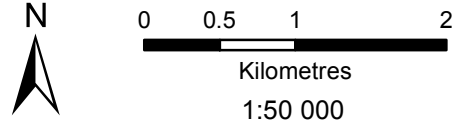
- Proposed Infrastructure**
- Discharge Line (Option 1)
 - Discharge Line (Option 2)
 - Feed Water Line to KPS WTP
 - Infrastructure Areas
 - Temporary Laydown Area



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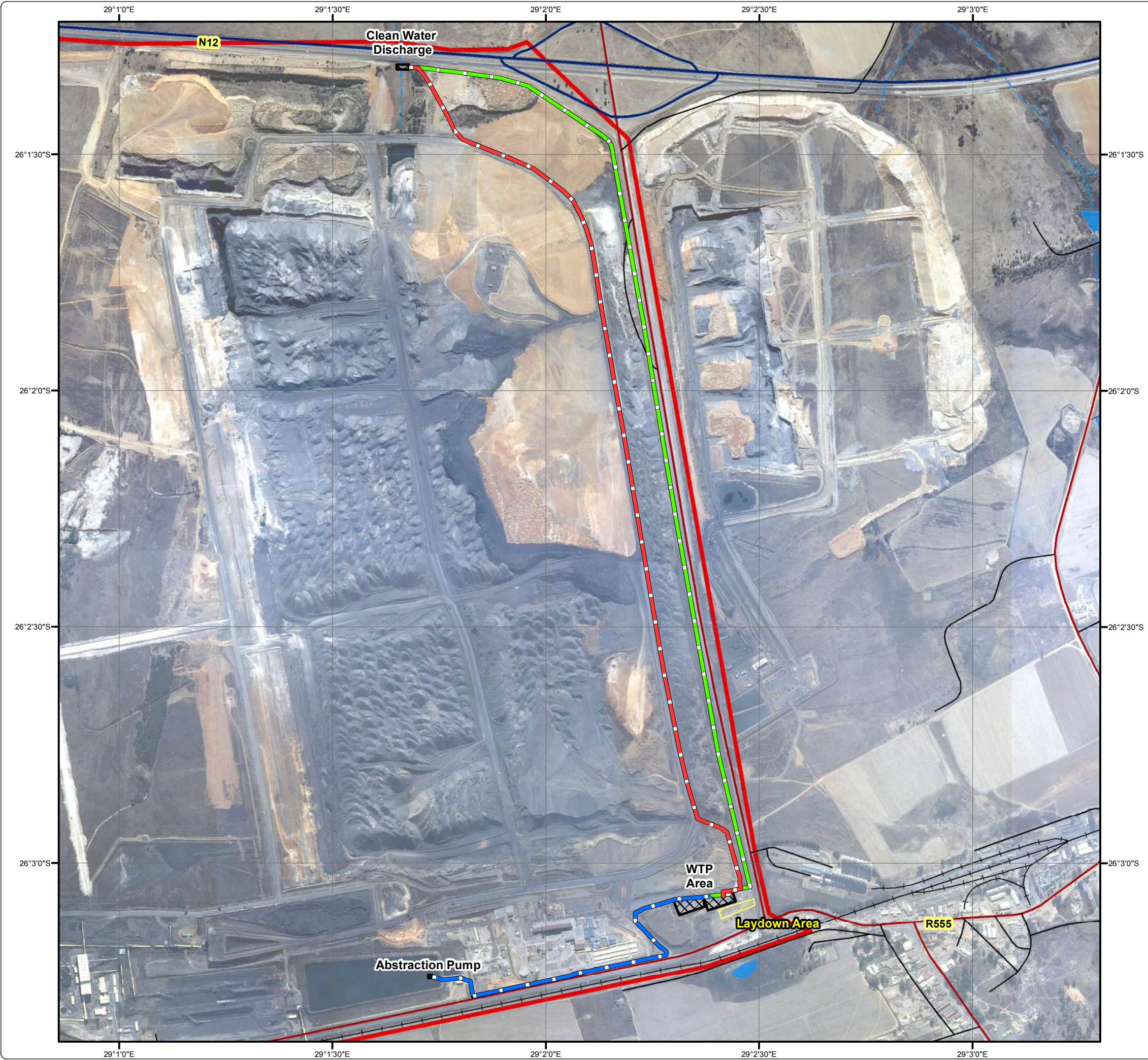
Projection: Transverse Mercator Ref #: ajm.SOU5014.201806.002
 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 05/06/2018



Klipspruit Colliery Water Treatment Plant Infrastructure Plan

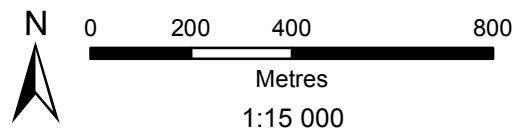
Legend

- Klipspruit Mining Right
- Secondary Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Dam Wall
- Dam / Lake
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Area
- Temporary Laydown Area



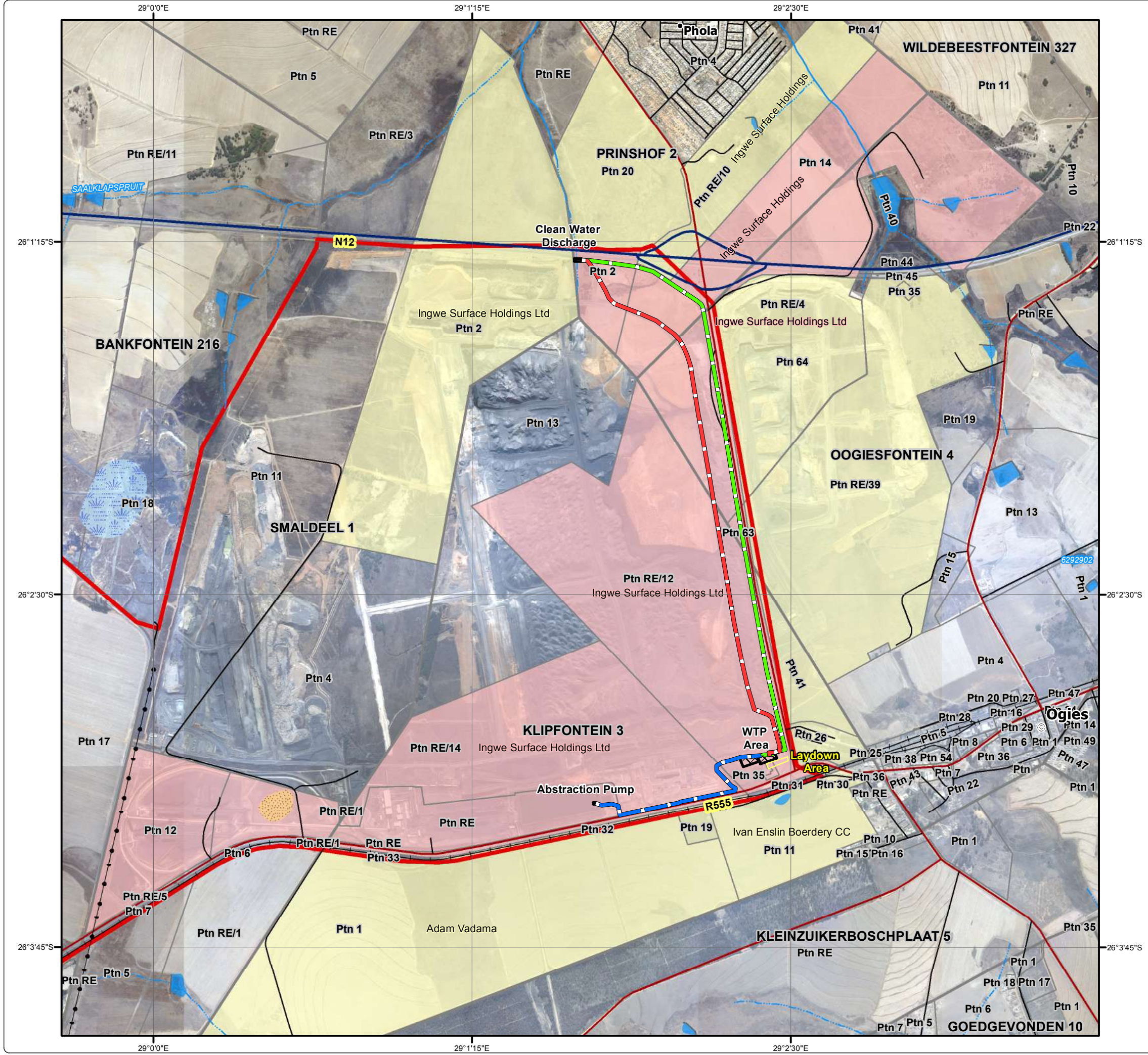
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Projection: Transverse Mercator Ref #: ajm.SOU5014.201806.003
 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 05/06/2018



Klipspruit Colliery Water Treatment Plant

Land Tenure

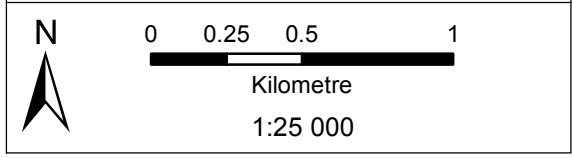


- Legend**
- Klipspruit Mining Right
 - Secondary Town
 - Settlement
 - Arterial / National Route
 - Main Road
 - Minor Road
 - Discharge Line (Option 1)
 - Discharge Line (Option 2)
 - Feed Water Line to KPS WTP
 - Infrastructure Areas
 - Temporary Laydown Area
 - Directly Affected Portion
 - Indirectly Affected Portion
 - Farm Boundary
 - Farm Portion



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Klipspruit Colliery Water Treatment Plant

Land Type

Legend

- Klipspruit Mining Right
- Arterial / National Route
- Main Road
- Minor Road
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Area
- Temporary Laydown Area

Land Type

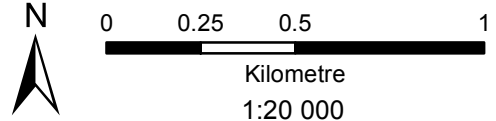
- Ba4
- Bb13

Land Type	Description
Ba4	PLINTHIC CATENA: UPLAND DUPLEX AND MARGALITIC SOILS RARE; Dystrophic and/or mesotrophic; red soils widespread
Bb13	PLINTHIC CATENA: UPLAND DUPLEX AND MARGALITIC SOILS RARE; Dystrophic and/or mesotrophic; red soils not widespread
















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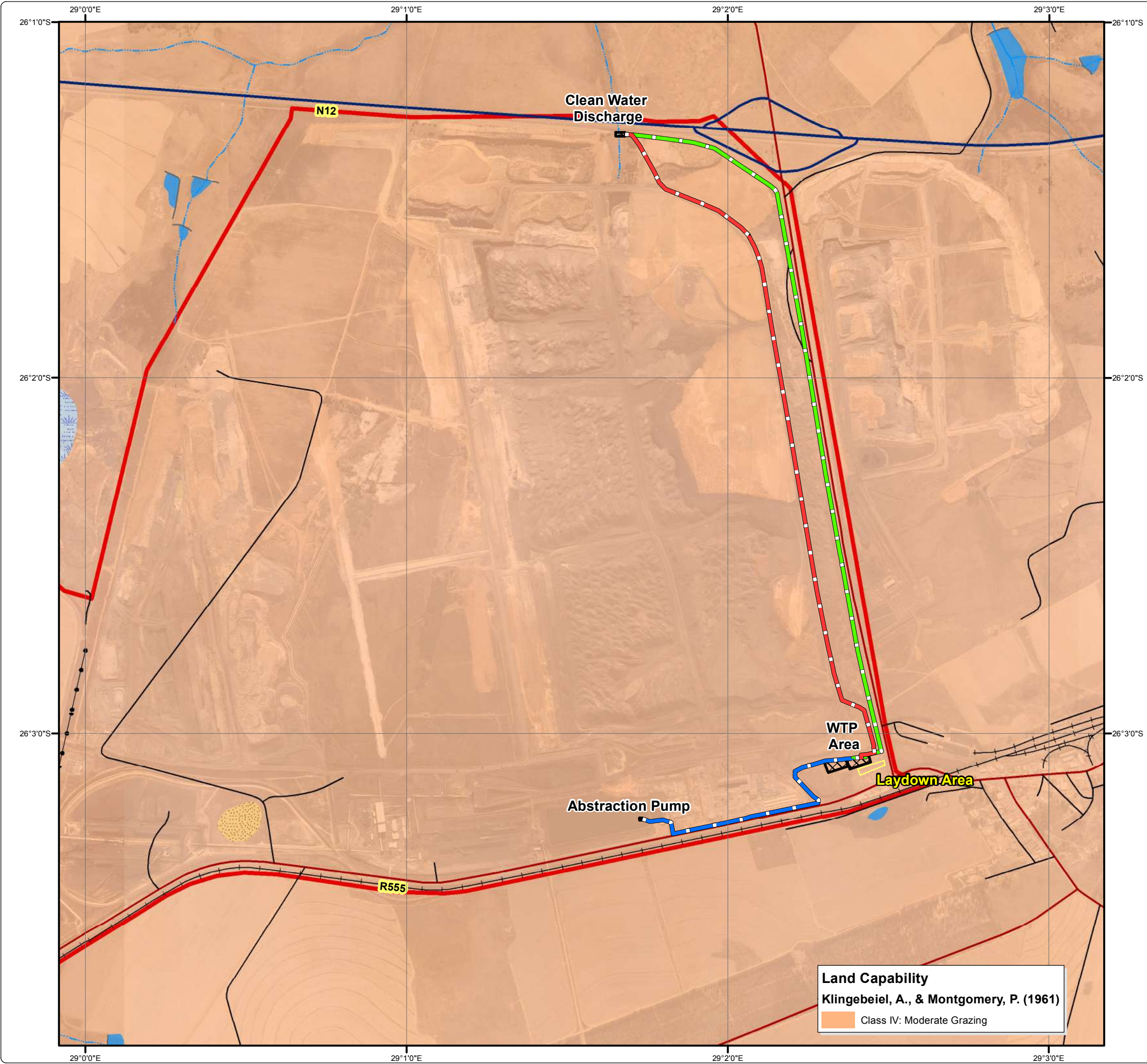
Projection: Transverse Mercator Ref #: cwb.SOU5014.201808.062
 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 17/08/2018



Klipspruit Colliery Water Treatment Plant Land Capability

Legend

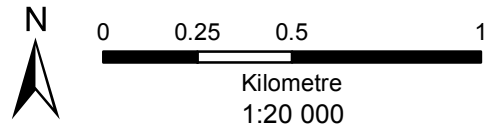
-  Klipspruit Mining Right
-  Arterial / National Route
-  Main Road
-  Minor Road
-  Non-Perennial Stream
-  Perennial Stream
-  Dam / Lake
-  Non-Perennial Pan / Stream
- Proposed Infrastructure**
-  Discharge Line (Option 1)
-  Discharge Line (Option 2)
-  Feed Water Line to KPS WTP
-  Infrastructure Area
-  Temporary Laydown Area



Land Capability
 Klingebeiell, A., & Montgomery, P. (1961)
 Class IV: Moderate Grazing



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Klipspruit Colliery Water Treatment Plant

Land Use

Legend

- Klipspruit Mining Right
- Secondary Town
- Arterial / National Route
- Main Road
- Minor Road
- Dam Wall
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Non-Perennial Pan / Stream
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Areas
- Temporary Laydown Area

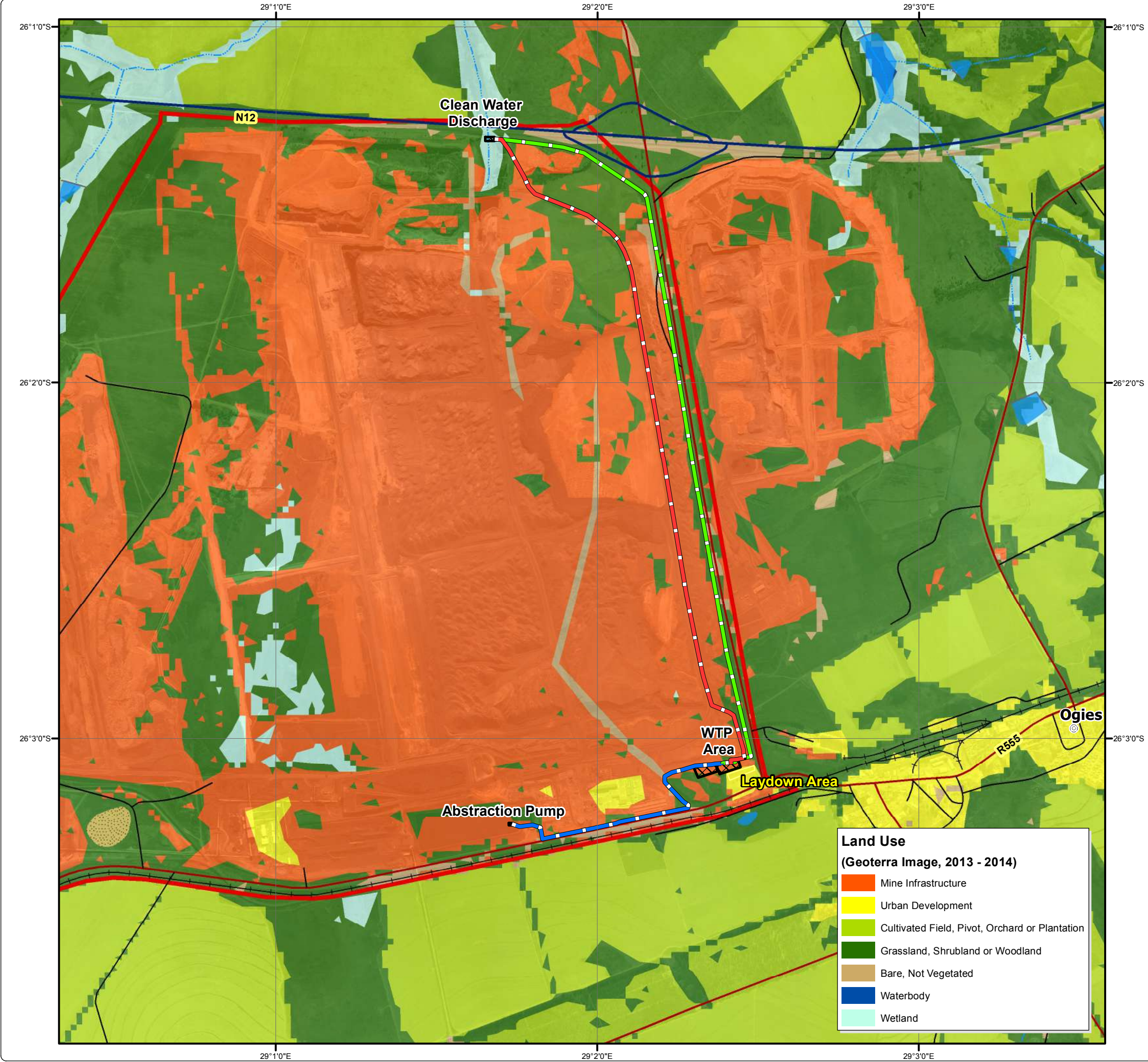
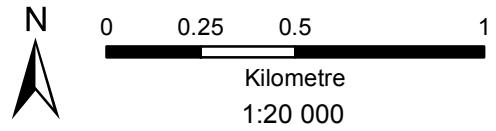
Land Use
(Geoterra Image, 2013 - 2014)

- Mine Infrastructure
- Urban Development
- Cultivated Field, Pivot, Orchard or Plantation
- Grassland, Shrubland or Woodland
- Bare, Not Vegetated
- Waterbody
- Wetland



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 Central Meridian: 29°E Date: 05/06/2018



Klipspruit Colliery Water Treatment Plant Regional Vegetation

Legend

- Klipspruit Mining Right
- Project Area
- Power Station
- Secondary Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Power Line
- Dam Wall
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Non-Perennial Pan / Stream
- Perennial Pan

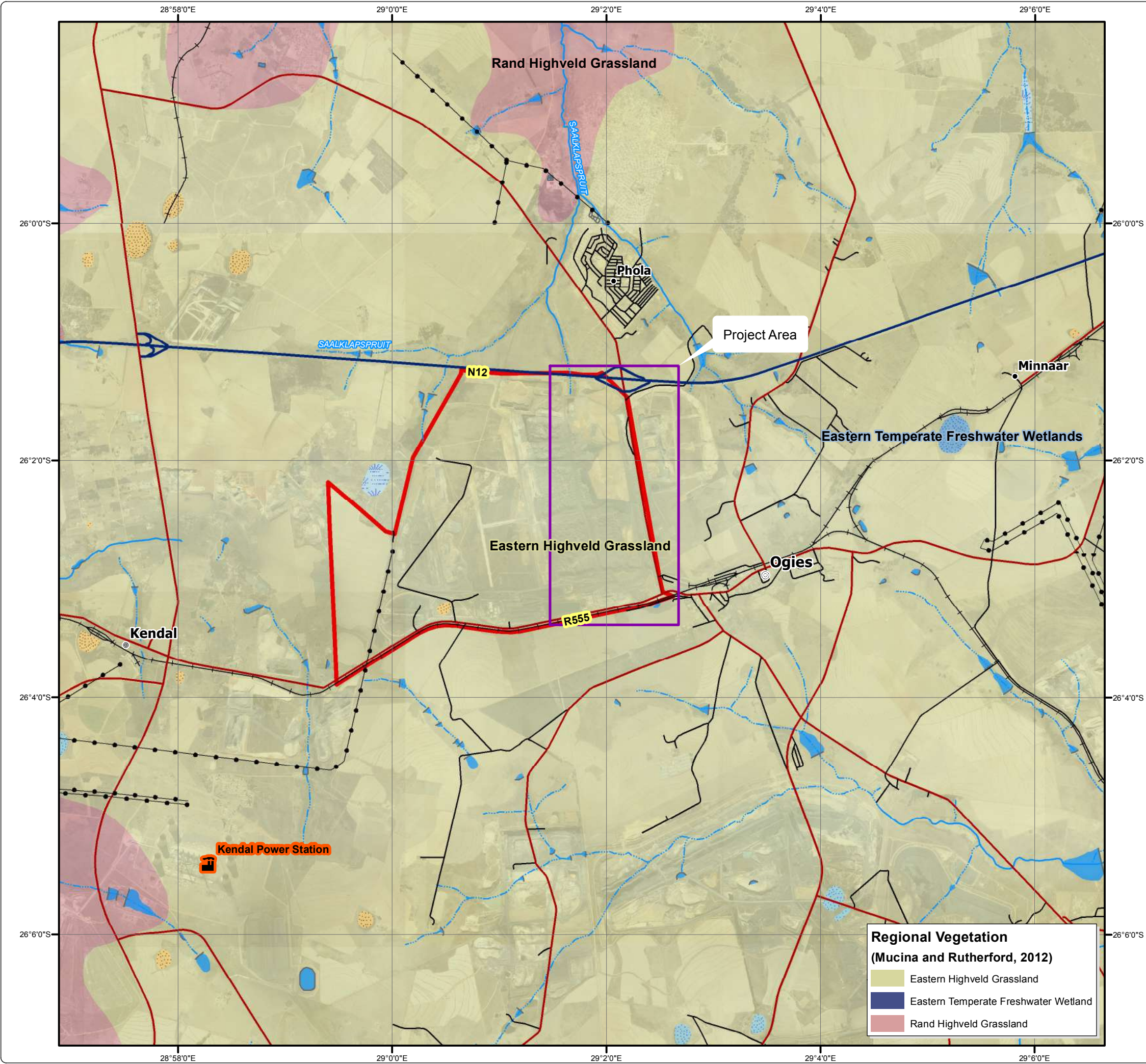
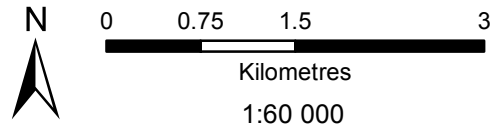
Regional Vegetation
(Mucina and Rutherford, 2012)

- Eastern Highveld Grassland
- Eastern Temperate Freshwater Wetland
- Rand Highveld Grassland



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Klipspruit Colliery Water Treatment Plant

Ecological Sensitivity

Mpumalanga Biodiversity Sector Plan (2014)

- CBA Irreplaceable
- CBA Optimal
- Other Natural Areas
- Moderately modified- Old lands
- Heavily modified

Legend

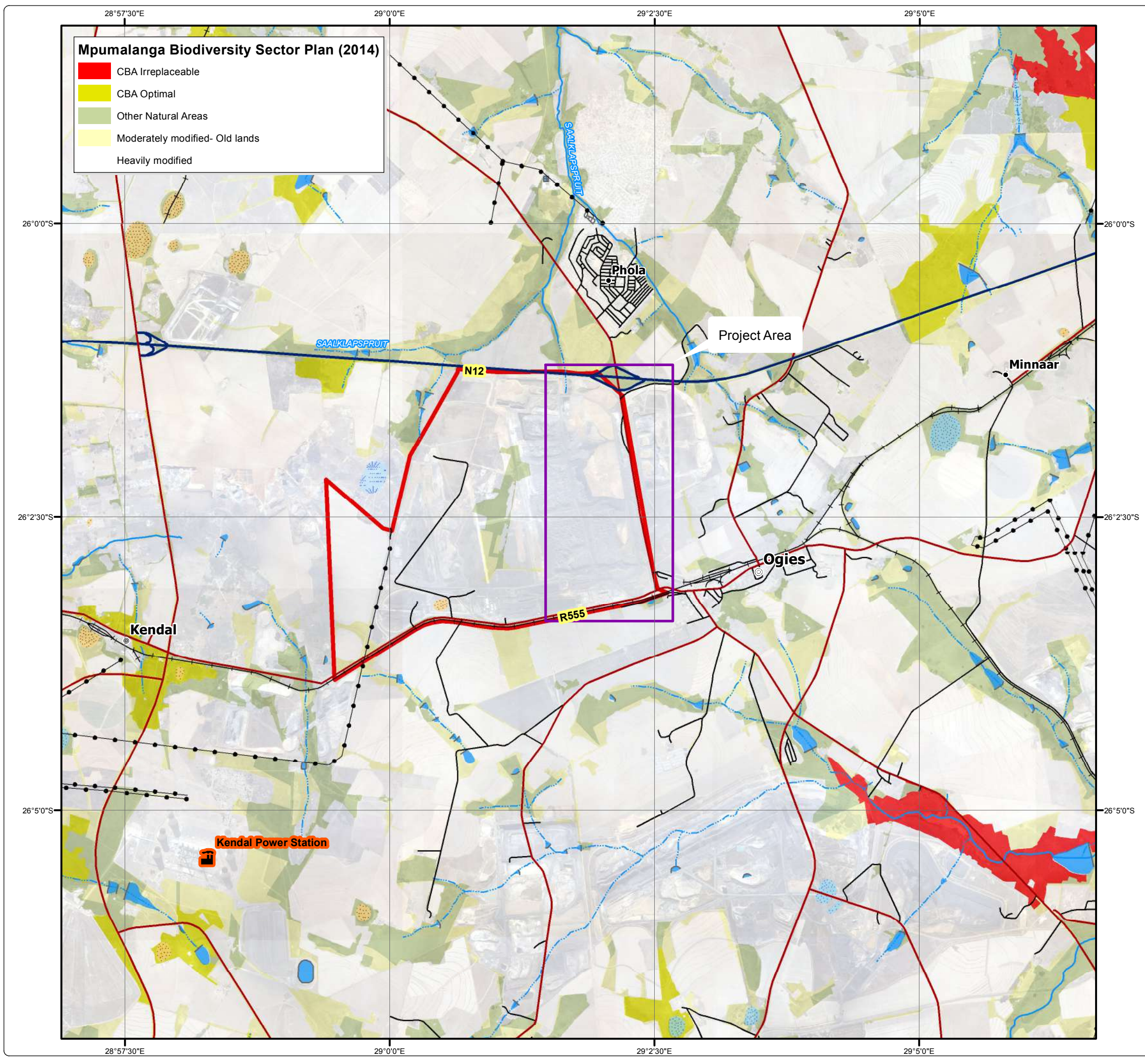
- Klipspruit Mining Right
- Project Area
- Power Station
- Secondary Town
- Other Town
- Settlement
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland

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 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 17/08/2018

Kilometres
1:60 000



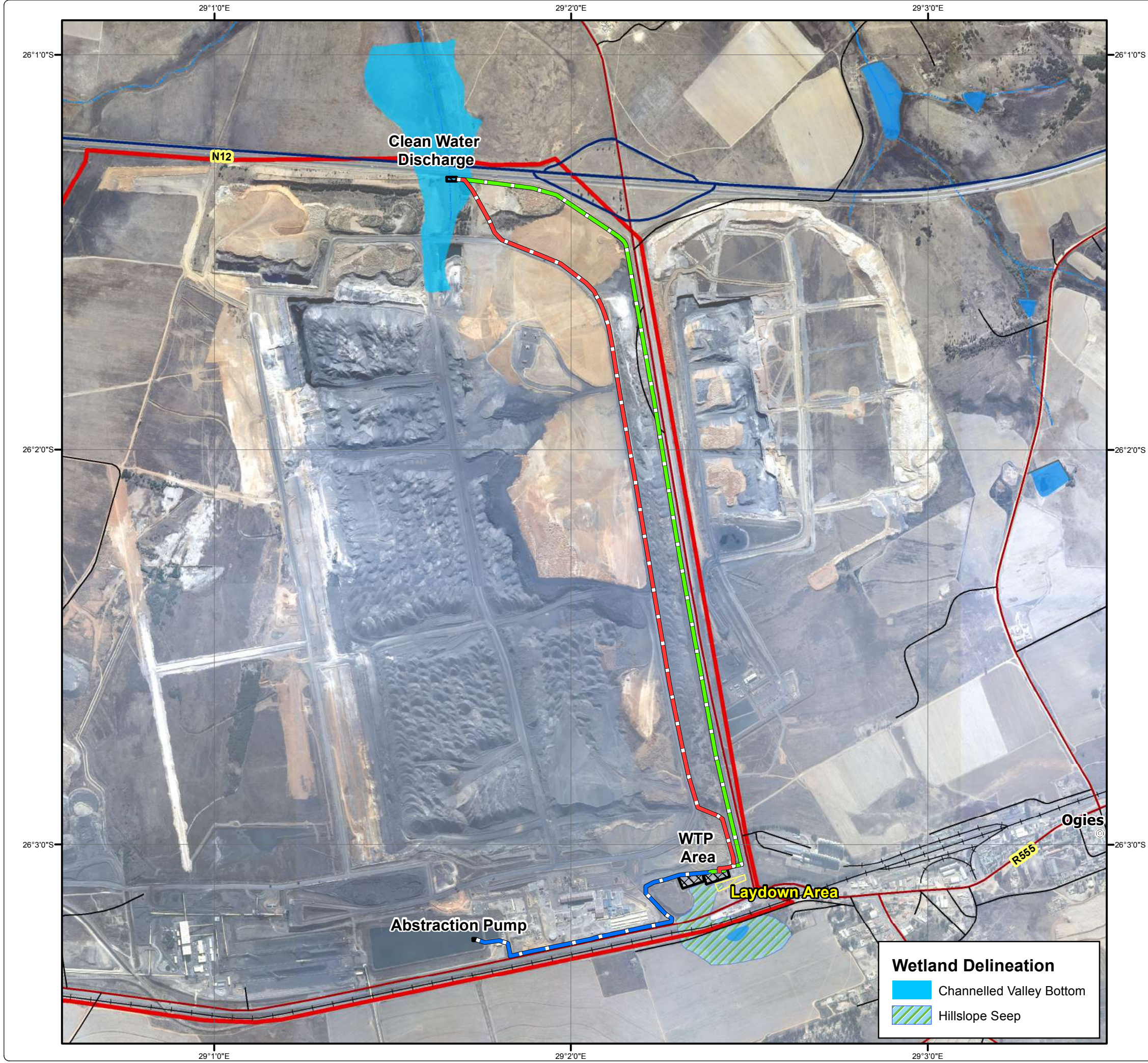
Klipspruit Colliery Water Treatment Plant Wetland Delineation

Legend

- Klipspruit Mining Right
- Secondary Town
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Area
- Temporary Laydown Area

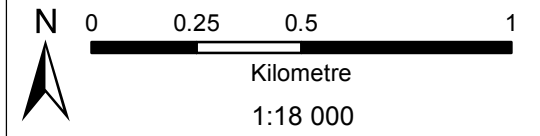
Wetland Delineation

- Channelled Valley Bottom
- Hillslope Seep



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Klipspruit Colliery Water Treatment Plant Wetland Delineation including 100m Buffer

Legend

- Klipspruit Mining Right
- Secondary Town
- Arterial / National Route
- Main Road
- Minor Road
- Dam Wall
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Non-Perennial Pan / Stream
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Area
- Temporary Laydown Area

Proposed Infrastructure

- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Area
- Temporary Laydown Area

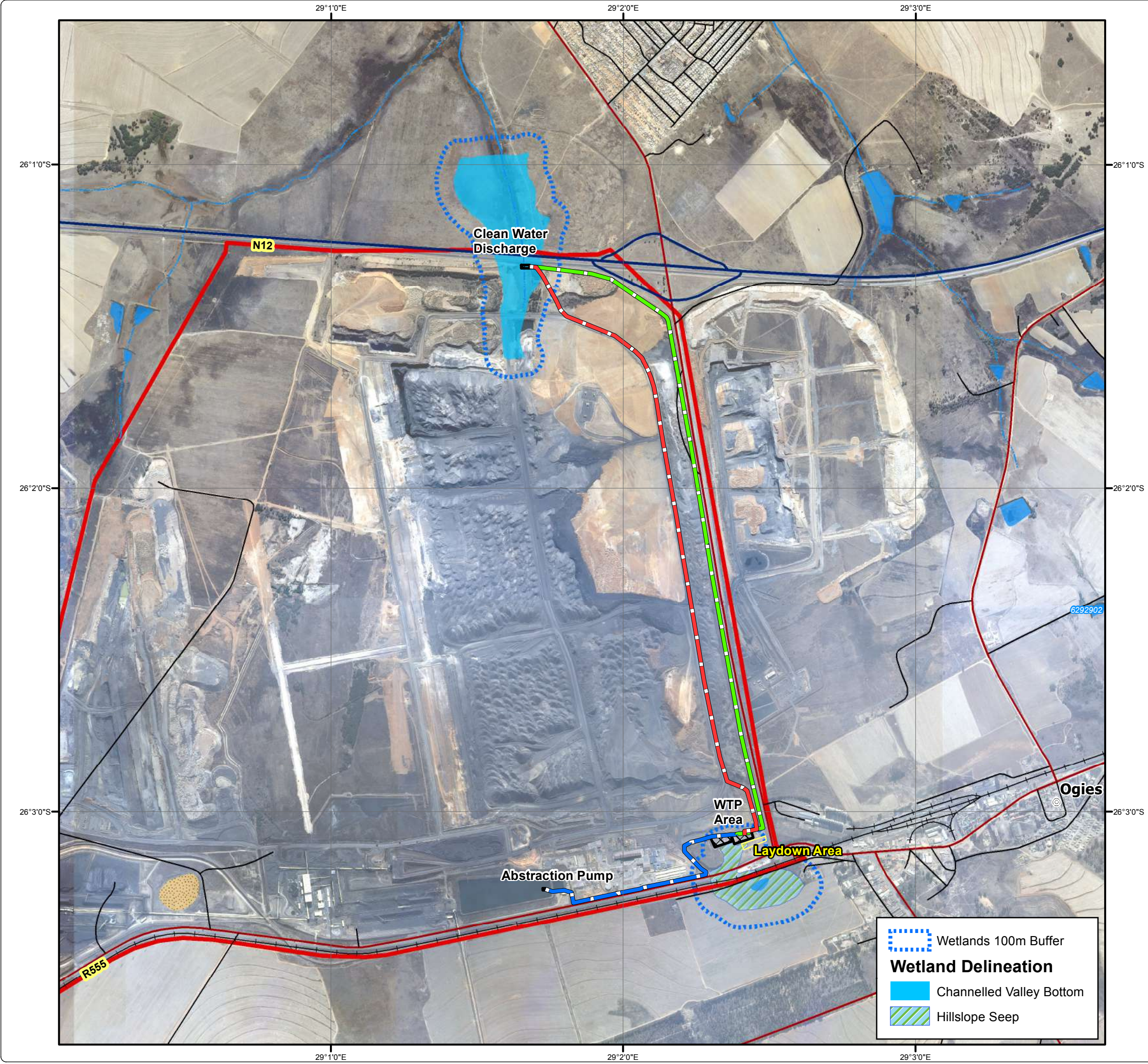
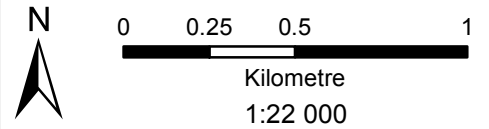
- Wetlands 100m Buffer
 - Channelled Valley Bottom
 - Hillslope Seep
- Wetland Delineation**



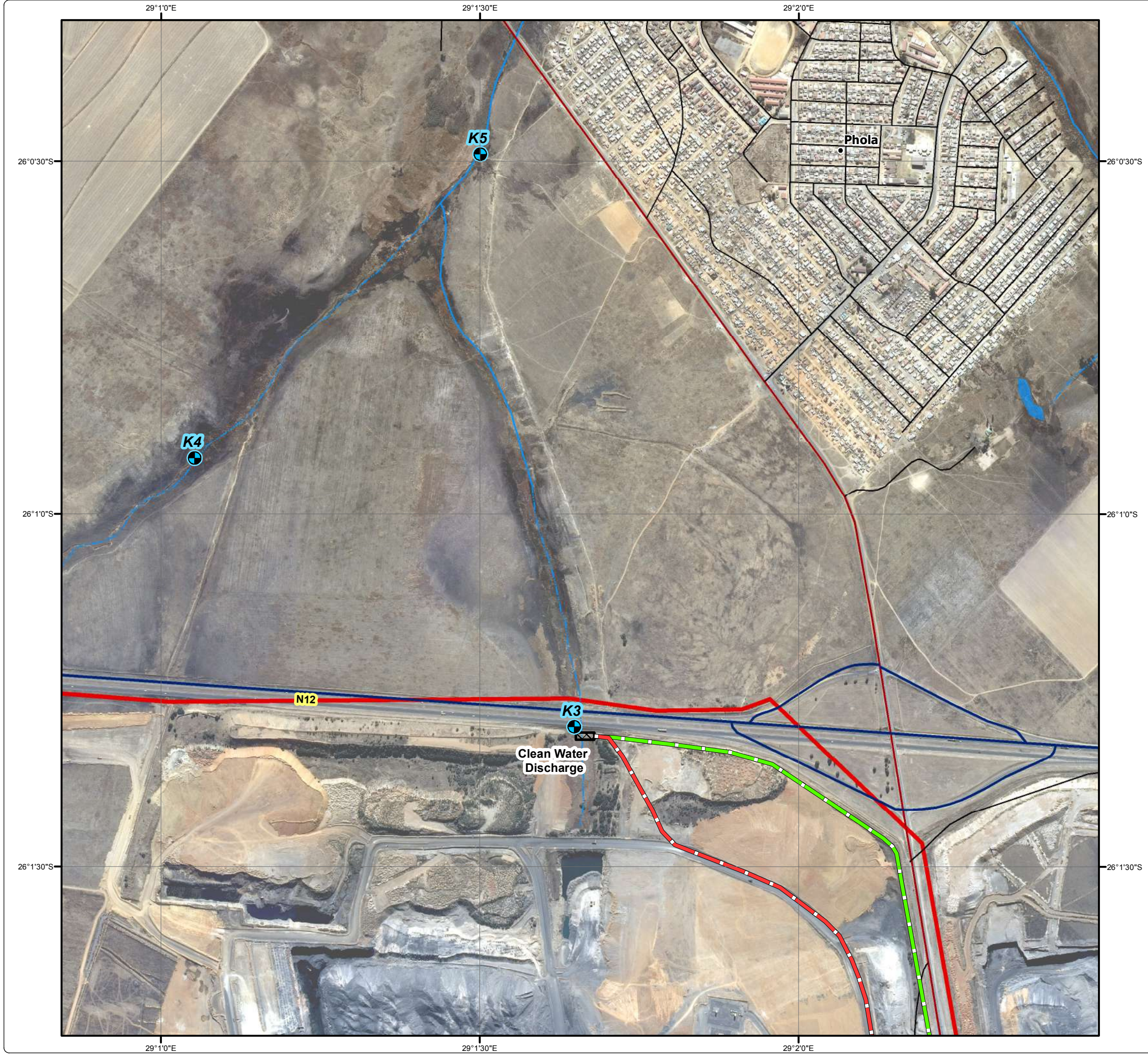
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 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Aquatic Sampling Points



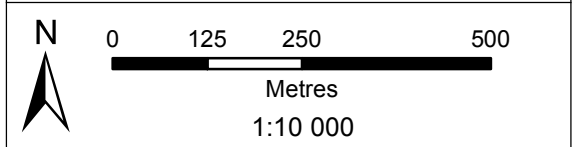
Legend

- Klipspruit Mining Right
- ⊕ Aquatics Sampling Point
- Settlement
- Arterial / National Route
- Main Road
- Dam Wall
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Infrastructure Area



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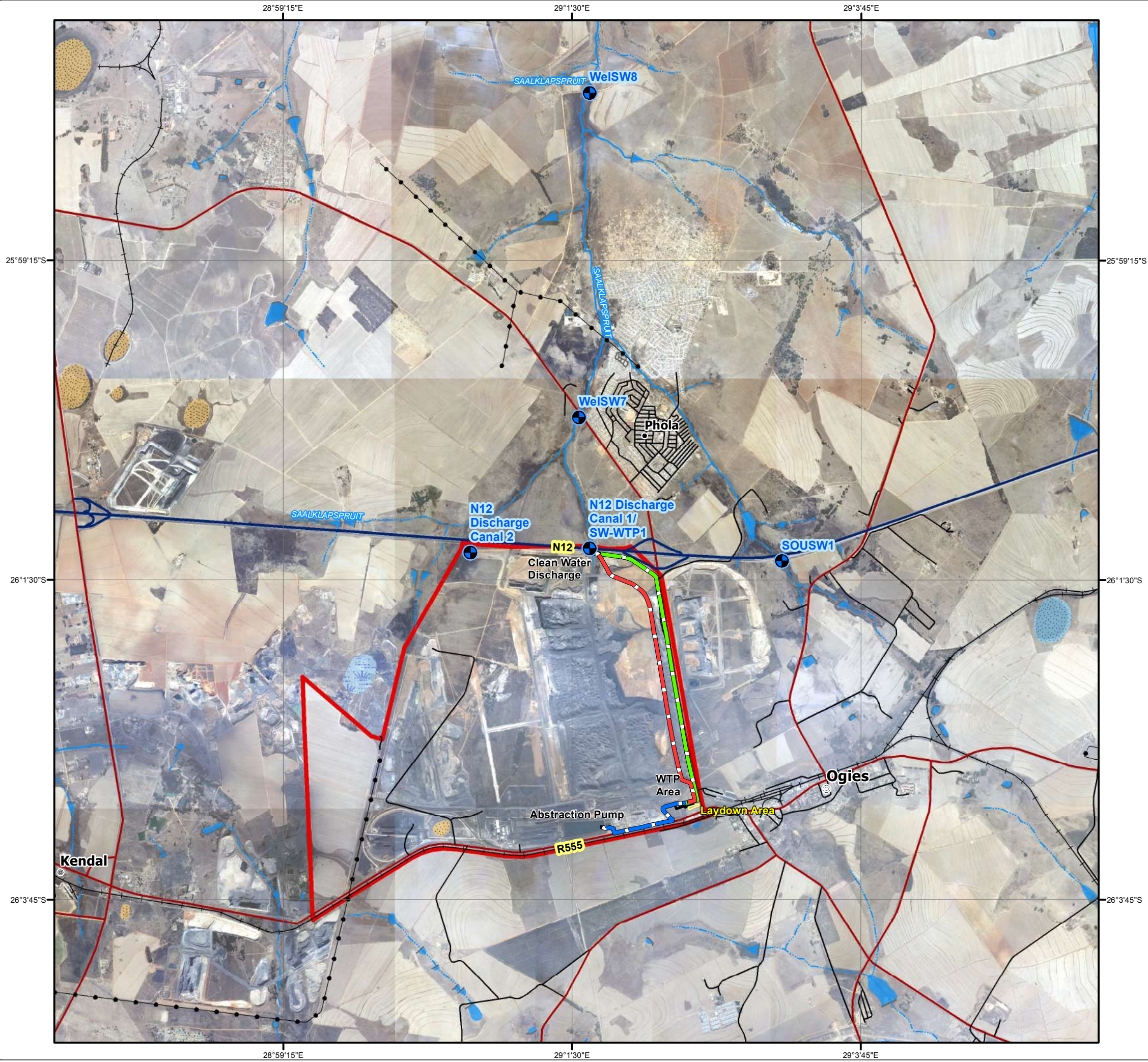
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 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Surface Water Monitoring Points

Legend

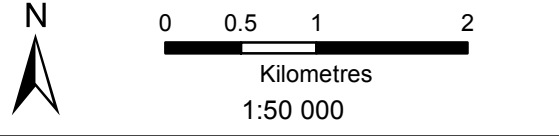
- Klipspruit Mining Right
- Surface Water Monitoring Point
- ⊙ Secondary Town
- Other Town
- Settlement
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- - - Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Non-Perennial Pan / Stream
- Perennial Pan
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Area
- Temporary Laydown Area




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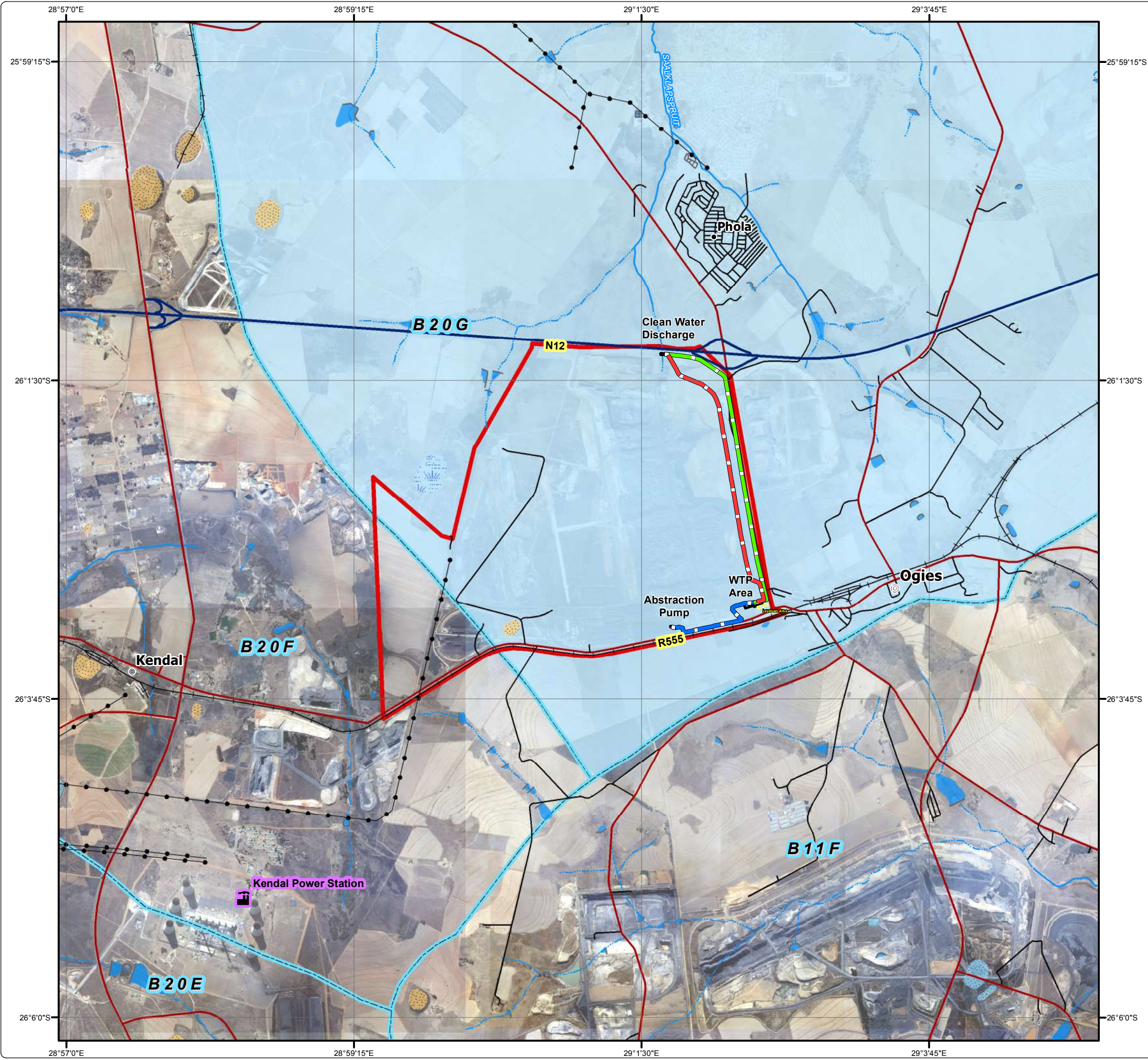
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 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Quaternary Catchments

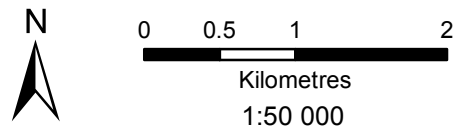
Legend

- Klipspruit Mining Right
- Secondary Town
- Other Town
- Settlement
- Power Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Non-Perennial Pan / Stream
- Perennial Pan
- Quaternary Catchment
- Affected Catchment
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Areas
- Temporary Laydown Area



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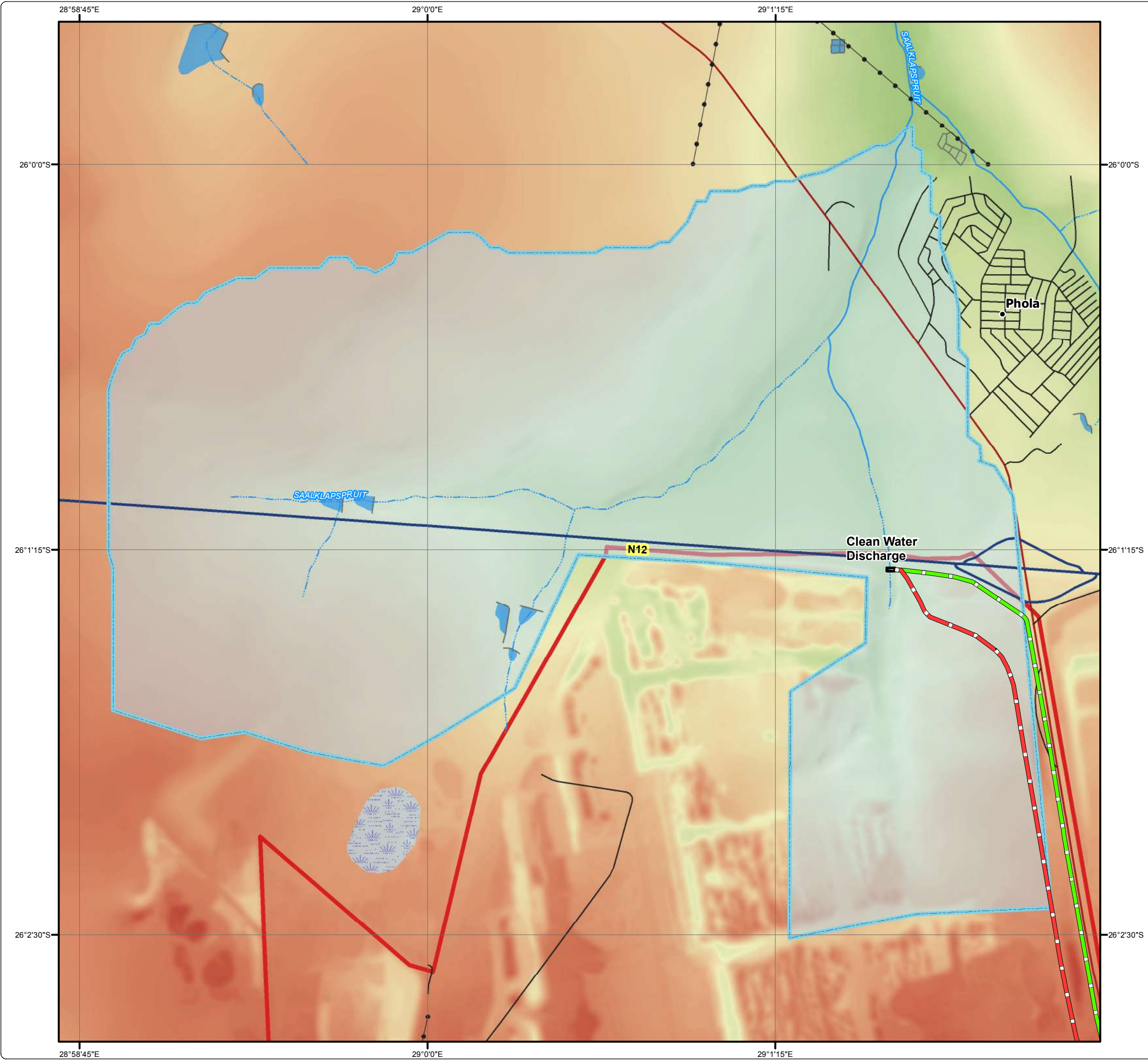
Projection: Transverse Mercator Ref #: cwb.SOU5014.201808.079
 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Delineated Catchment

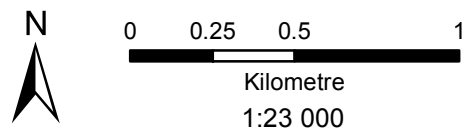
Legend

- Klipspruit Mining Right
- Settlement
- Arterial / National Route
- Main Road
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Infrastructure Area
- Delineated_Catchment
- Delineated Catchment
- Elevation (m.a.m.s.l)**
- High : 1600
- Low : 1450



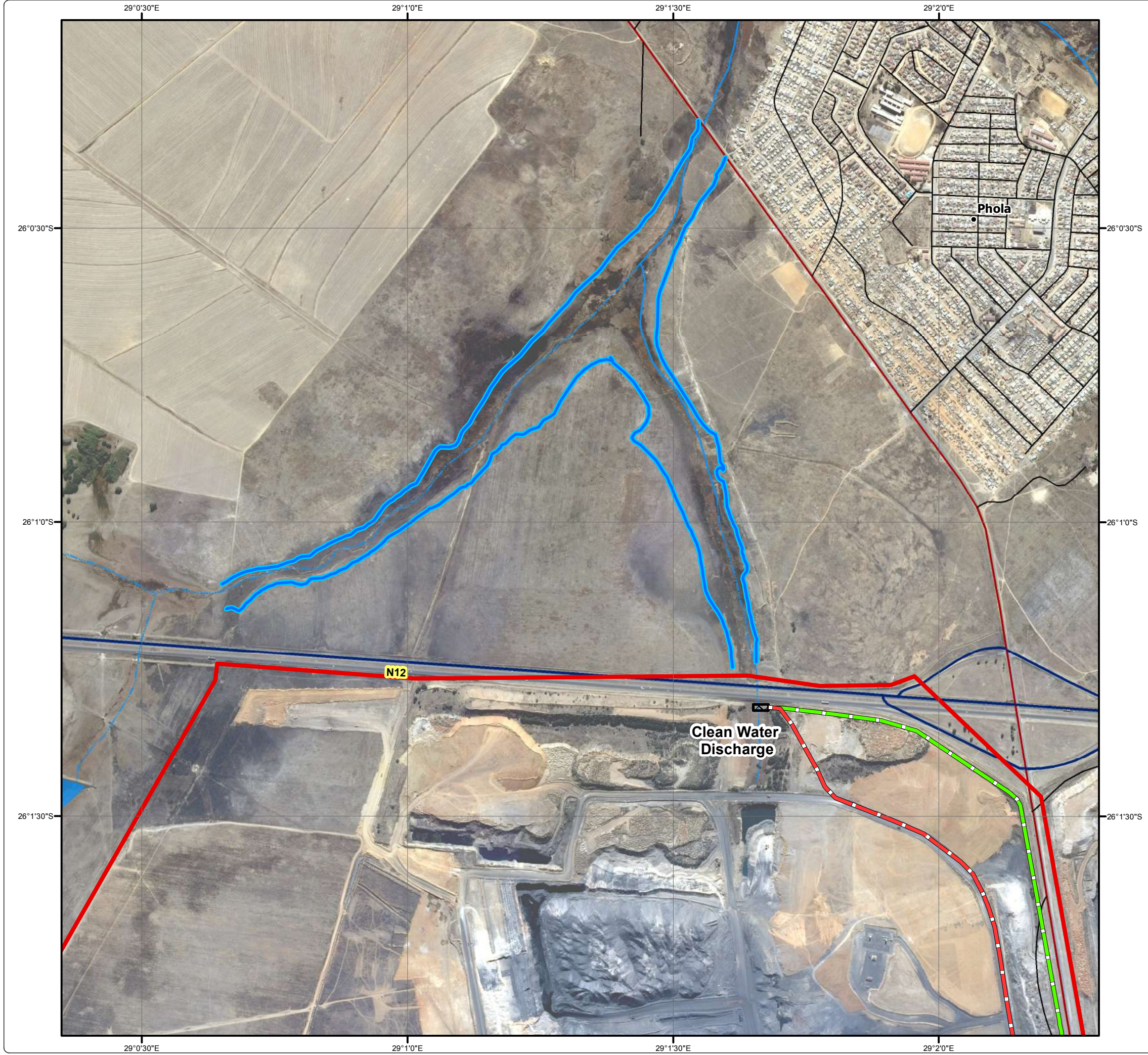
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 Datum: WGS 1984 Revision Number: 1
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Klipspruit Colliery Water Treatment Plant

Modelled Floodline Scenarios



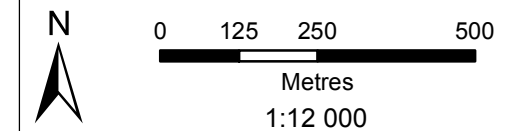
Legend

- Klipspruit Mining Right
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Dam / Lake
- 1:100yr Floodline**
- Post-Discharge
- Pre-Discharge
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Infrastructure Areas



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Central Meridian: 29°E	Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Groundwater Monitoring Boreholes

Legend

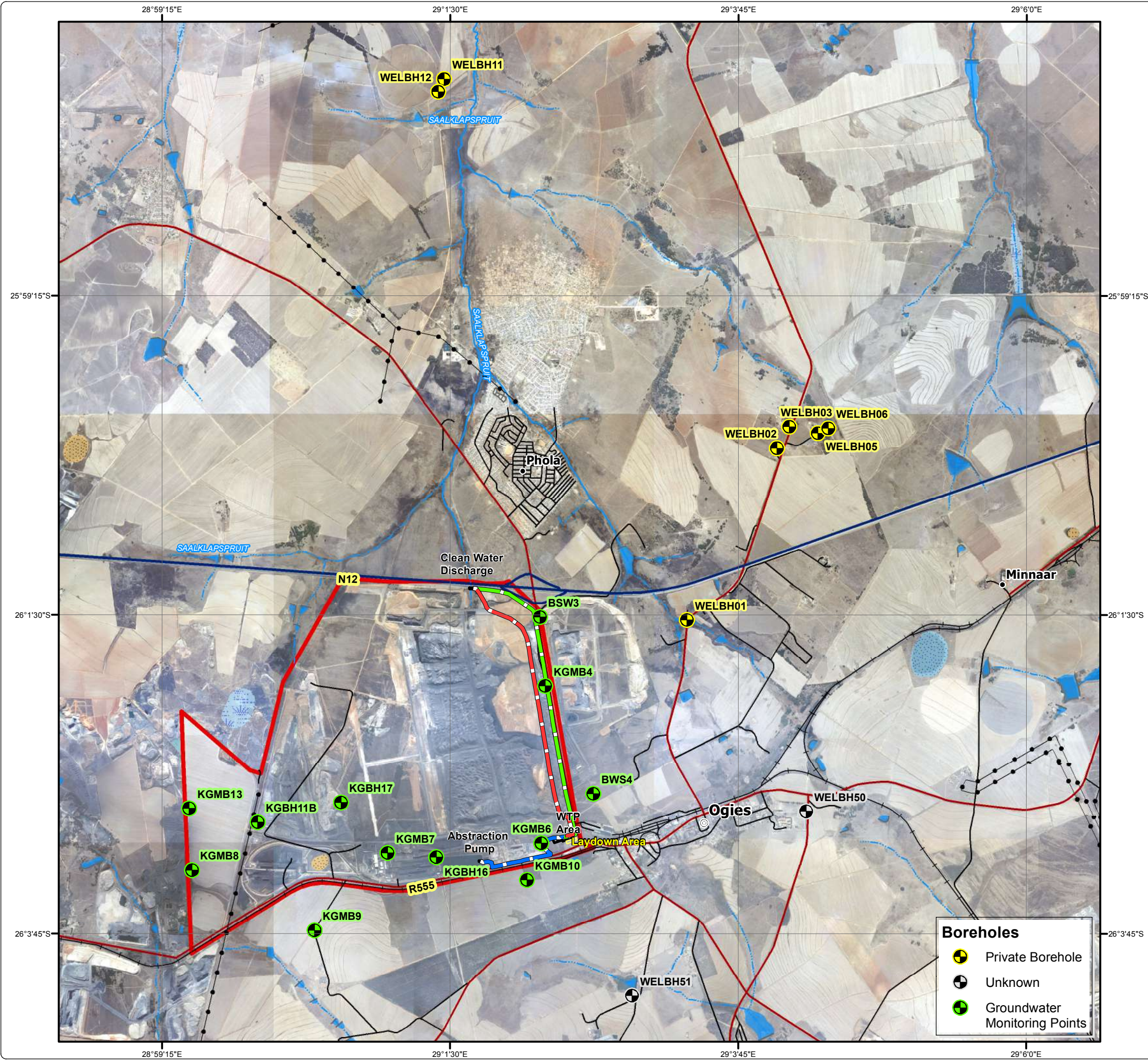
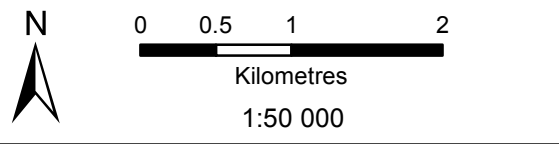
- Klipspruit Mining Right
 - Secondary Town
 - Settlement
 - Power Line
 - Arterial / National Route
 - Main Road
 - Minor Road
 - Non-Perennial Stream
 - Perennial Stream
 - Dam Wall
 - Dam / Lake
 - Non-Perennial Pan / Stream
 - Perennial Pan
- Proposed Infrastructure**
- Discharge Line (Option 1)
 - Discharge Line (Option 2)
 - Feed Water Line to KPS WTP
 - Infrastructure Area
 - Temporary Laydown Area

- Boreholes**
- Private Borehole
 - Unknown
 - Groundwater Monitoring Points



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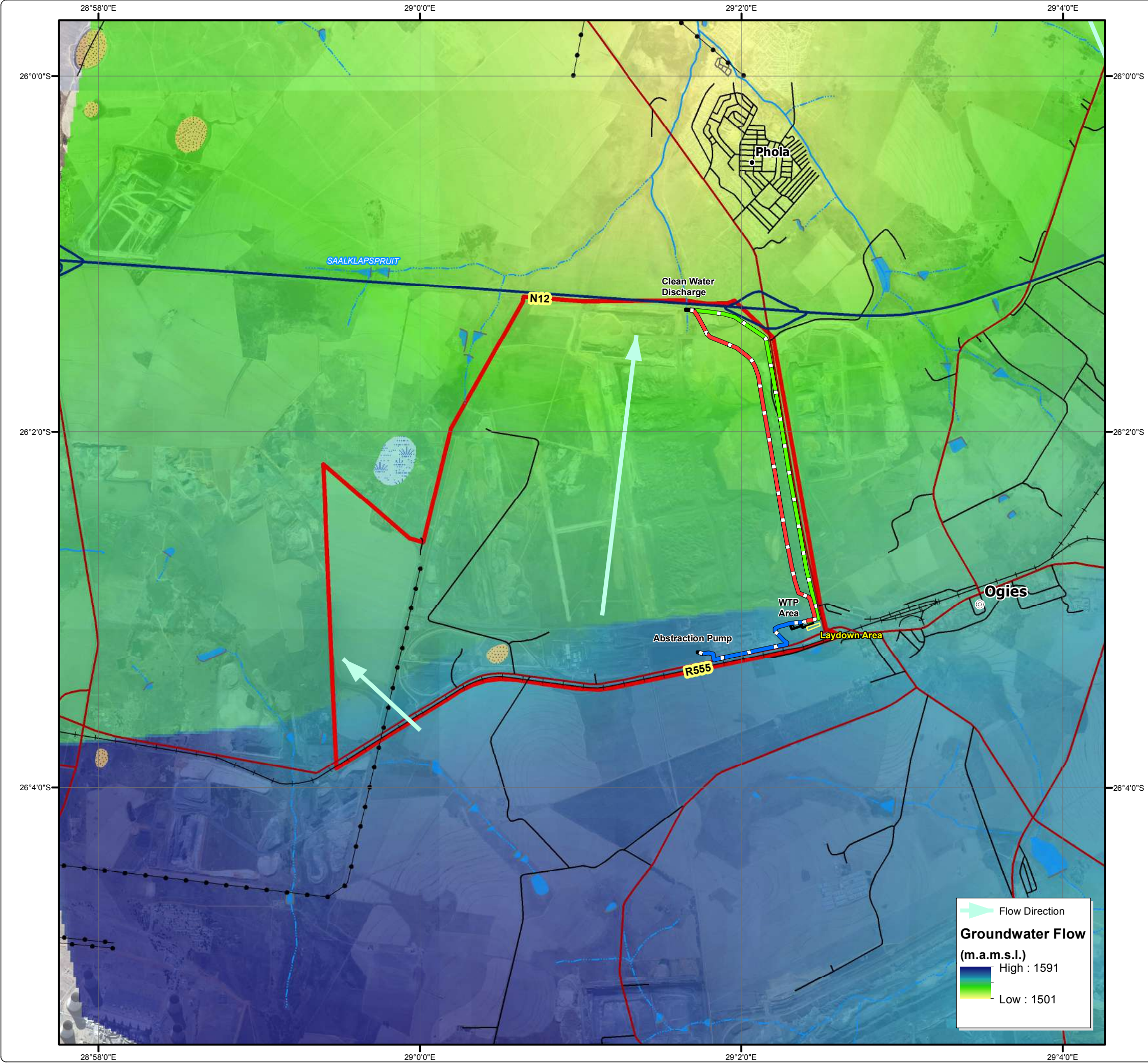
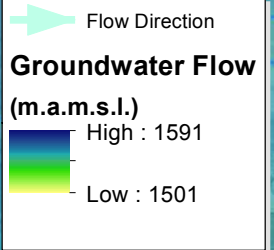
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 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Groundwater Flow and Direction

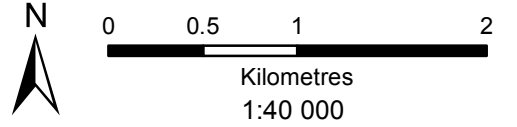
Legend

- Project Area
- Secondary Town
- Settlement
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Non-Perennial Pan / Stream
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Area
- Temporary Laydown Area



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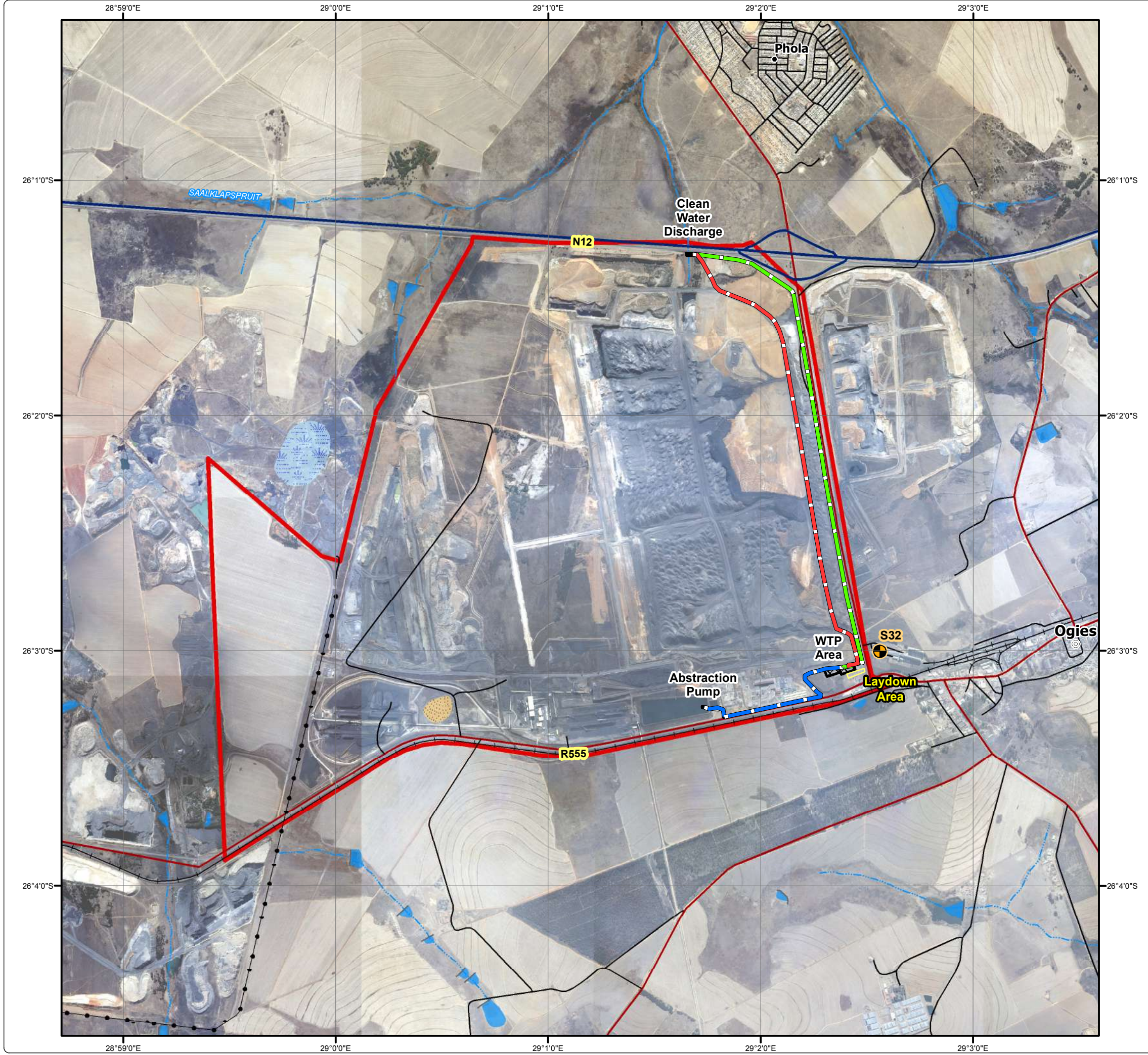
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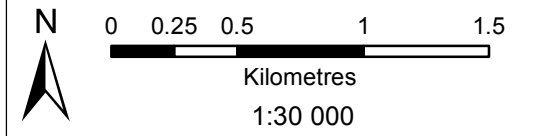
Klipspruit Colliery Water Treatment Plant Noise Monitoring Location

Legend

- Klipspruit Mining Right
- Noise Monitoring Location
- Secondary Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- Railway Line
- Dam Wall
- Non-Perennial Stream
- Perennial Stream
- Dam / Lake
- Non-Perennial Pan / Stream
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Area
- Temporary Laydown Area
























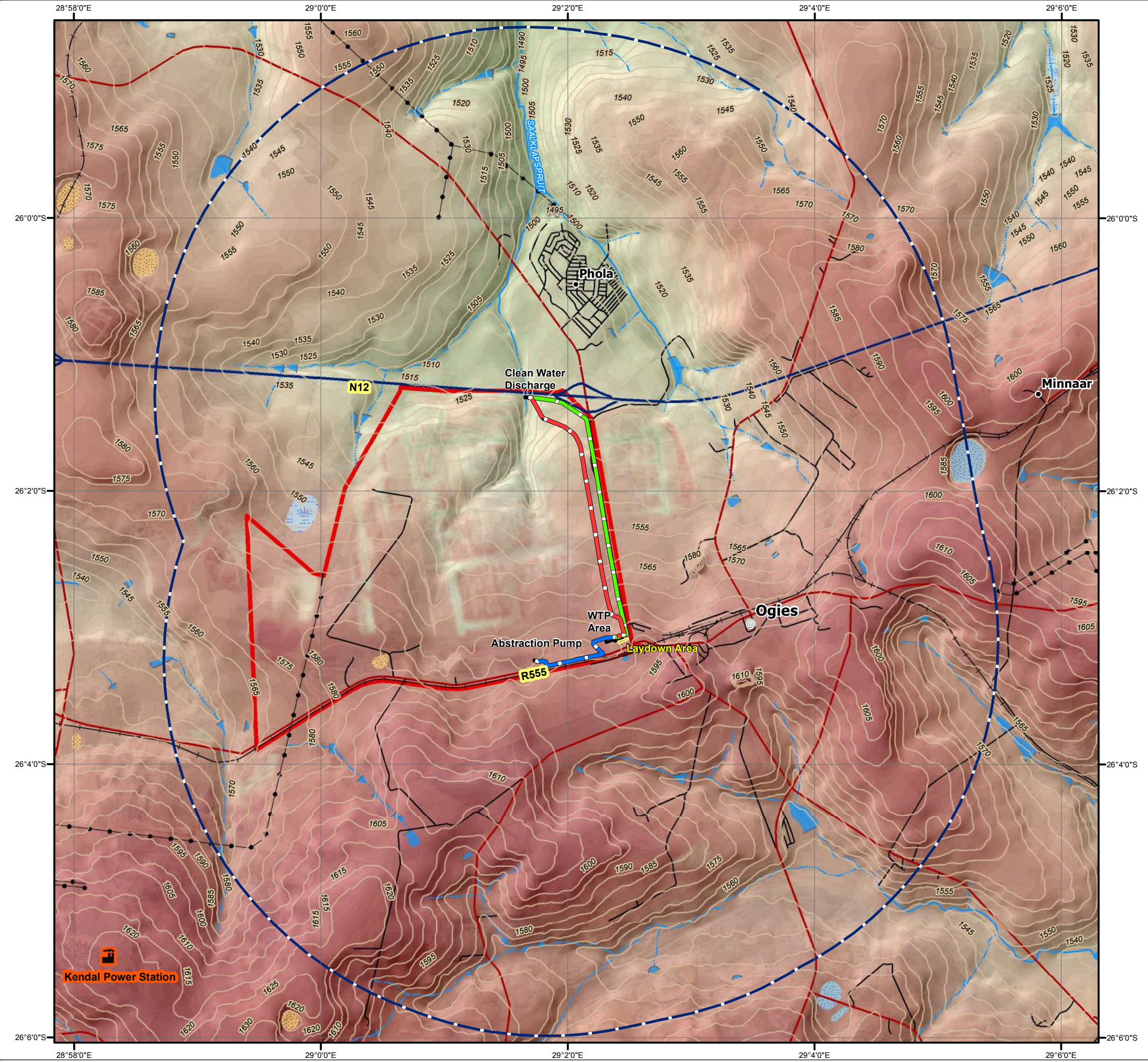
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Datum: WGS 1984 Revision Number: 1
Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Topographical Model

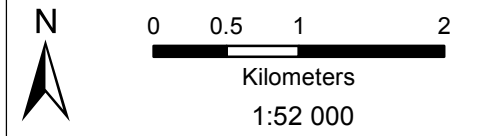
Legend

-  Klipspruit Mining Right
-  Secondary Town
-  Settlement
-  Power Station
-  5m Contour
-  Power Line
-  Arterial / National Route
-  Main Road
-  Minor Road
-  Non-Perennial Stream
-  Perennial Stream
-  Dam Wall
-  Dam / Lake
-  Wetland
- Proposed Infrastructure**
-  Discharge Line (Option 1)
-  Discharge Line (Option 2)
-  Feed Water Line to KPS WTP
-  Infrastructure Areas
-  Temporary Laydown Area
-  5km Visual Zone of Influence
- Elevation (m.a.m.s.l.)**
-  High : 1600
Low : 1450

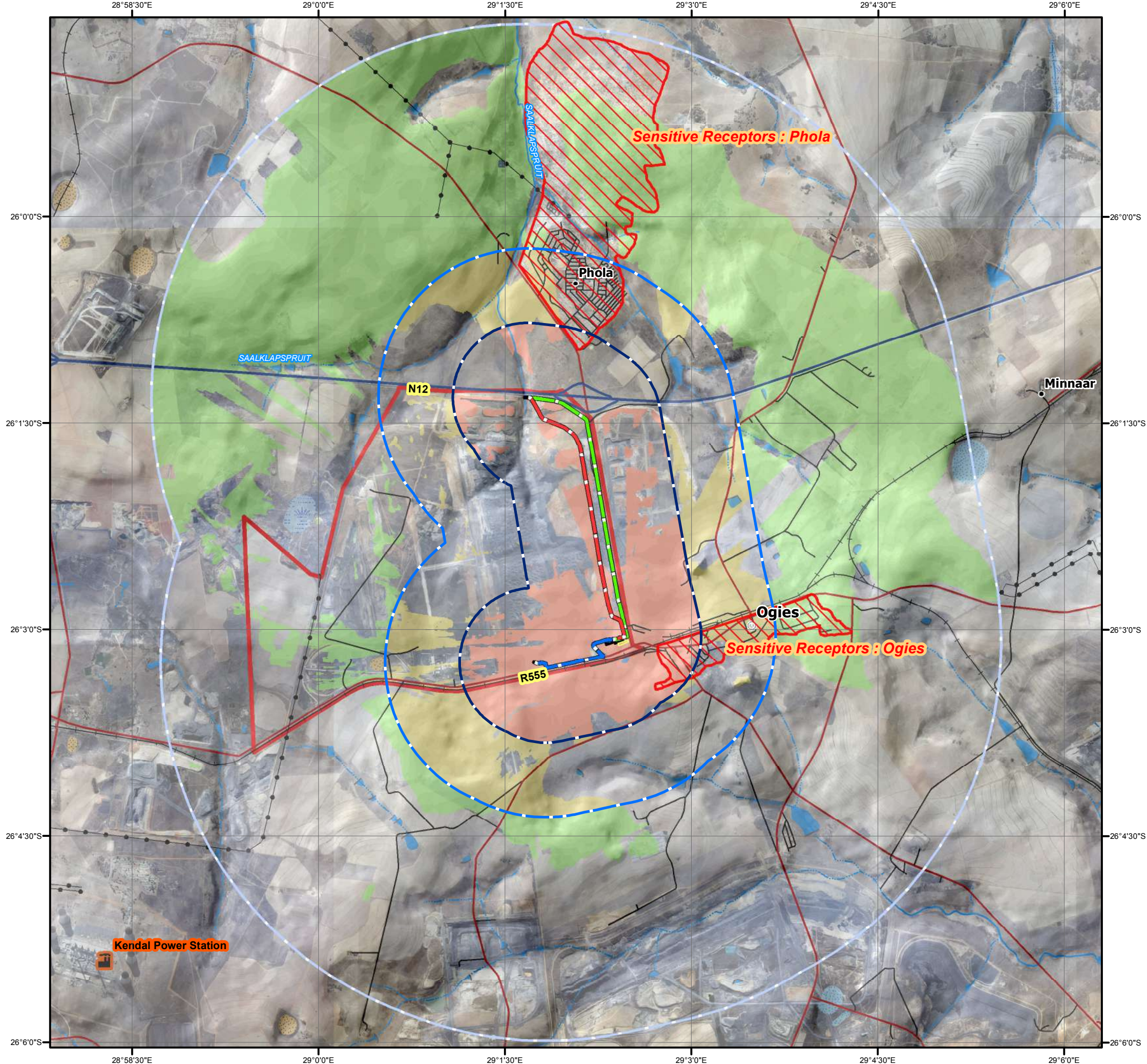


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Projection: Transverse Mercator Ref #: cwb.SOU5014.201806.086
 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Proposed Infrastructure Viewshed



Legend

- Klipspruit Mining Right
- Secondary Town
- Settlement
- Power Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Areas
- Temporary Laydown Area
- 1km Visual Zone of Influence
- 2km Visual Zone of Influence
- 5km Visual Zone of Influence
- Sensitive Receptors
- Visibility**
- High
- Medium
- Low



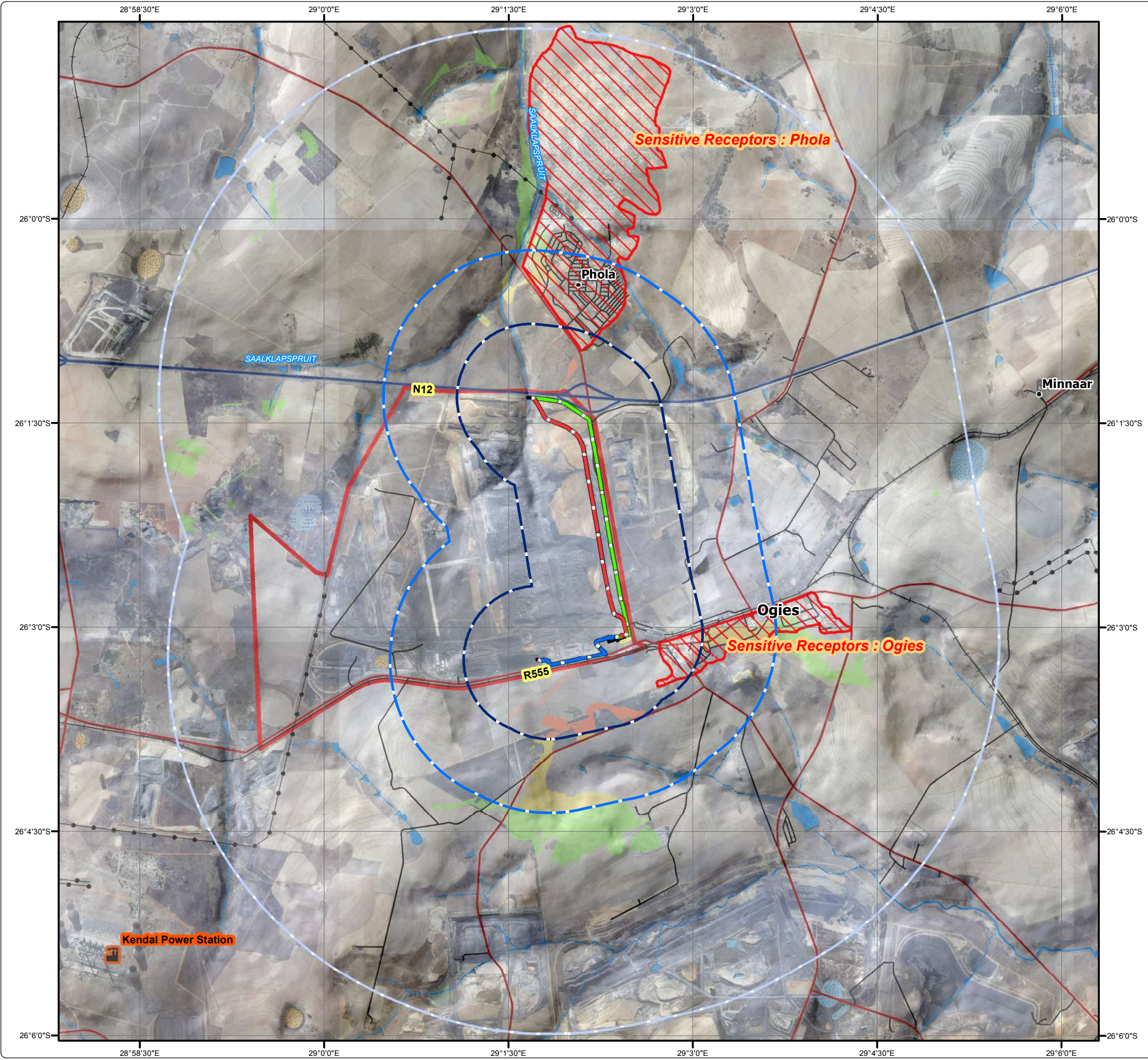
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Projection: Transverse Mercator Ref #: cwb.SOU5014.201806.088
 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Proposed Infrastructure Only Viewshed



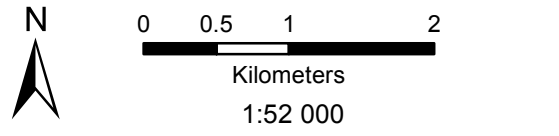
Legend

- Klipspruit Mining Right
- Secondary Town
- Settlement
- Power Station
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Areas
- Temporary Laydown Area
- 1km Visual Zone of Influence
- 2km Visual Zone of Influence
- 5km Visual Zone of Influence
- Sensitive Receptors
- Visibility**
- High
- Low
- Medium



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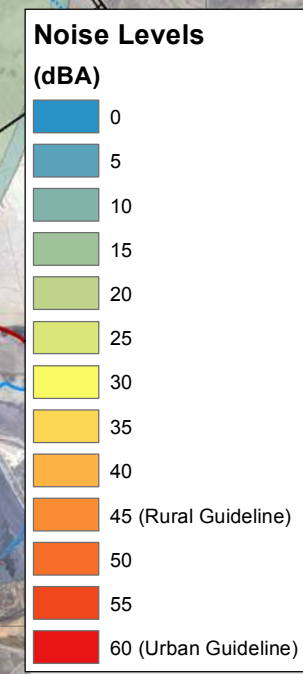
Projection: Transverse Mercator Ref #: cwb.SOU5014.201806.089
 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Construction Noise Propagation

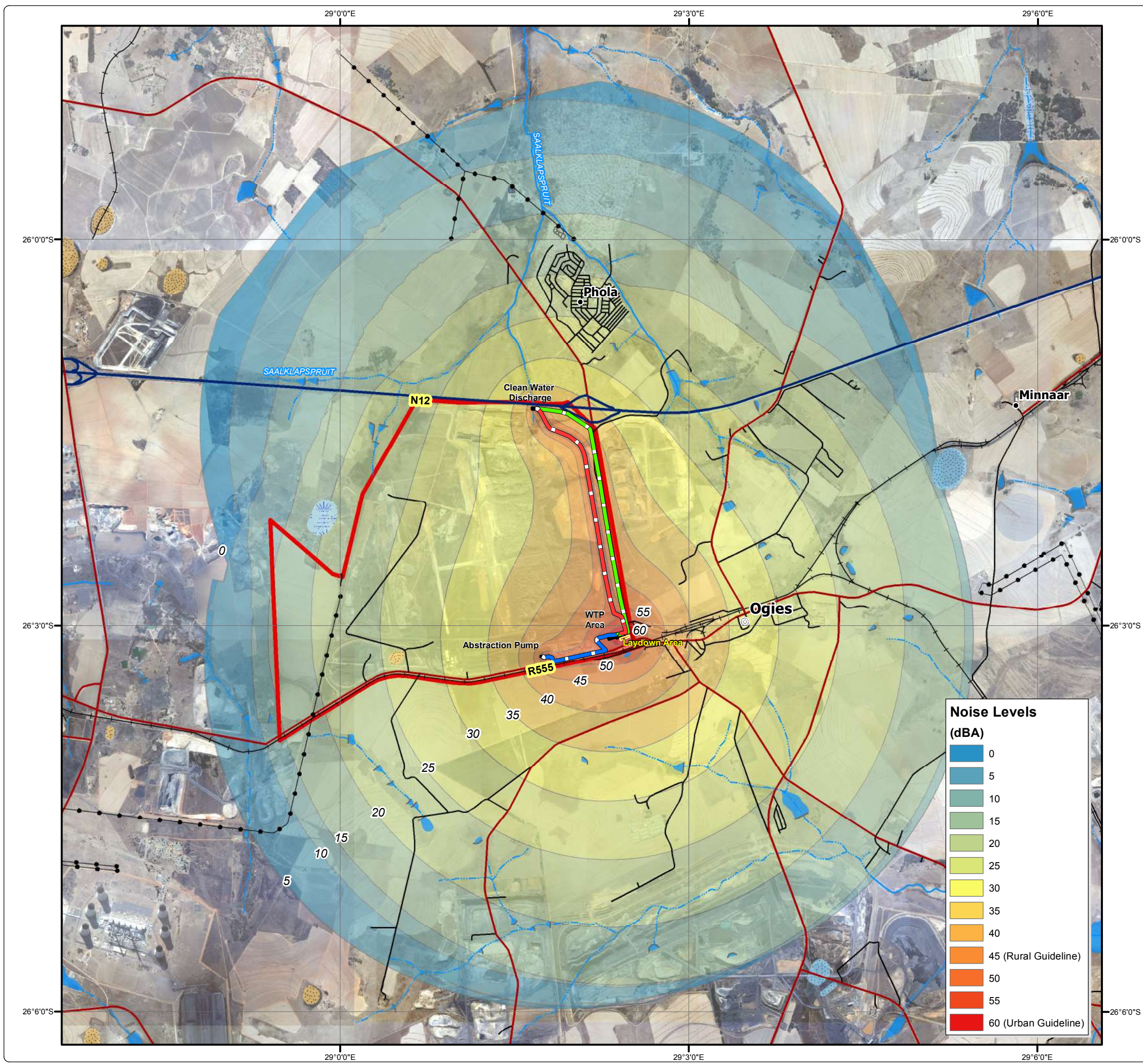
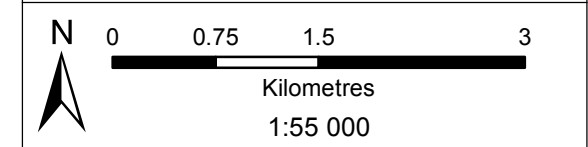
Legend

- Klipspruit Mining Right
- Secondary Town
- Settlement
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Area
- Temporary Laydown Area



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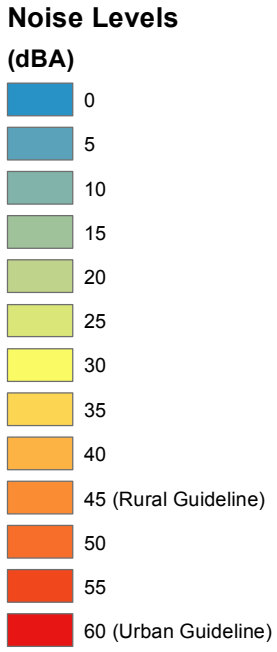
Projection: Transverse Mercator Ref #: ajm.SOU5014.201808.090
 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Operational Noise Propagation Daytime

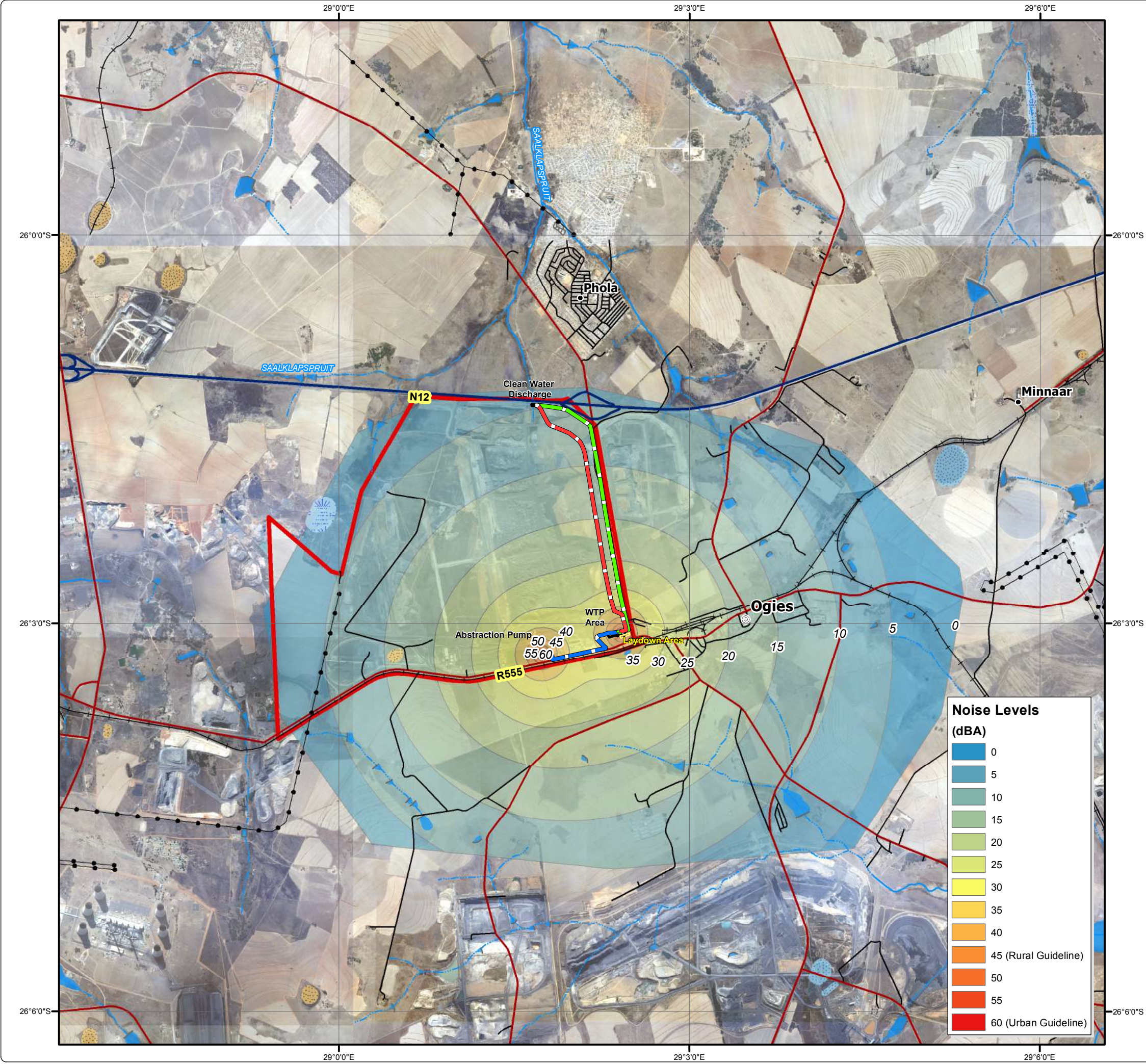
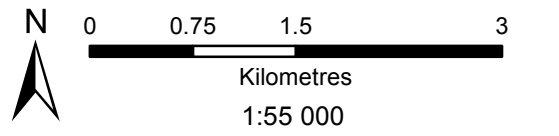
Legend

- Project Area
- Secondary Town
- Settlement
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Areas
- Temporary Laydown Area



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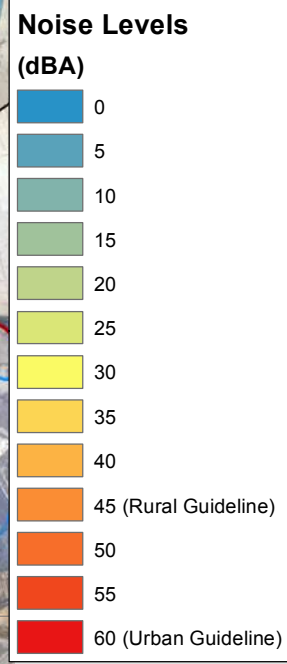
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 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 20/08/2018



Klipspruit Colliery Water Treatment Plant Operational Noise Propagation Night Time

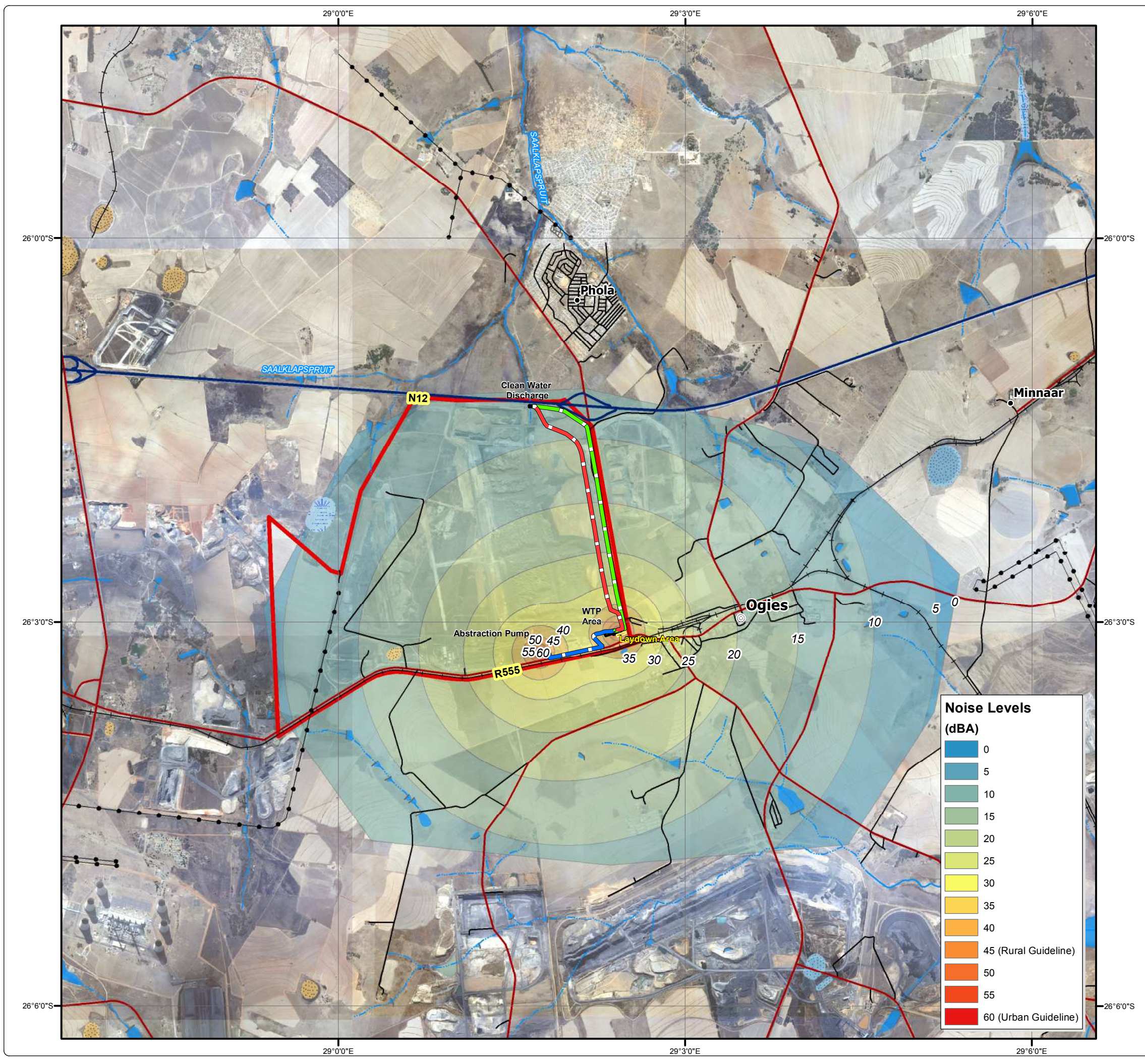
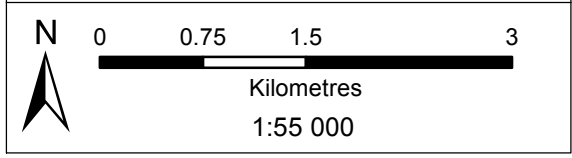
Legend

- Project Area
- Secondary Town
- Settlement
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Non-Perennial Stream
- Perennial Stream
- Dam Wall
- Dam / Lake
- Wetland
- Proposed Infrastructure**
- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP
- Infrastructure Areas
- Temporary Laydown Area



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Projection: Transverse Mercator Ref #: cw.SOU5014.201808.091
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Klipspruit Colliery Water Treatment Plant Composite Plan

Identified Heritage Resource

Wetland Delineation

- Channelled Valley Bottom
- Hillslope Seep
- Wetlands 100m Buffer

Mpumalanga Biodiversity Sector Plan (2014)

- CBA Optimal
- Other Natural Areas
- Moderately modified- Old lands
- Heavily modified

Legend

- Klipspruit Mining Right
- Power Station
- Secondary Town
- Other Town
- Settlement
- Power Line
- Arterial / National Route
- Main Road
- Minor Road
- Perennial Stream
- Dam Wall
- Dam / Lake

Proposed Infrastructure

- Discharge Line (Option 1)
- Discharge Line (Option 2)
- Feed Water Line to KPS WTP

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 Datum: WGS 1984 Revision Number: 1
 Central Meridian: 29°E Date: 27/08/2018

