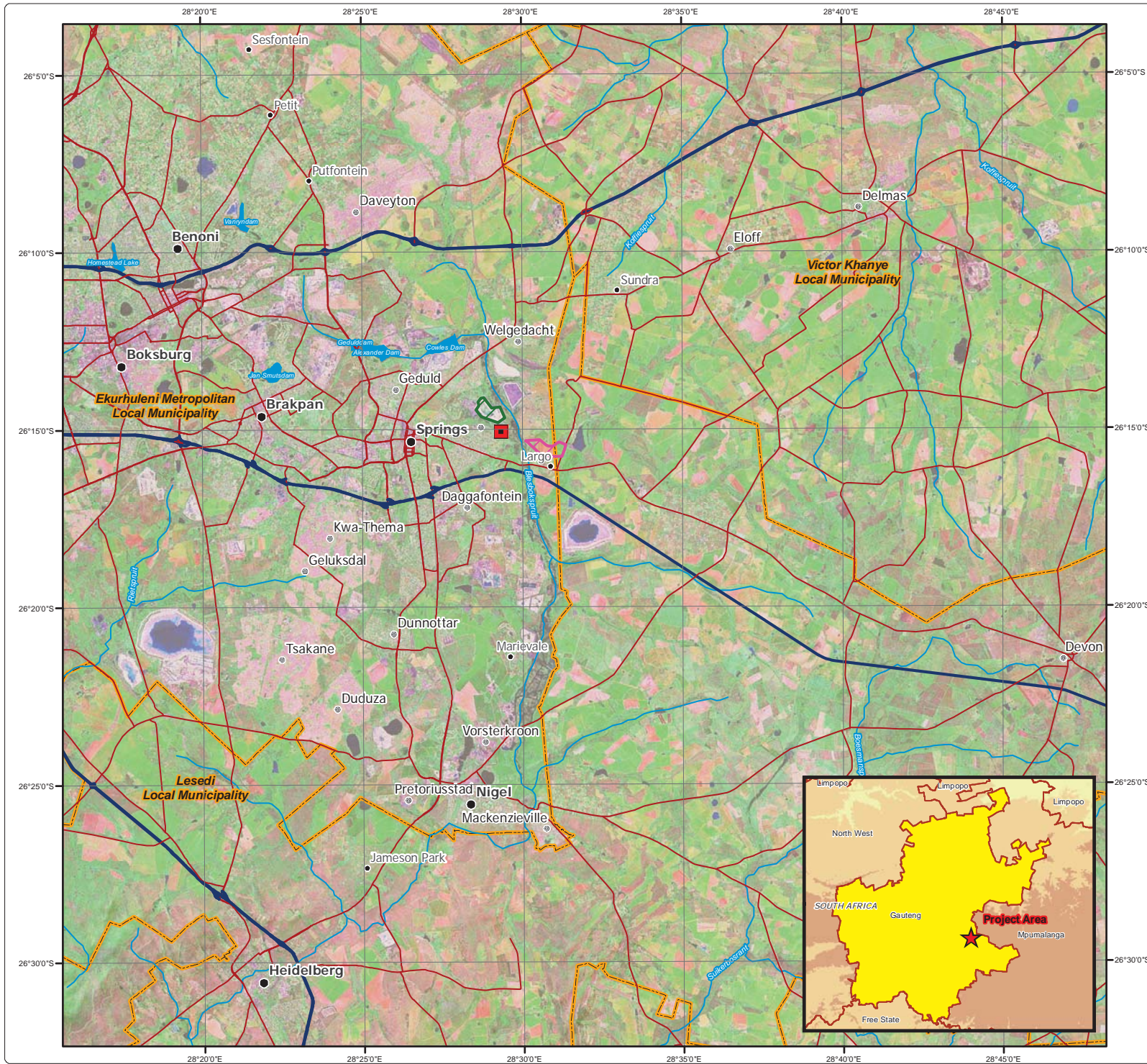


Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin Regional Setting

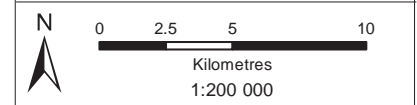
Legend

- Grootvlei Mine Shaft No 3
- Proposed Sites**
- Grootvlei 6L16
- Largo Site 4
- Major Town
- ⊙ Secondary Town
- ⊙ Other Town
- Settlement
- Main Road
- National Road
- River
- Dam
- ▭ Local Municipal Boundary



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Projection: Transverse Mercator Ref #: idp.AEC2588.201401.073
 Datum: WGS 1994 Revision Number: 1
 Central Meridian: 27°E Date: 10/01/2014


















Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Local Setting

Legend

-  Grootvlei Mine Shaft No 3
-  Pipeline to Grootvlei 6L16
-  Pipeline to Largo Site 4

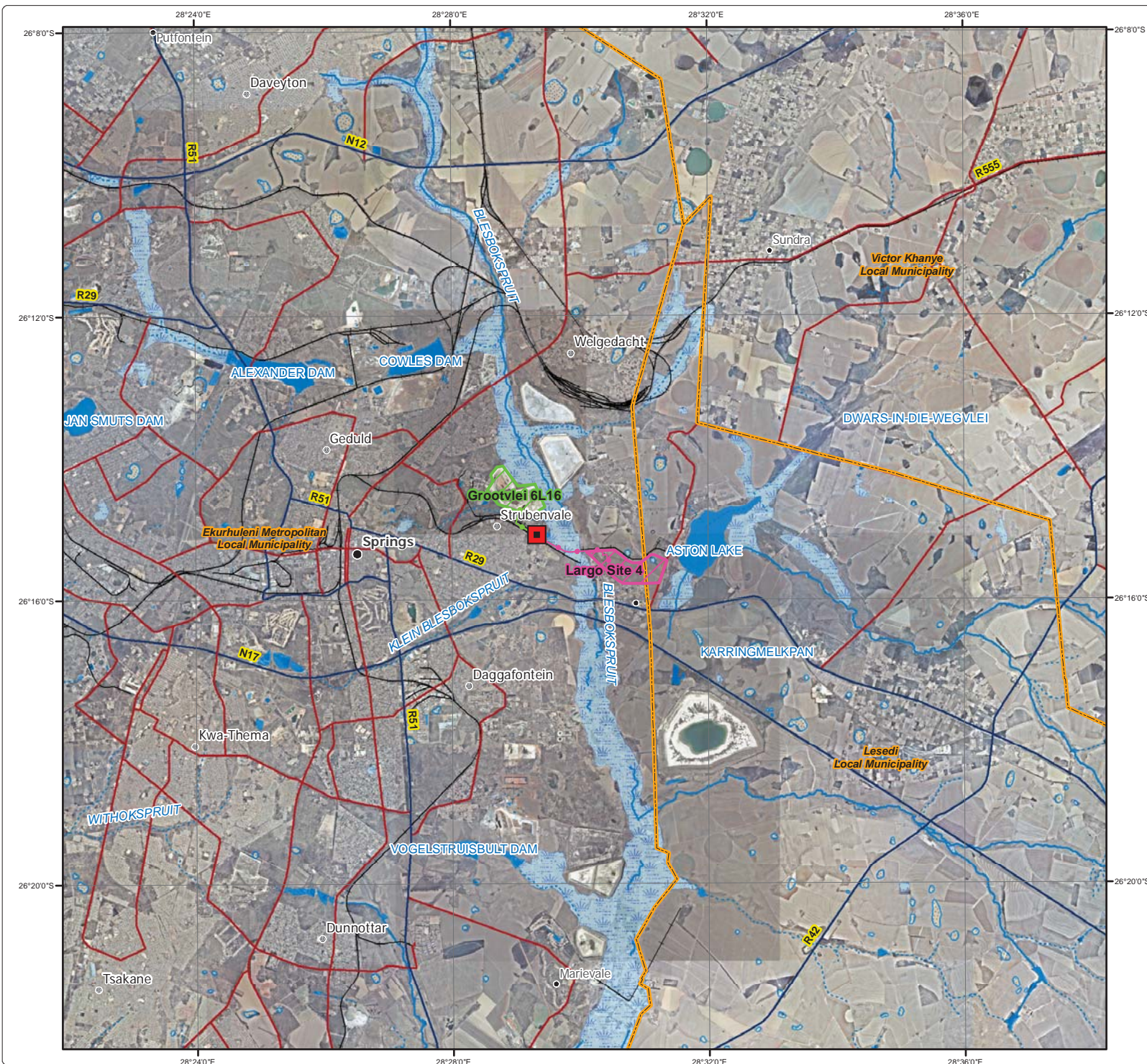
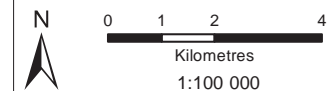
Proposed Sites

-  Grootvlei 6L16
-  Largo Site 4
-  Major Town
-  Other Town
-  Settlement
-  Arterial / National Route
-  Main Road
-  Railway Line
-  Perennial River
-  Non-Perennial River
-  Dam
-  Non-Perennial Pan
-  Perennial Pan
-  Wetland
-  Local Municipal Boundary





















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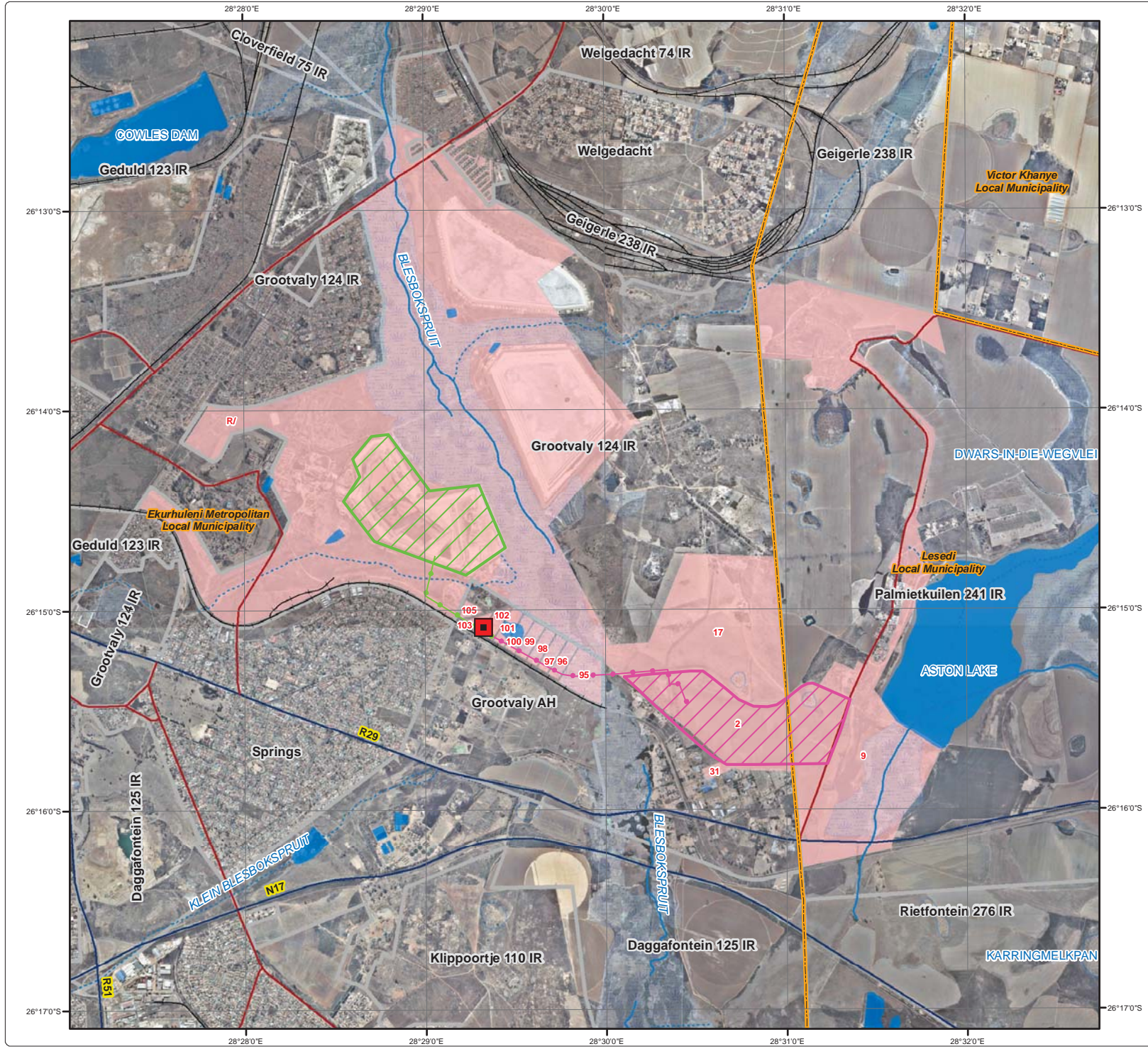
• Sustainability • Service • Positive Change • Professionalism • Future Focused • Integrity
 Projection: Transverse Mercator Ref #: anp.AEC2588.201312.105
 Datum: WGS 1994 Revision Number: 2
 Central Meridian: 29°E Date: 04/03/2014



Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Land Tenure - Overview

- Legend**
-  Grootvlei Mine Shaft No 3
 -  Pipeline to Grootvlei 6L16
 -  Pipeline to Largo Site 4
 - Proposed Sites**
 -  Grootvlei 6L16
 -  Largo Site 4
 -  Arterial / National Route
 -  Main Road
 -  Railway Line
 -  Perennial River
 -  Non-Perennial River
 -  Dam
 -  Non-Perennial Pan
 -  Perennial Pan
 -  Wetland
 -  Farm Boundary
 -  Farm Portion
 -  Directly Affected Farm Portion
 -  Local Municipal Boundary



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Projection: Transverse Mercator Ref #: anp.AEC2588.201401.171
 Datum: WGS 1994 Revision Number: 1
 Central Meridian: 29°E Date: 04/03/2014


















N 0 0.5 1 2
 Kilometres
 1:35 000

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Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Project Area

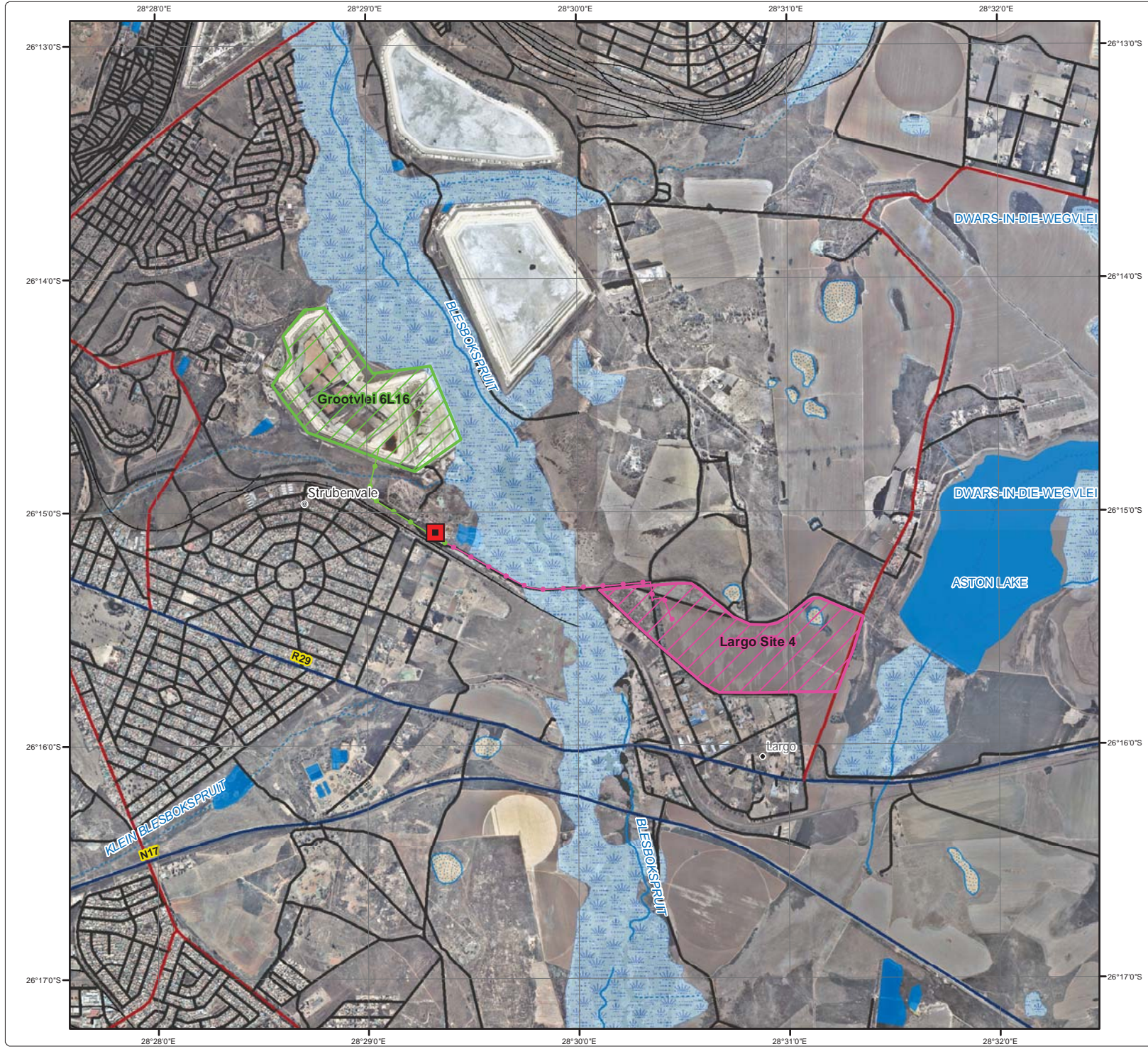
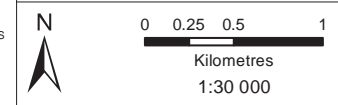
Legend

-  Grootvlei Mine Shaft No 3
-  Pipeline to Grootvlei 6L16
-  Pipeline to Largo Site 4
- Proposed Sites**
-  Grootvlei 6L16
-  Largo Site 4
-  Major Town
-  Other Town
-  Settlement
-  Arterial / National Route
-  Main Road
-  Minor Road; TRACK FOOTPATH
-  Railway Line
-  Perennial River
-  Non-Perennial River
-  Dam
-  Non-Perennial Pan
-  Perennial Pan
-  Wetland



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Projection: Transverse Mercator Ref #: anp.AEC2588.201312.105
 Datum: WGS 1994 Revision Number: 2
 Central Meridian: 29°E Date: 04/03/2014



Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Project Alternative Sites

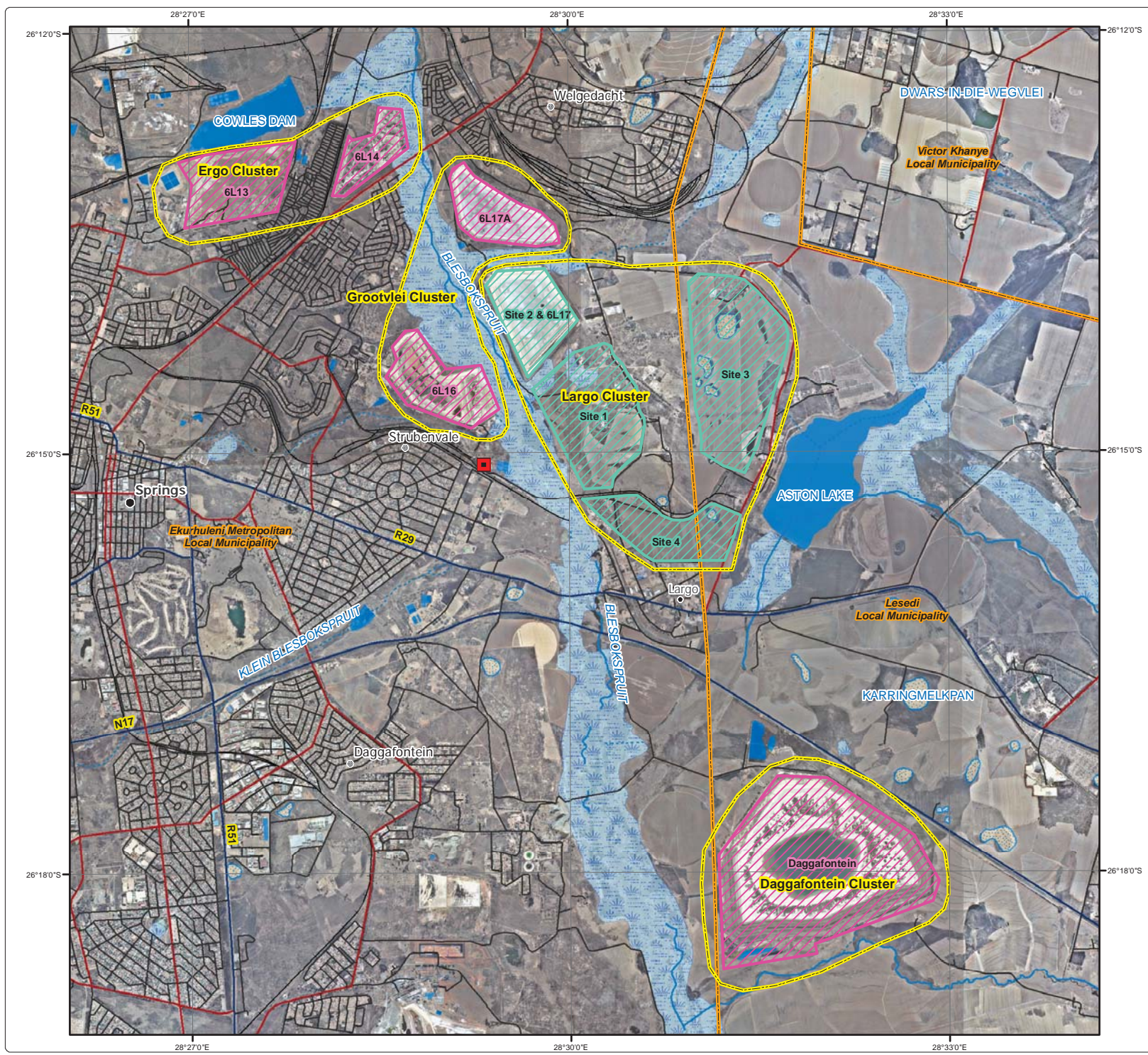
Legend

- Grootvlei Mine Shaft No 3
- Major Town
- ⊙ Other Town
- Settlement
- Arterial / National Route
- Main Road
- Minor Road
- +— Railway Line
- Perennial River
- - - Non-Perennial River
- Dam
- Non-Perennial Pan
- Perennial Pan
- Wetland
- Local Municipal Boundary
- Clusters & Potential Sites**
- Clusters
- Largo Sites
- Digby Wells Identified Sites



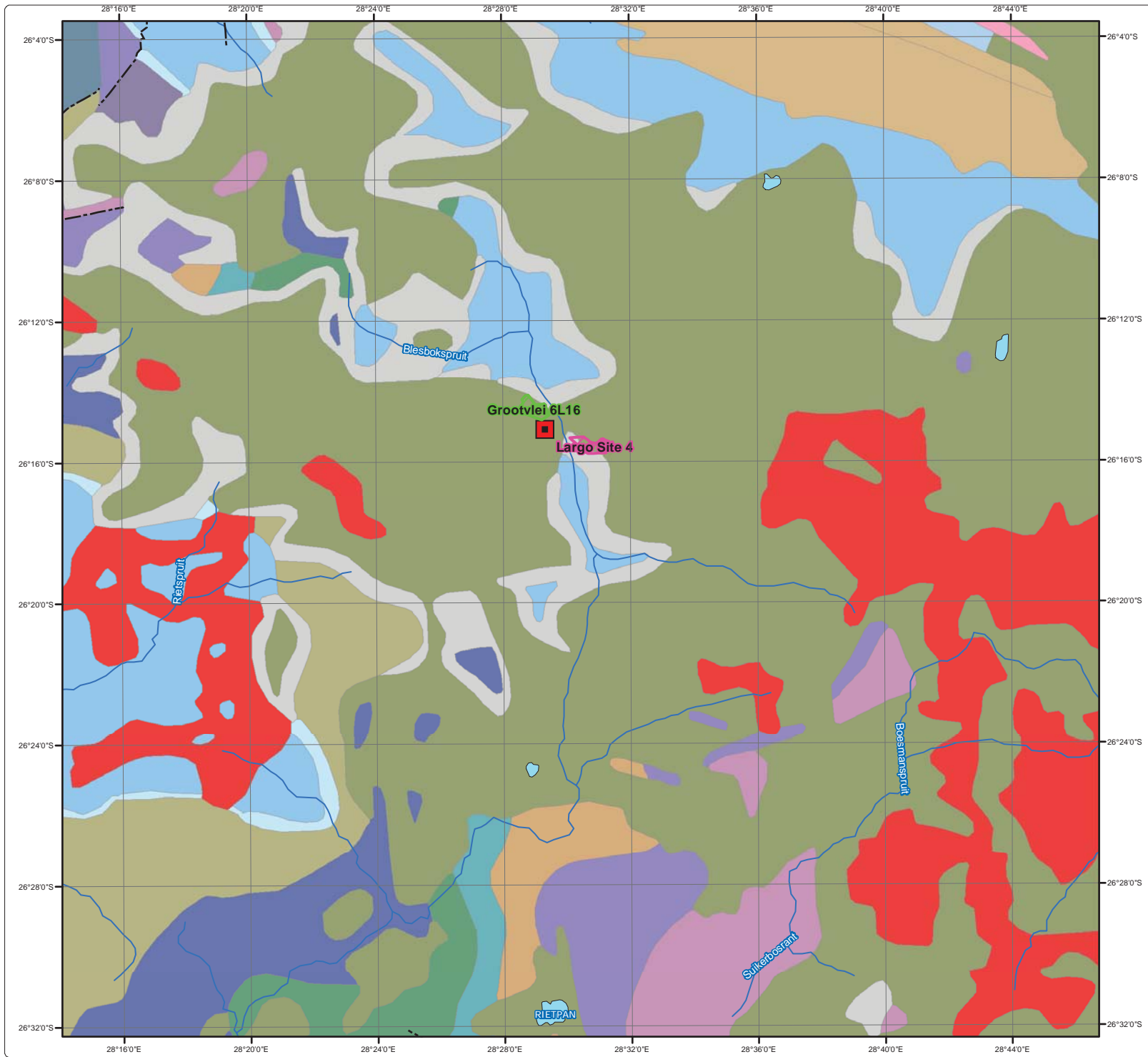
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Projection: Transverse Mercator Ref #: anp.AEC2588.201312.105
Datum: Hartbeeshoek 1994 Revision Number: 1
Central Meridian: 29°E Date: 16/01/2014



Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Regional Geology



Legend

Proposed Sites

- Grootvlei 6L16
- Largo Site 4
- Grootvlei Mine Shaft No 3

Observed Faults

- Observed Faults

Rivers

- Rivers

Dams

- Dams

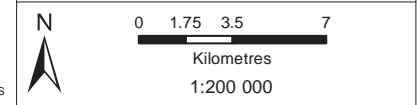
Geology

- Blekrakal Magnetite Gabbro, Rustenburg Layered
- Black Reef Fm, Transvaal Spgrp
- Daspoort Fm, Pretoria Grp
- Dwarsfontein Cplx
- Dwyka Grp, Karoo Spgrp
- Ecca Grp, Karoo Spgrp
- Government Sbgrp, West Rand Grp
- Halfway House Granite
- Hospital Hill Sbgrp, West Rand Grp
- Jeppestown Sbgrp, West Rand Grp
- Johannesburg Sbgrp, Central Rand Grp
- Kaffirskraal Cplx
- Karoo Dolente Sui
- Klipriversberg Grp, Ventersdorp Spgrp
- Lebowa Granite Sui, Bushveld Cplx
- Madzaringwe Fm, Karoo Spgrp
- Magaliesberg Fm, Pretoria Grp
- Malmansi Sbgrp, Chuniespoort Grp
- Piensaars River Cplx
- Platberg Grp, Ventersdorp Spgrp
- Pretoria Grp, Transvaal Spgrp
- Pyramid Gabbro-Norite, Rustenburg Layered Sui
- Rooiberg Grp, Transvaal Spgrp
- Schilpadnest Sbsul, Rustenburg Layered Sui
- Silverton Fm, Pretoria Grp
- Strubenkop Fm, Pretoria Grp
- Swazian Erathem
- Turffontein Sbgrp, Central Rand Gr
- Vaalian Erathem
- Witwatersrand Spgrp



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Projection: Transverse Mercator Ref #: idp.AEC2588.201404.053
 Datum: WGS 1994 Revision Number: 2
 Central Meridian: 29°E Date: 04/03/2014



Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin


Topography Model

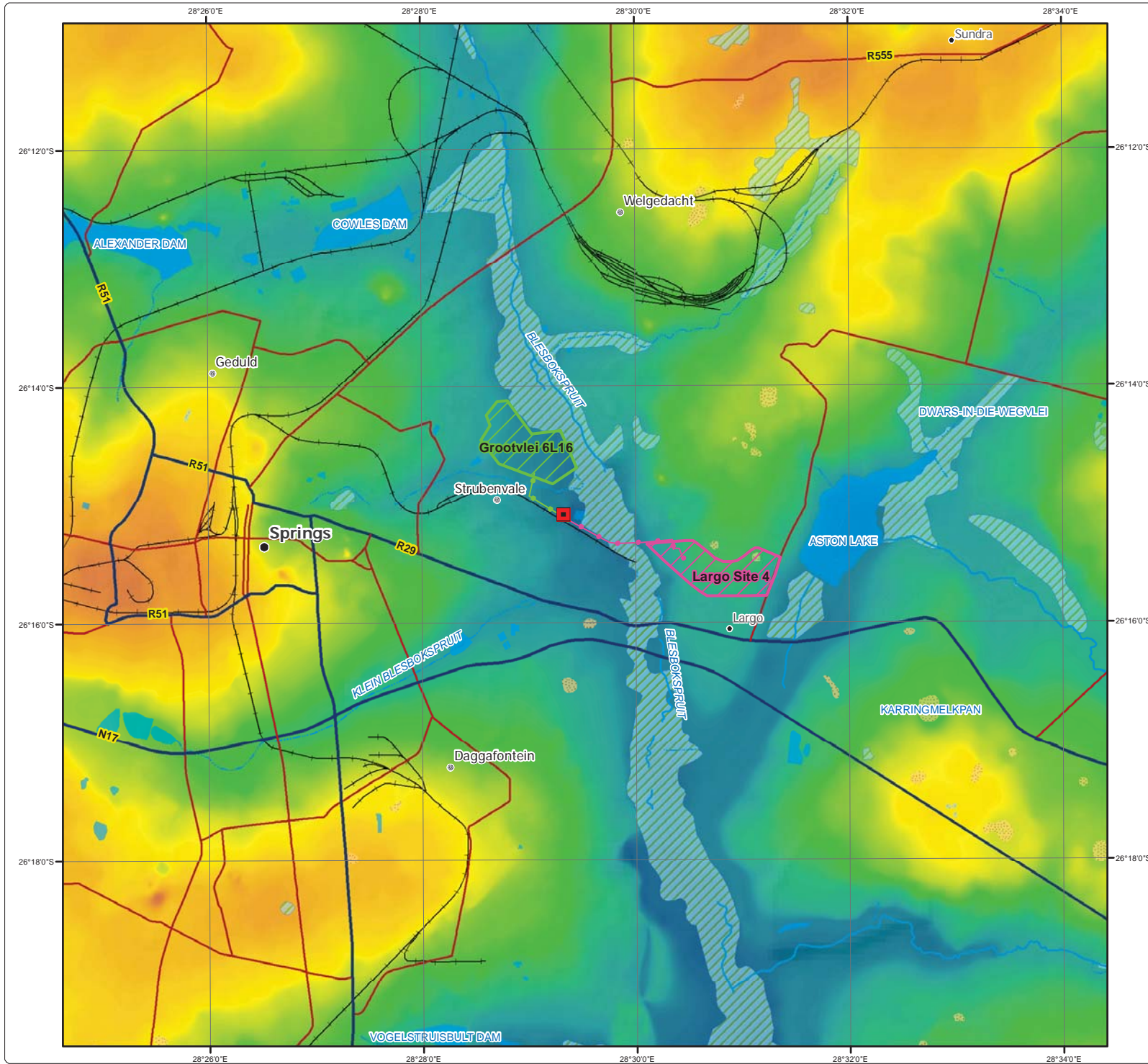
Legend

-  Grootvlei Mine Shaft No 3
 -  Pipeline to Grootvlei 6L16
 -  Pipeline to Largo Site 4
- Proposed Sites**
-  Grootvlei 6L16
 -  Largo Site 4
 -  Major Town
 -  Other Town
 -  Settlement

-  Arterial / National Route
-  Main Road
-  Perennial River
-  Non-Perennial River
-  Dam / Lake
-  Non-Perennial Pan
-  Perennial Pan
-  Wetland
-  Railway Line

Topography

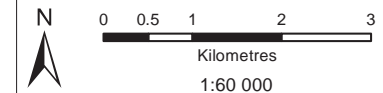
Elevation (m.a.m.s.l)
 High : 1667

 Low : 1559



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Projection: Transverse Mercator Ref #: mpl.AEC2588.201401.038
 Datum: Hartbeeshoek 1994 Revision Number: 1
 Central Meridian: 29°E Date: 10/01/2014





















Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Land Capability




Legend

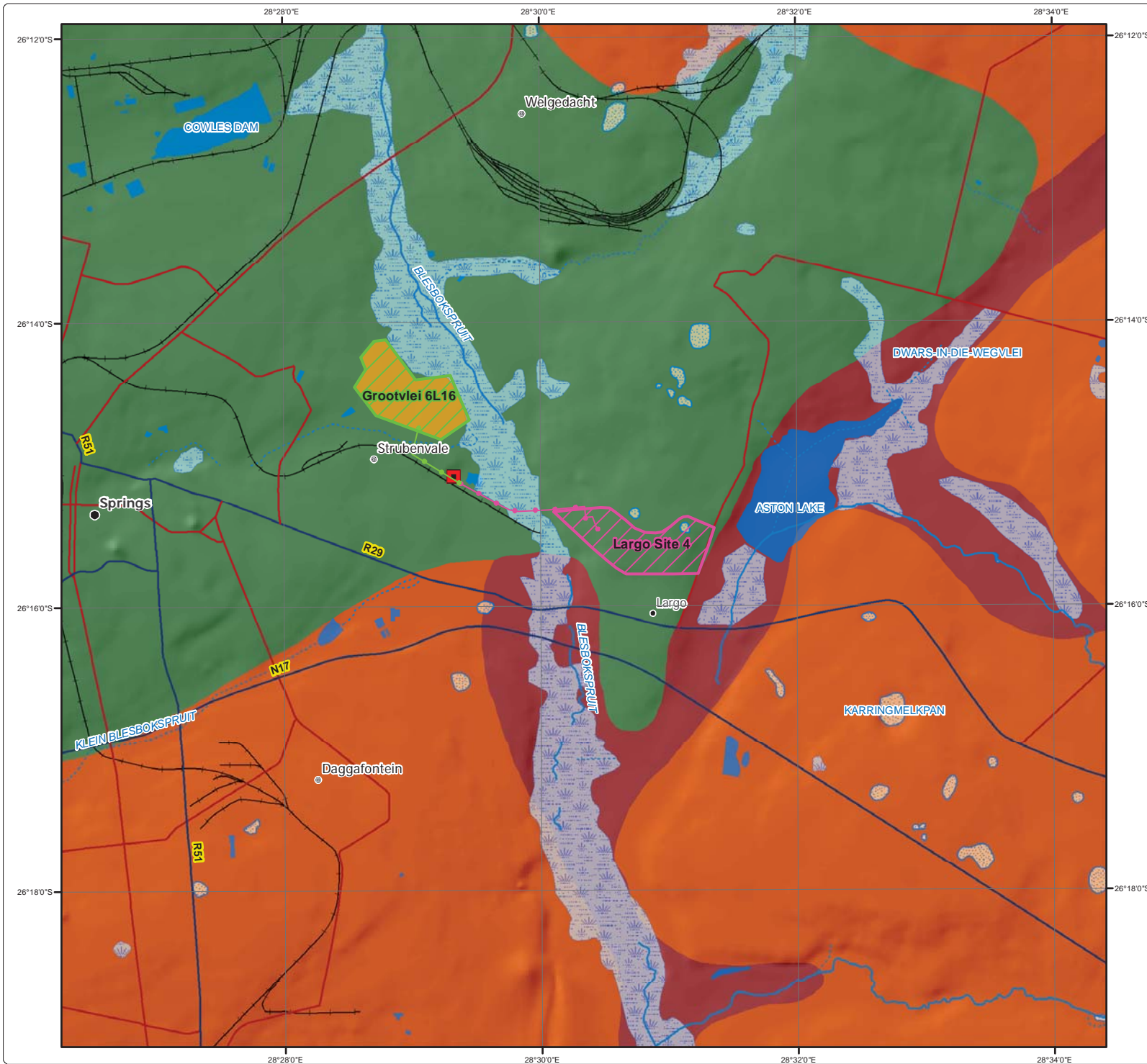
Proposed Sites

-  Grootvlei 6L16
-  Largo Site 4
-  Pipeline to Grootvlei 6L16
-  Pipeline to Largo Site 4

-  Grootvlei Mine Shaft No 3
-  Major Town
-  Other Town
-  Settlement
-  Railway Line
-  Arterial / National Route
-  Main Road
-  Perennial River
-  Non-Perennial River
-  Tailing Storage Facility
-  Dam
-  Non-perennial Pan
-  Perennial Pan
-  Wetland

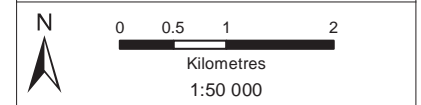
Land Capability Klingebeiel, A., & Montgomery, P. (1961)

-  Class 2/ Intensive Cultivation
-  Class 3/ Moderate Cultivation
-  Class 5/ Wetland or Moderate Grazing



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Projection: Transverse Mercator Ref #: idp.AEC2588.201401.018
 Datum: Hartbeeshoek 1994 Revision Number: 1
 Central Meridian: 29°E Date: 07/01/2014



Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Land Use

Legend

Proposed Sites

- Grootvlei 6L16
- Largo Site 4
- Pipeline to Grootvlei 6L16
- Pipeline to Largo Site 4
- Grootvlei Mine Shaft No 3

- Major Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- Railway Line
- Perennial River
- Non-Perennial River

- Dam / Lake
- Non-perennial Pan
- Perennial Pan
- Wetland

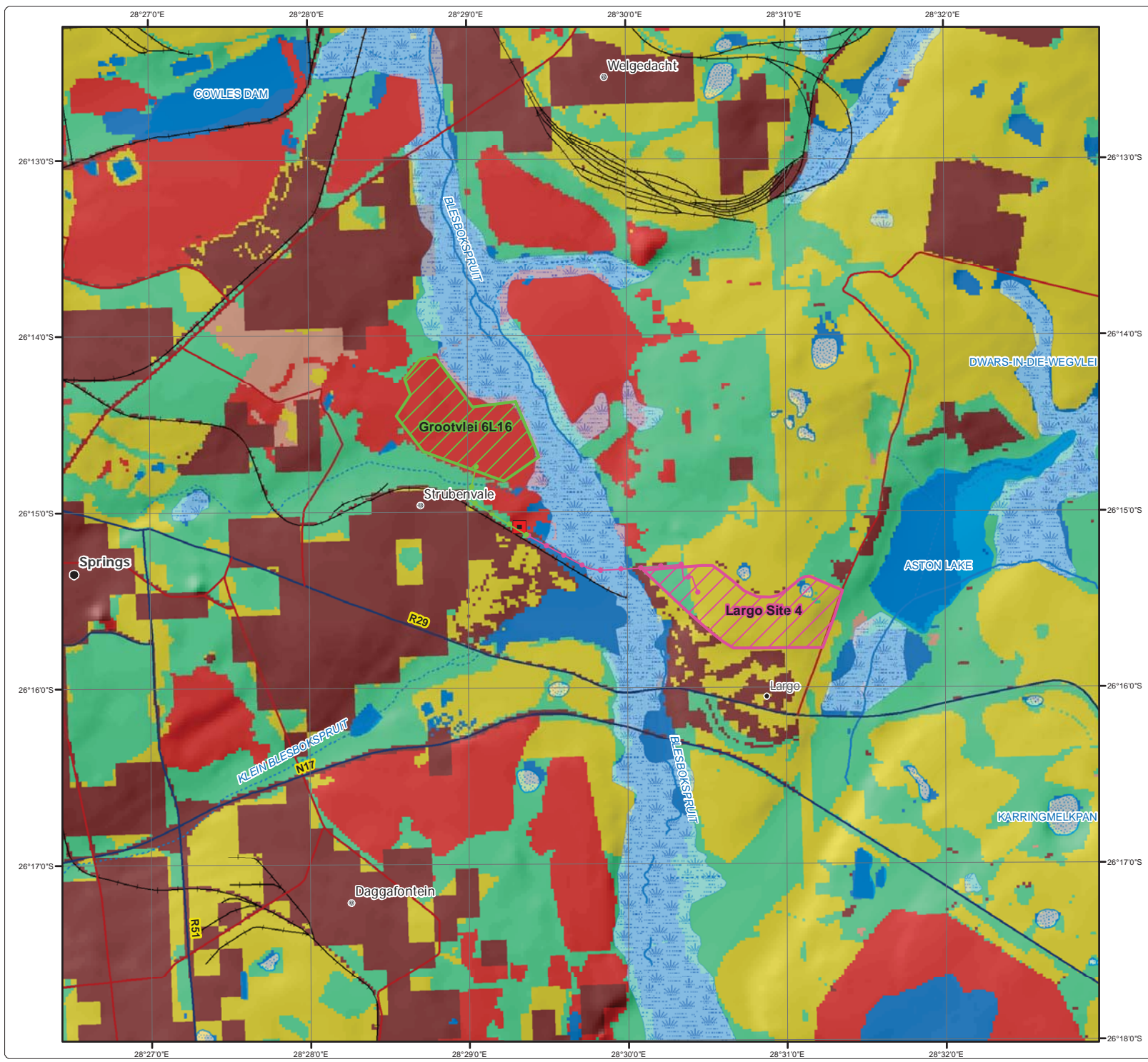
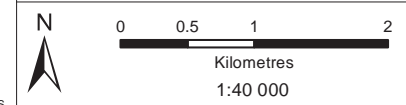
- #### Land Use (SAMBI,2009)
- Cultivation
 - Degraded
 - Mines
 - Natural
 - Plantations
 - Urban Built-up
 - Waterbodies



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Projection: Transverse Mercator Ref #: idp.AEC2588.201401.020
Datum: Hartbeeshoek 1994 Revision Number: 1
Central Meridian: 29°E Date: 07/01/2014



Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

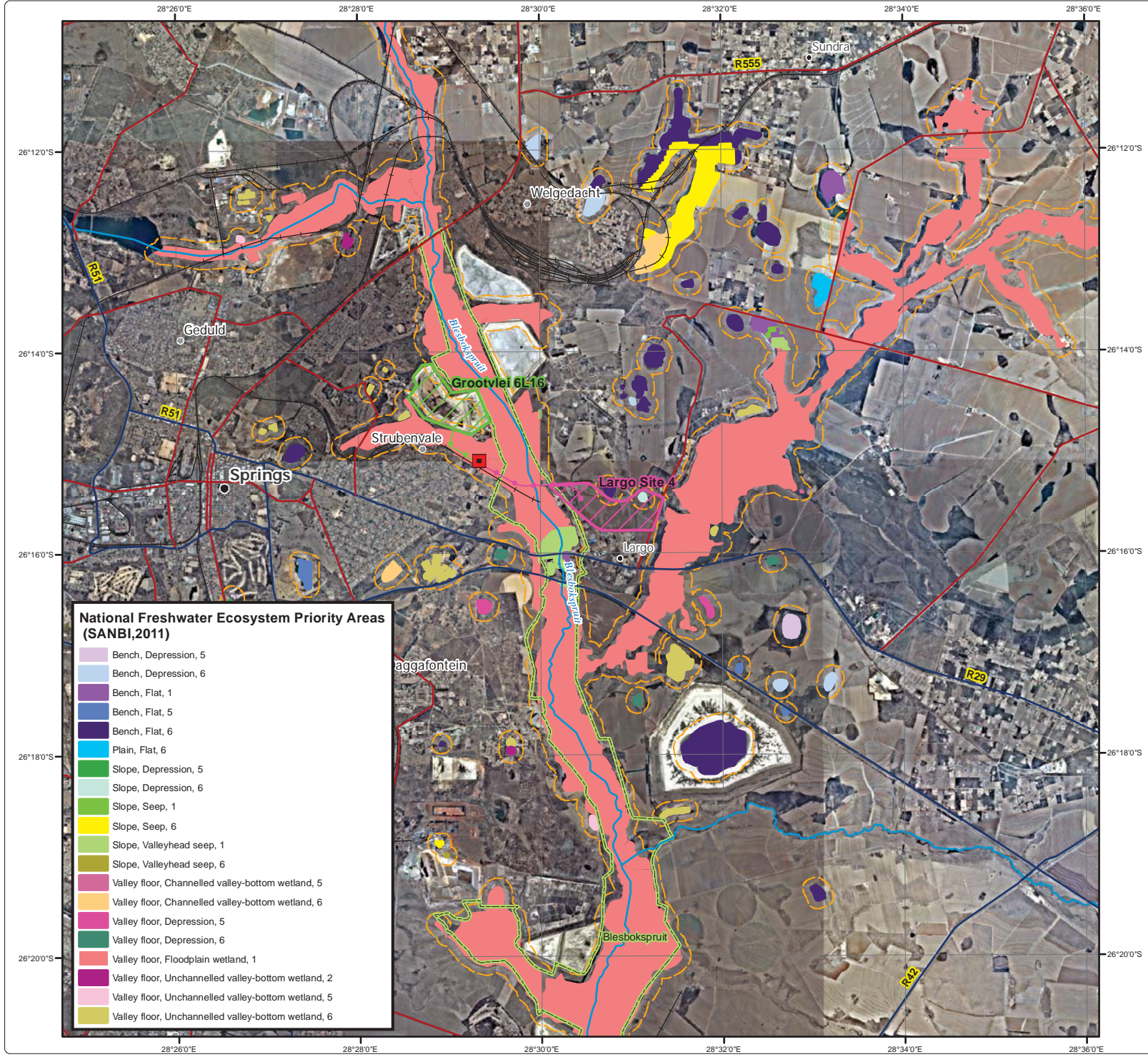
NFEPA Wetlands

Legend

- Grootvlei Mine Shaft No 3
- Pipeline to Grootvlei 6L16
- Pipeline to Largo Site 4
- Grootvlei 6L16
- Largo Site 4
- Major Town
- Other Town
- Settlement
- Arterial / National Route
- Main Road
- NFEPA Rivers
- +— Railway Line
- Ramsar Sites
- 150m Wetland Buffer

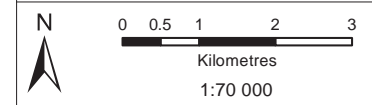
National Freshwater Ecosystem Priority Areas (SANBI,2011)

	Bench, Depression, 5
	Bench, Depression, 6
	Bench, Flat, 1
	Bench, Flat, 5
	Bench, Flat, 6
	Plain, Flat, 6
	Slope, Depression, 5
	Slope, Depression, 6
	Slope, Seep, 1
	Slope, Seep, 6
	Slope, Valleyhead seep, 1
	Slope, Valleyhead seep, 6
	Valley floor, Channelled valley-bottom wetland, 5
	Valley floor, Channelled valley-bottom wetland, 6
	Valley floor, Depression, 5
	Valley floor, Depression, 6
	Valley floor, Floodplain wetland, 1
	Valley floor, Unchannelled valley-bottom wetland, 2
	Valley floor, Unchannelled valley-bottom wetland, 5
	Valley floor, Unchannelled valley-bottom wetland, 6



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Projection: Transverse Mercator Ref #: sdp.AEC2588.201403.054
 Datum: Hartbeeshoek 1994 Revision Number: 1
 Central Meridian: 29°E Date: 13/01/2014







Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

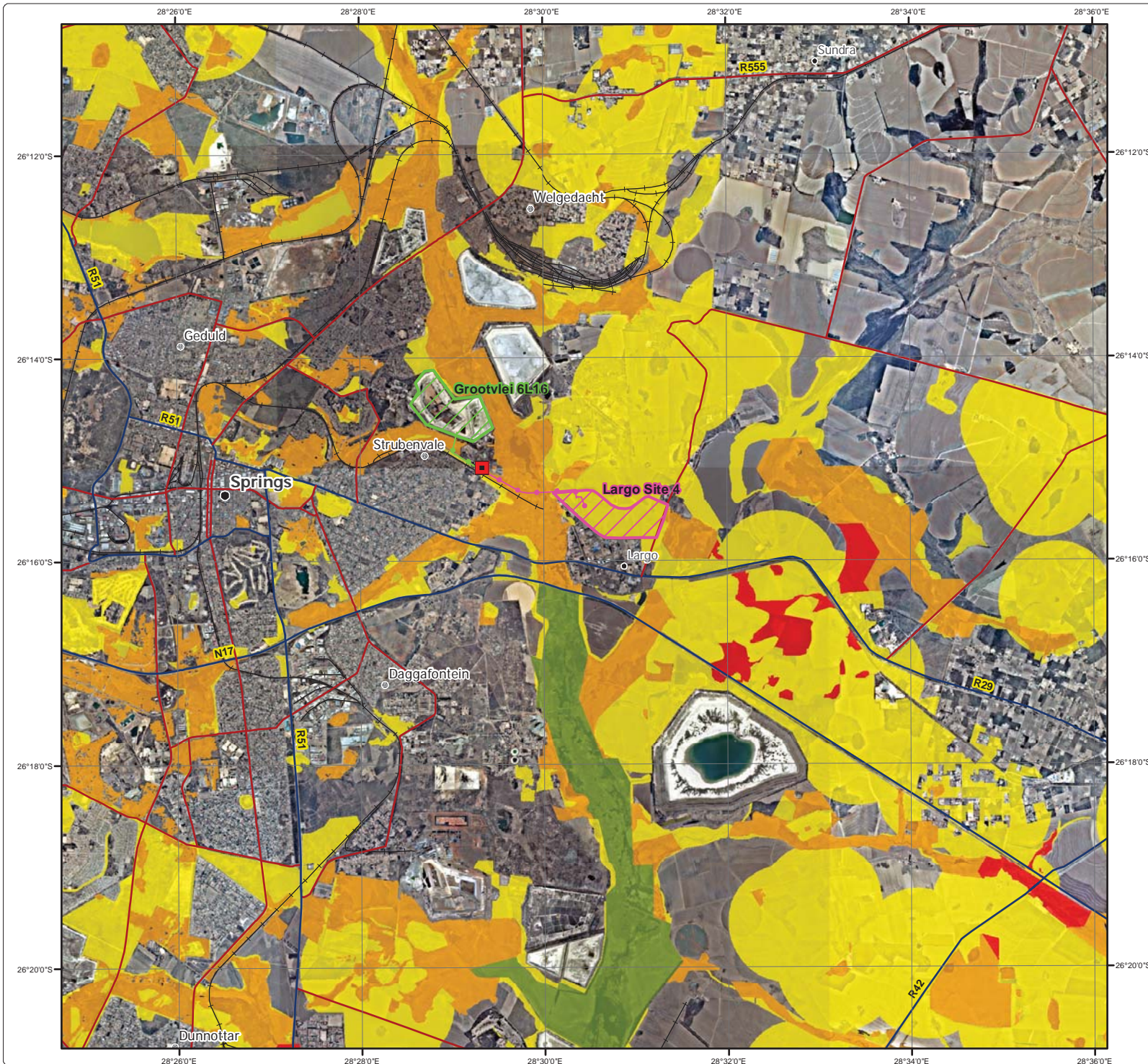
Gauteng C-Plan

Legend

-  Grootvlei Mine Shaft No 3
-  Pipeline to Grootvlei 6L16
-  Pipeline to Largo Site 4
- Proposed Sites**
-  Grootvlei 6L16
-  Largo Site 4
-  Major Town
-  Other Town
-  Settlement
-  Railway Line
-  Arterial / National Route
-  Main Road

Gauteng C-Plan (SANBI 2011)

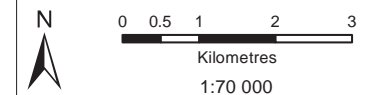
-  Ecological Support Area
-  Important Area
-  Irreplaceable Area
-  Protected Area



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Projection: Transverse Mercator	Ref #: idp.AEC2588.201404.034
Datum: Hartbeeshoek 1994	Revision Number: 1
Central Meridian: 29°E	Date: 08/04/2014



Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Quaternary Catchments

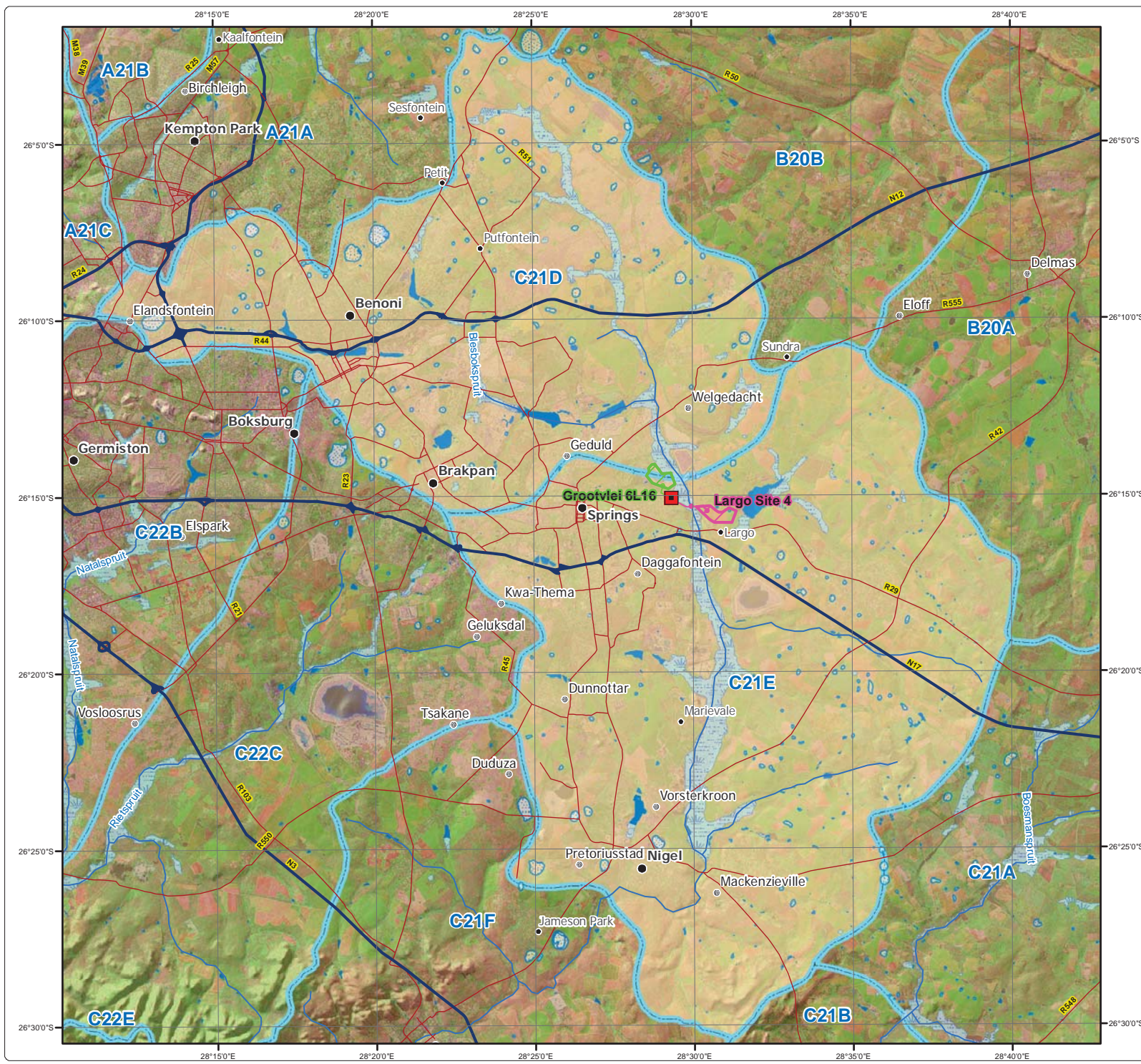
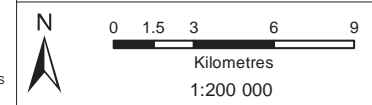
Legend

-  Grootvlei Mine Shaft No 3
 -  Pipeline to Grootvlei 6L16
 -  Pipeline to Largo Site 4
- Proposed Sites**
-  Grootvlei 6L16
 -  Largo Site 4
 -  Major Town
 -  Other Town
 -  Settlement
 -  National Road
 -  Main Road
 -  Rivers
 -  Dam
 -  Non-Perennial Pan
 -  Perennial Pan
 -  Wetland
 -  Quaternary Catchment
 -  Affected Quaternary Catchments



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Projection: Transverse Mercator Ref #: idp.AEC2588.201403.053
 Datum: Hartbeeshoek 1994 Revision Number: 1
 Central Meridian: 29°E Date: 11/03/2014



Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Groundwater Monitoring Locations

Legend

- Groundwater Monitoring Locations
- Proposed Sites**
- Grootvlei 6L16
- Largo Site 4
- Grootvlei Mine Shaft No 3
- Pipeline to Grootvlei 6L16
- Pipeline to Largo Site 4
- Arterial / National Route
- Main Road
- Railway Line
- Perennial River
- Non-Perennial River
- Quaternary Catchment Boundaries
- Dam
- Non-Perennial Pan
- Perennial Pan
- Wetland



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Projection: Transverse Mercator Ref #: idp.AEC2598.201404.003
 Datum: WGS 1994 Revision Number: 2
 Central Meridian: 29°E Date: 04/03/2014



Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

Noise Monitoring Locations

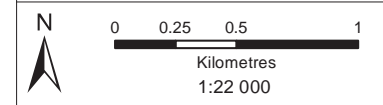
Legend

-  Noise Monitoring Location
- Proposed Sites**
-  Grootvlei 6L16
-  Largo Site 4
-  Grootvlei Mine Shaft No 3
-  Pipeline to Grootvlei 6L16
-  Pipeline to Largo Site 4
-  Arterial / National Route
-  Main Road
-  Minor Road
-  Railway Line
-  Perennial River
-  Non-Perennial River
-  Dam
-  Non-Perennial Pan
-  Wetland



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Projection: Transverse Mercator Ref #: idp.AEC2588.201404.050
 Datum: WGS 1994 Revision Number: 1
 Central Meridian: 29°E Date: 09/04/2014

















Proposed Sludge Disposal Sites For AMD Management in the Eastern Basin

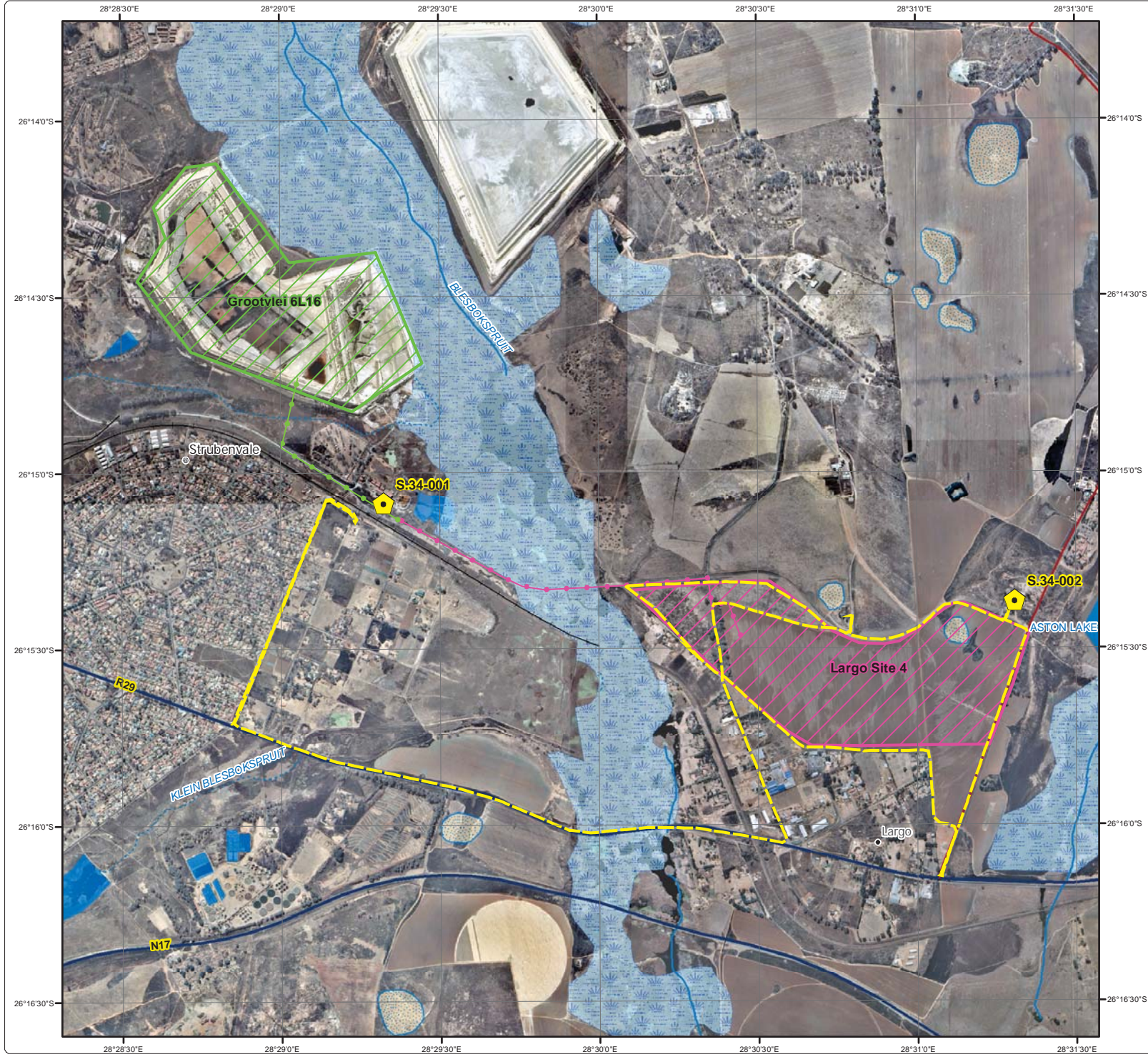
Heritage Screening Survey

Legend

-  Identified Heritage Resource
-  Heritage Track
-  Pipeline to Grootvlei 6L16
-  Pipeline to Largo Site 4

Proposed Sites

-  Grootvlei 6L16
-  Largo Site 4
-  Major Town
-  Other Town
-  Settlement
-  Arterial / National Route
-  Main Road
-  Railway Line
-  Perennial River
-  Non-Perennial River
-  Dam / Lake
-  Non-Perennial Pan
-  Perennial Pan
-  Wetland



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Projection: Transverse Mercator Ref #: idp.AEC2588.201405.034
 Datum: Hartbeeshoek 1994 Revision Number: 1
 Central Meridian: 29°E Date: 09/05/2014

