



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



energy

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Energy
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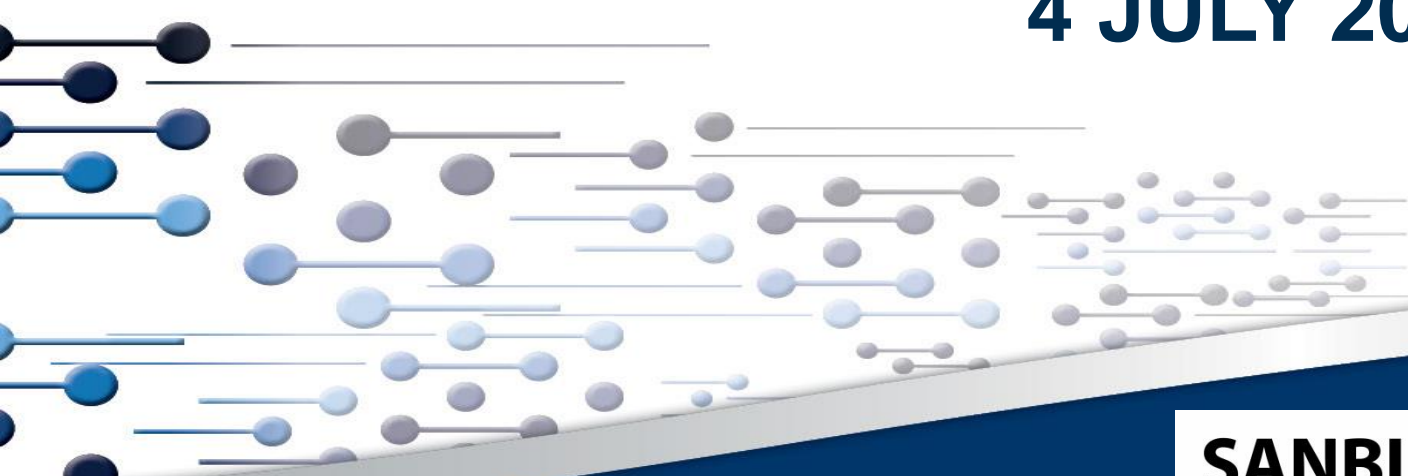
public enterprises

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REPUBLIC OF SOUTH AFRICA



Final Pinch Point Analysis of Environmental and Engineering Constraints for the design of the Phased Gas Pipeline and EGI Expansion Corridors

4 JULY 2019



SANBI

Biodiversity for Life



South African National Biodiversity Institute

CSIR

our future through science

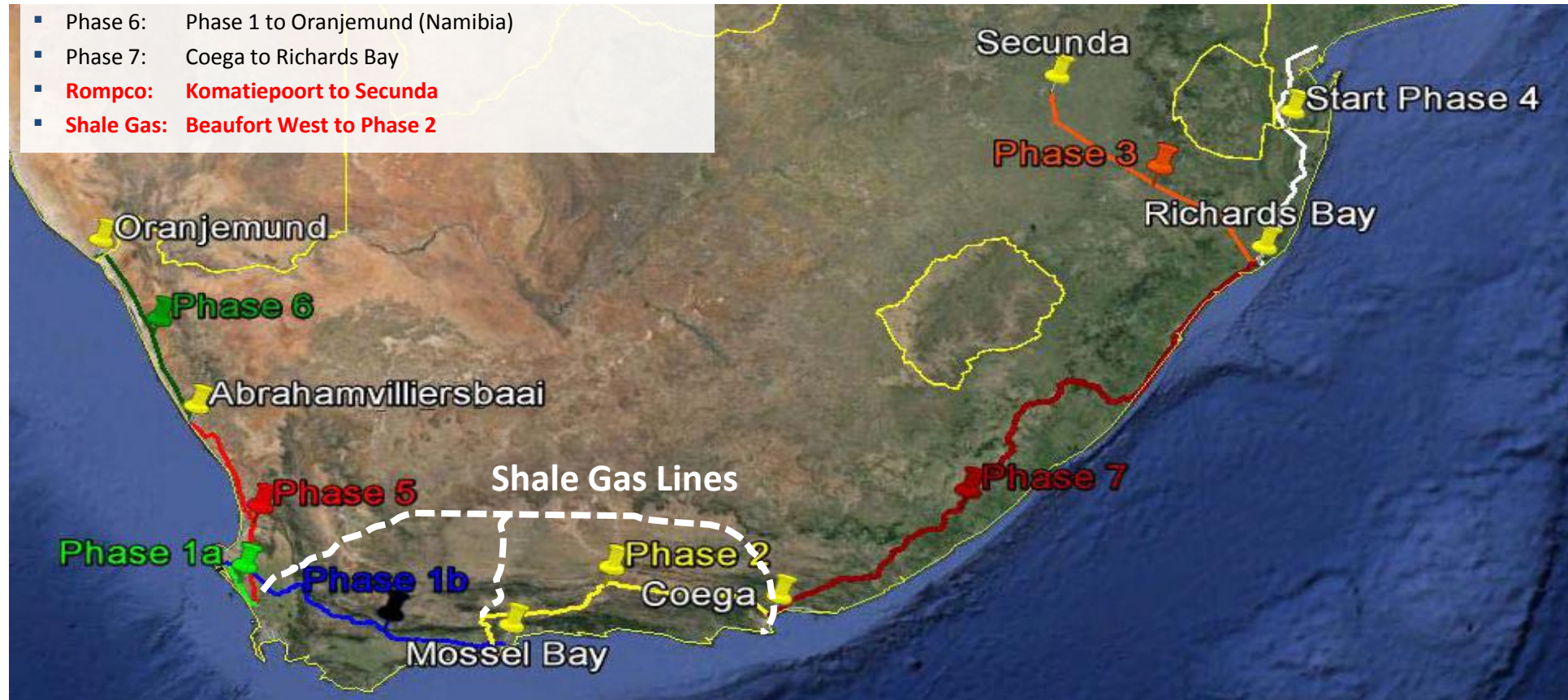
Rationale for the Pinch Point Analysis

- Initial corridors are based on **Operation Phakisa** outputs,
- **Environmental and engineering** constraints not considered,
- **Energy demand** not considered in designed,
- Corridors need to be **realigned** to consider existing Energy corridors/focus areas.
- **Specialist studies** to be used to update wall to wall mapping and refine pinch points

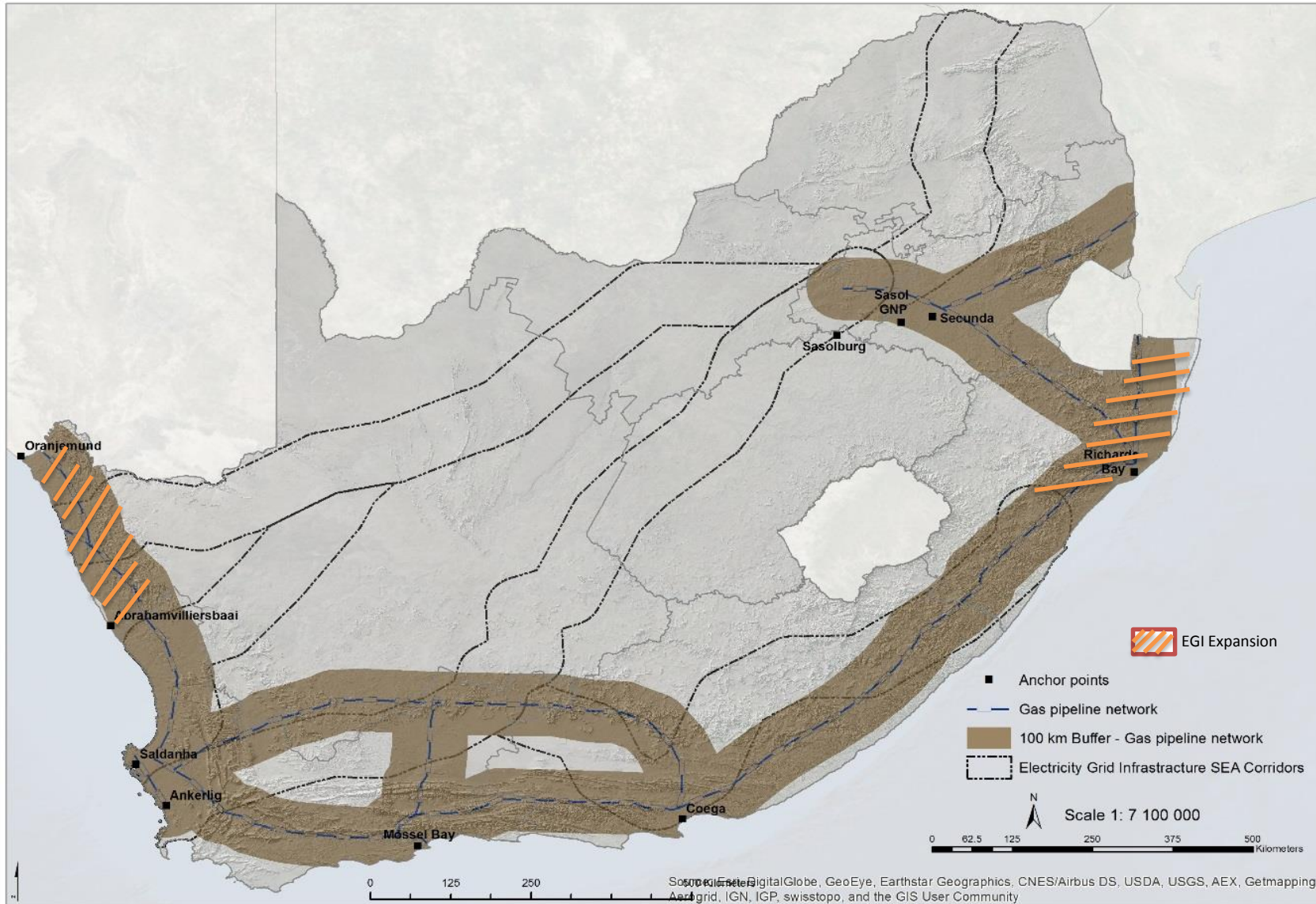
Phakisa A1 Phased Gas Pipeline Network

Phasing

- Phase 1a: Saldanha to Ankerlig
- Phase 1b: Saldanha to Mossel Bay
- Phase 2: Mossel Bay to Coega
- Phase 3: Richards Bay to Secunda
- Phase 4: Mozambique Southern Border to Richards Bay
- Phase 5: Abrahamvilliersbaai to Ankerlig Take-off
- Phase 6: Phase 1 to Oranjemund (Namibia)
- Phase 7: Coega to Richards Bay
- Rompco: Komatipoort to Secunda**
- Shale Gas: Beaufort West to Phase 2**



DRAFT Initial Corridors PGP & EGI



Environmental Sensitivities

Protected Areas

National Parks

Provincial NRs

Contract NRs

Forest PAs

Special NRs

MCAs

PEs

PA expansion

PA buffers

Terrestrial

Natural Forest

Thicket

Threatened spp
habitat

CBAs

Threatened
Ecosystems

Freshwater

All wetlands

Rivers

Dams

Estuaries

Degradation

Eroded areas

Soil erodibility

Avifauna

IBAs

Colonies and roosts
for large birds

Bat roosts

Bat ecoregions

Environmental Sensitivities

Production Landscape

Commercial Forestry

Forestry expansion

Deep rooted agriculture

Irrigation pivots > 500m

Other agriculture fields

Infrastructure and Industrial

SKA and SALT

Industrial areas

Roads

Railways

Pipelines

Cultural Landscape

Heritage Sites

Landscape integrity

Engineering Constraints

Industry

SKA

Forestry

Urban settlement

WULAs

Mining

Natural Environment

Rivers & wetlands

Agriculture fields

Thicket

Dams & estuaries

Slope

Specific EGI data

High fire

High wind

High snow

Pollution

Flooding

Eroded areas

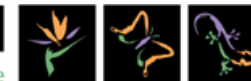
Specific for Gas

Geotechnical

Pollution

Fault lines and
seismic data

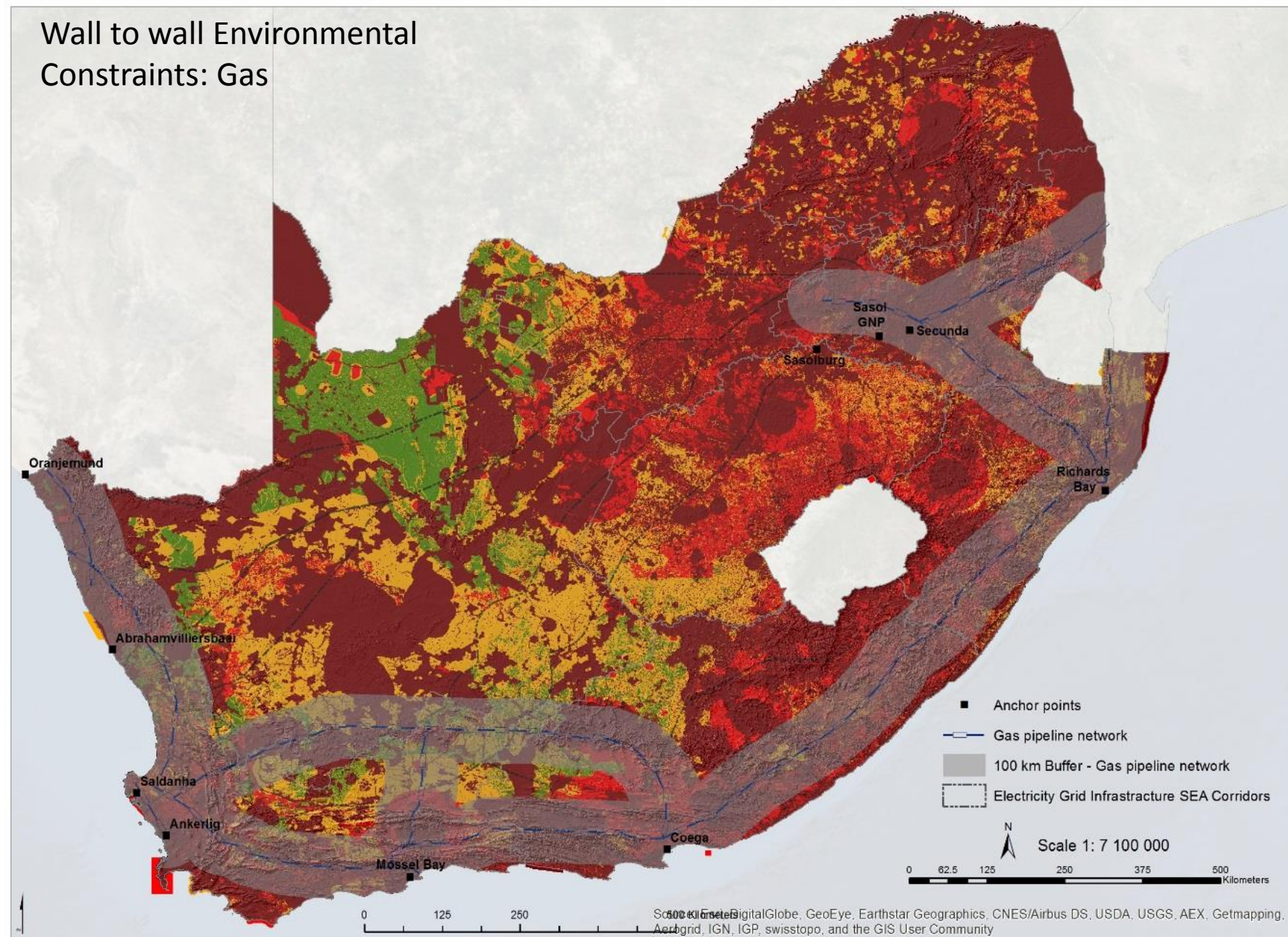
Water stressed
catchments



Sensitivity Categories

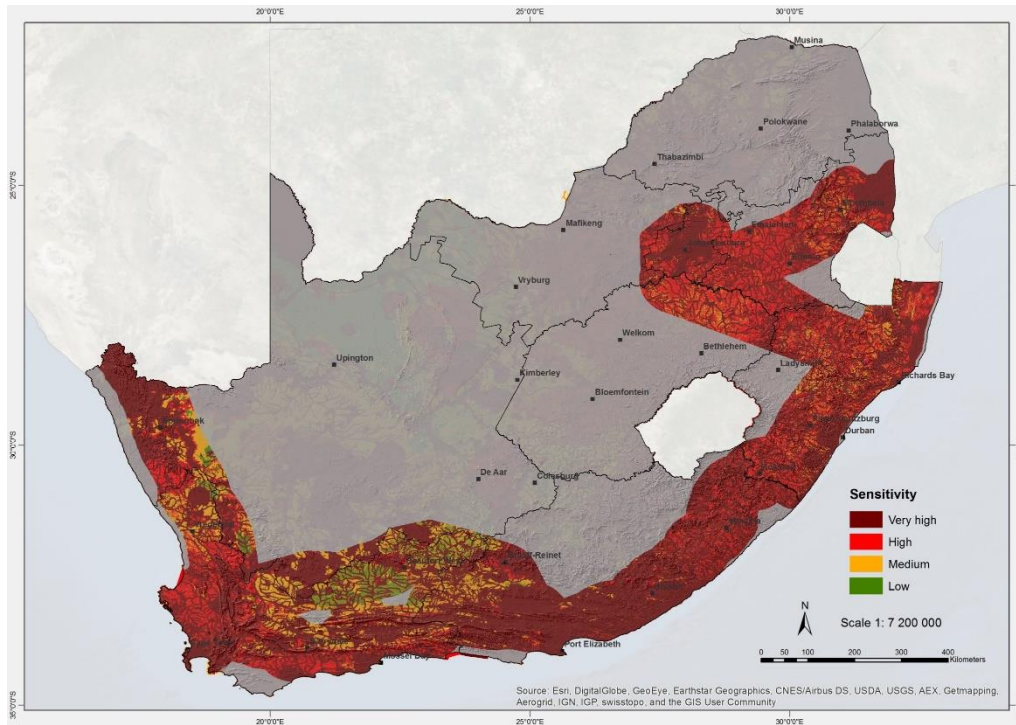
Constraint	Environmental
Very High	Area is rated as being extremely sensitivity to development. As a result the area will either have very high conservation or socio-economic value
High	Area is rated as being highly sensitivity to development. As a result the area will either have high conservation or socio-economic value
Medium	Area is rated as being of medium sensitivity to development. As a result the area will either have medium conservation or socio-economic value
Low	Areas considered to have low levels of sensitivity in the context of gas pipeline or EGI construction and maintenance

Wall to wall Environmental Constraints: Gas

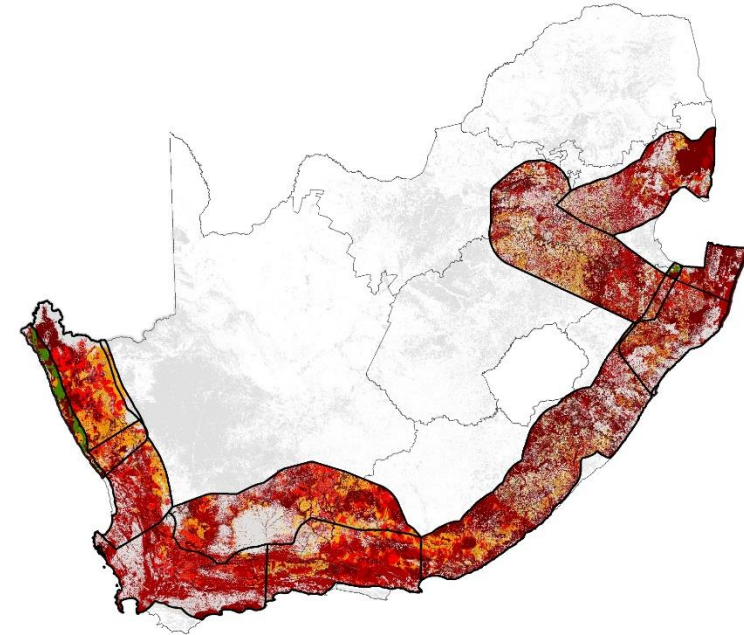


Wall to Wall Constraints for the Corridors

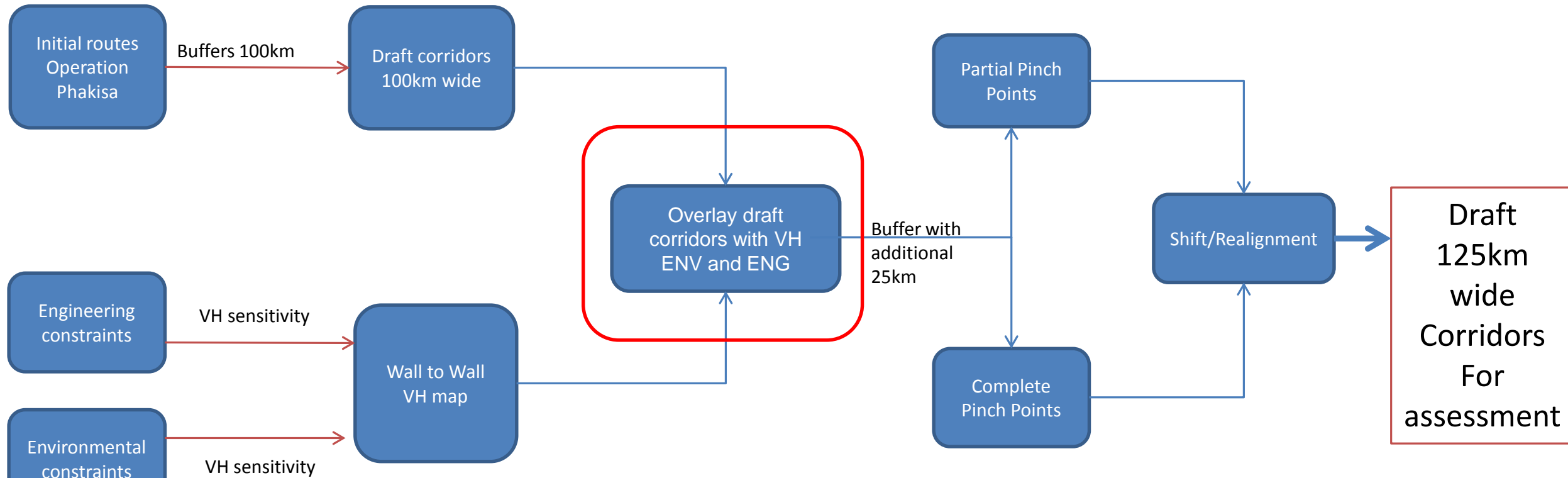
Pre Specialist Assessment Studies



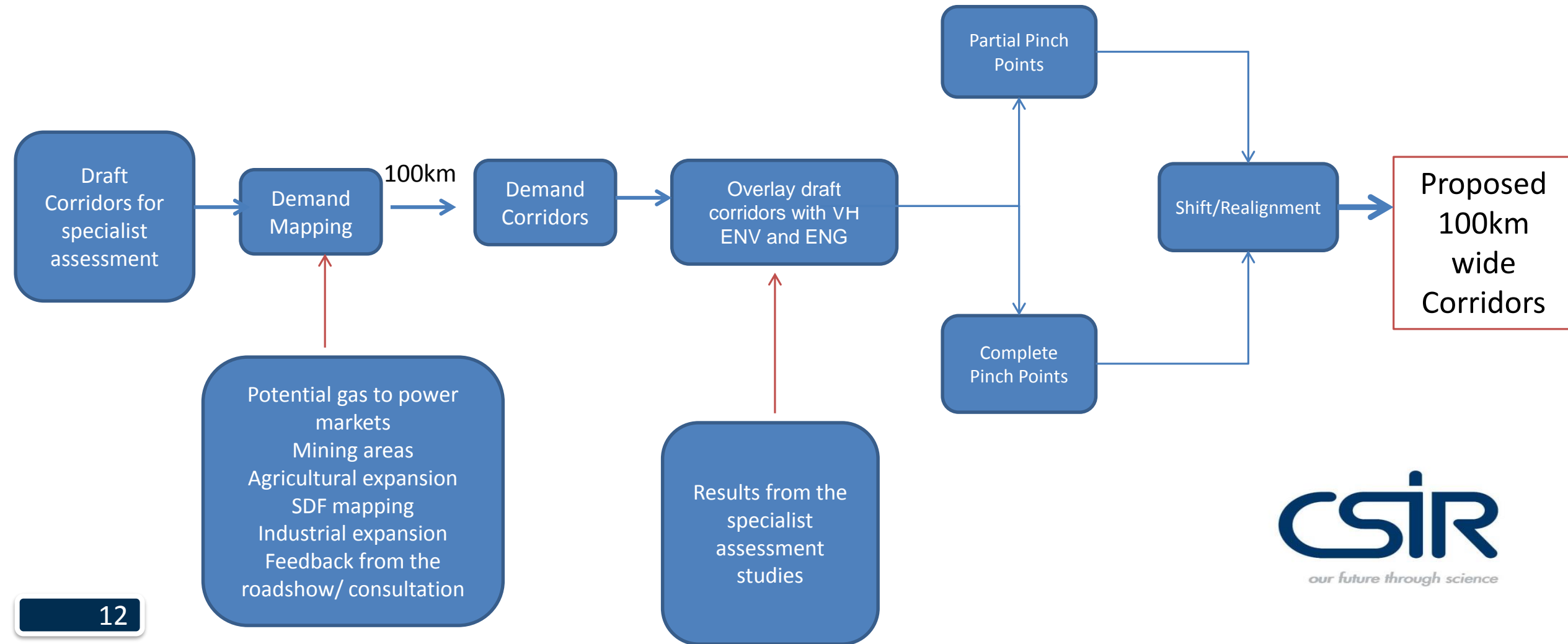
Post Specialist Assessment Studies



Pinch Point Analyses Process

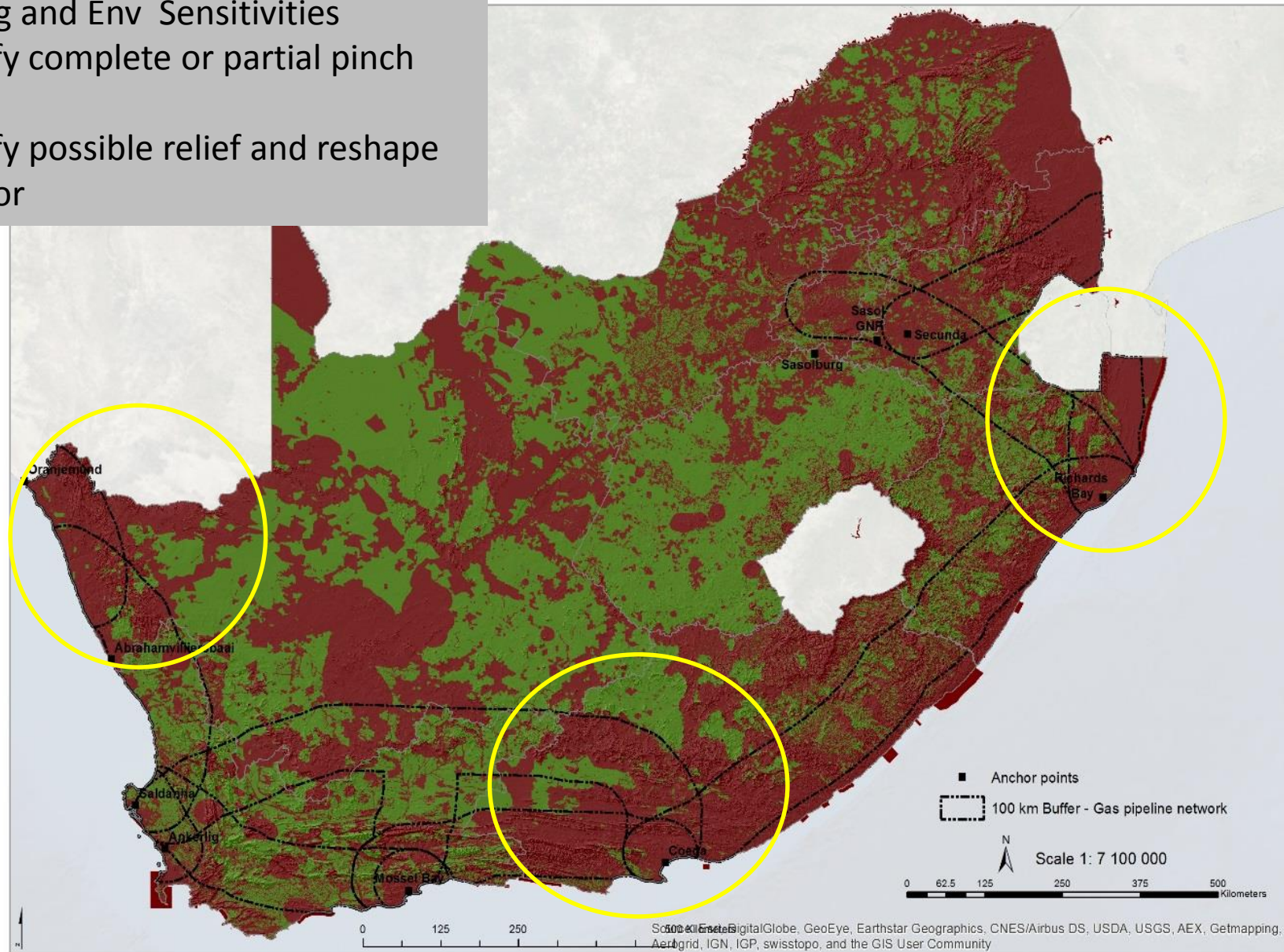


Pinch Point Analyses Process

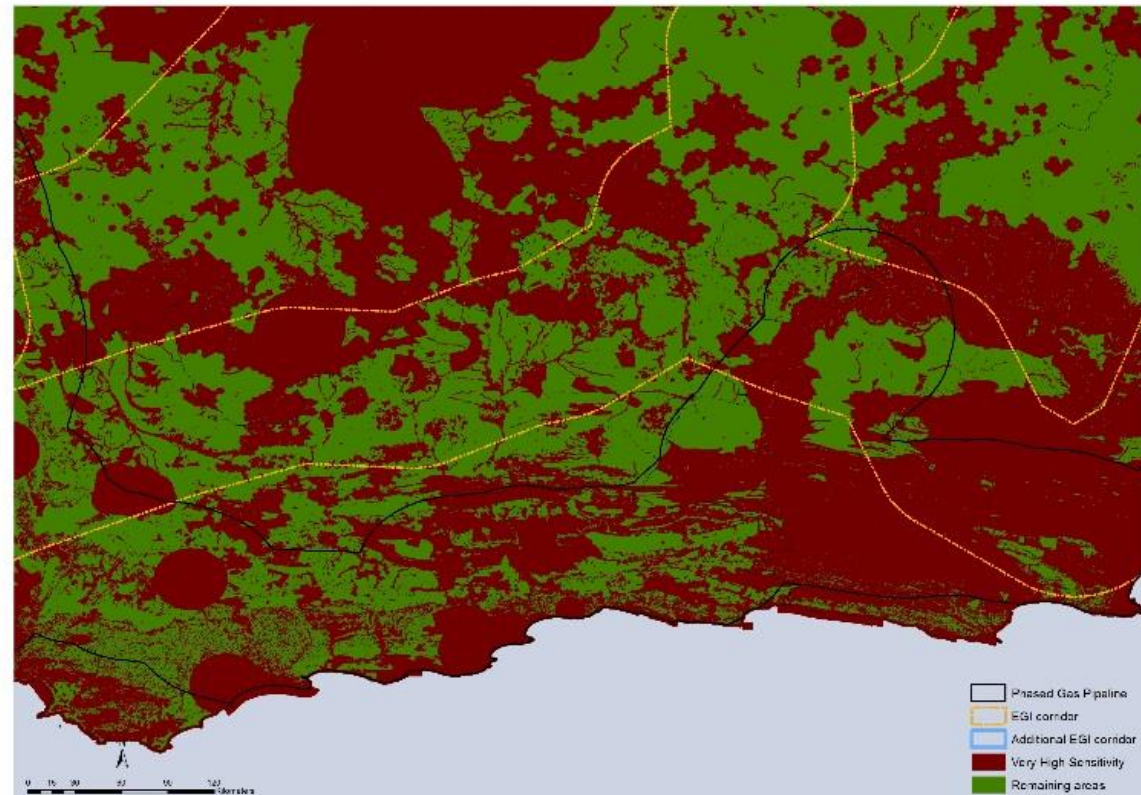
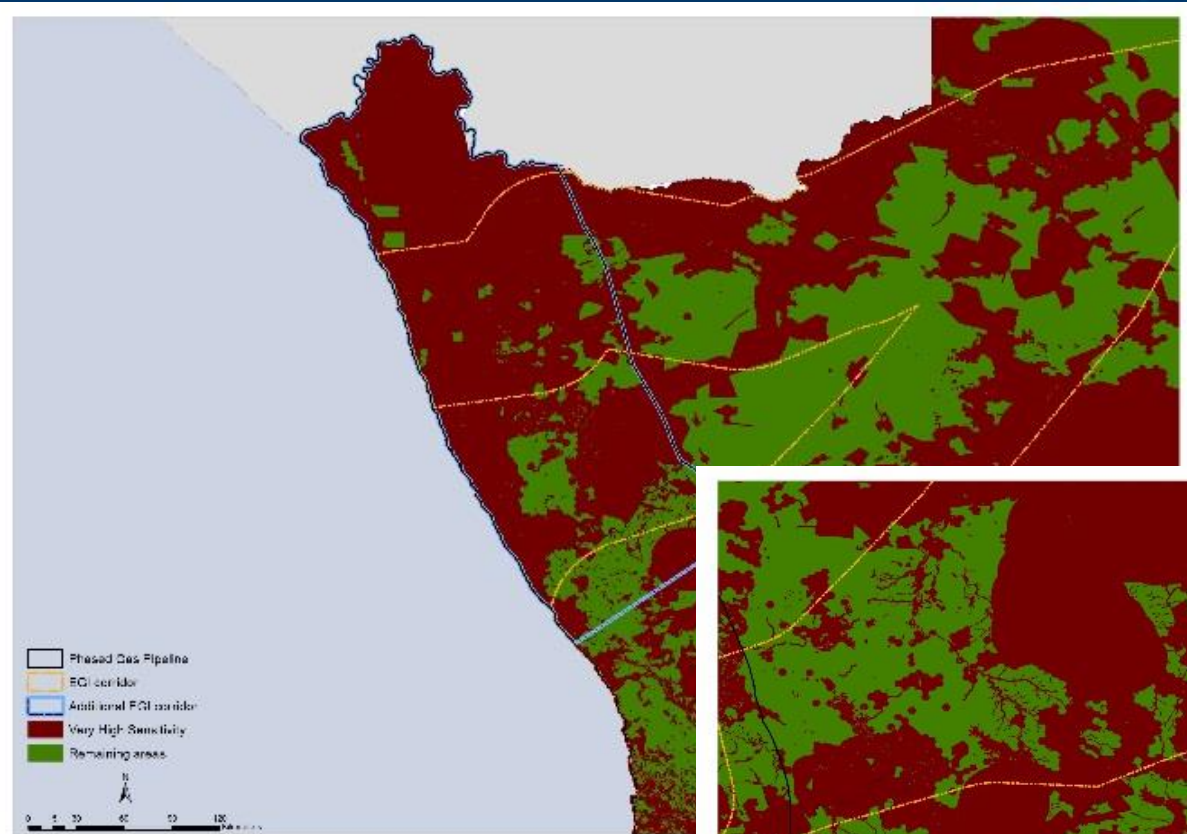


Analysis (Gas)

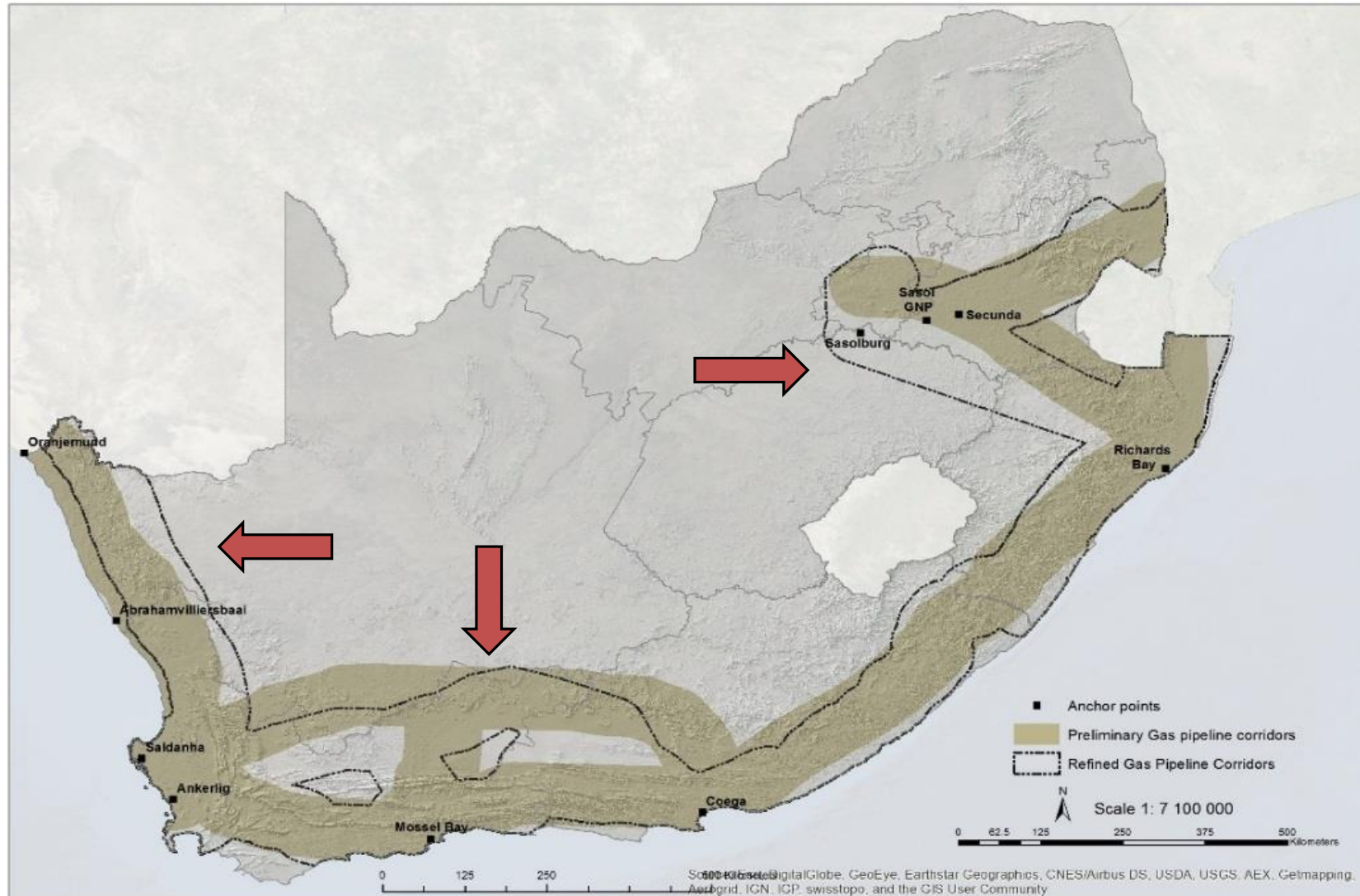
- VH Eng and Env Sensitivities
- Identify complete or partial pinch points
- Identify possible relief and reshape corridor



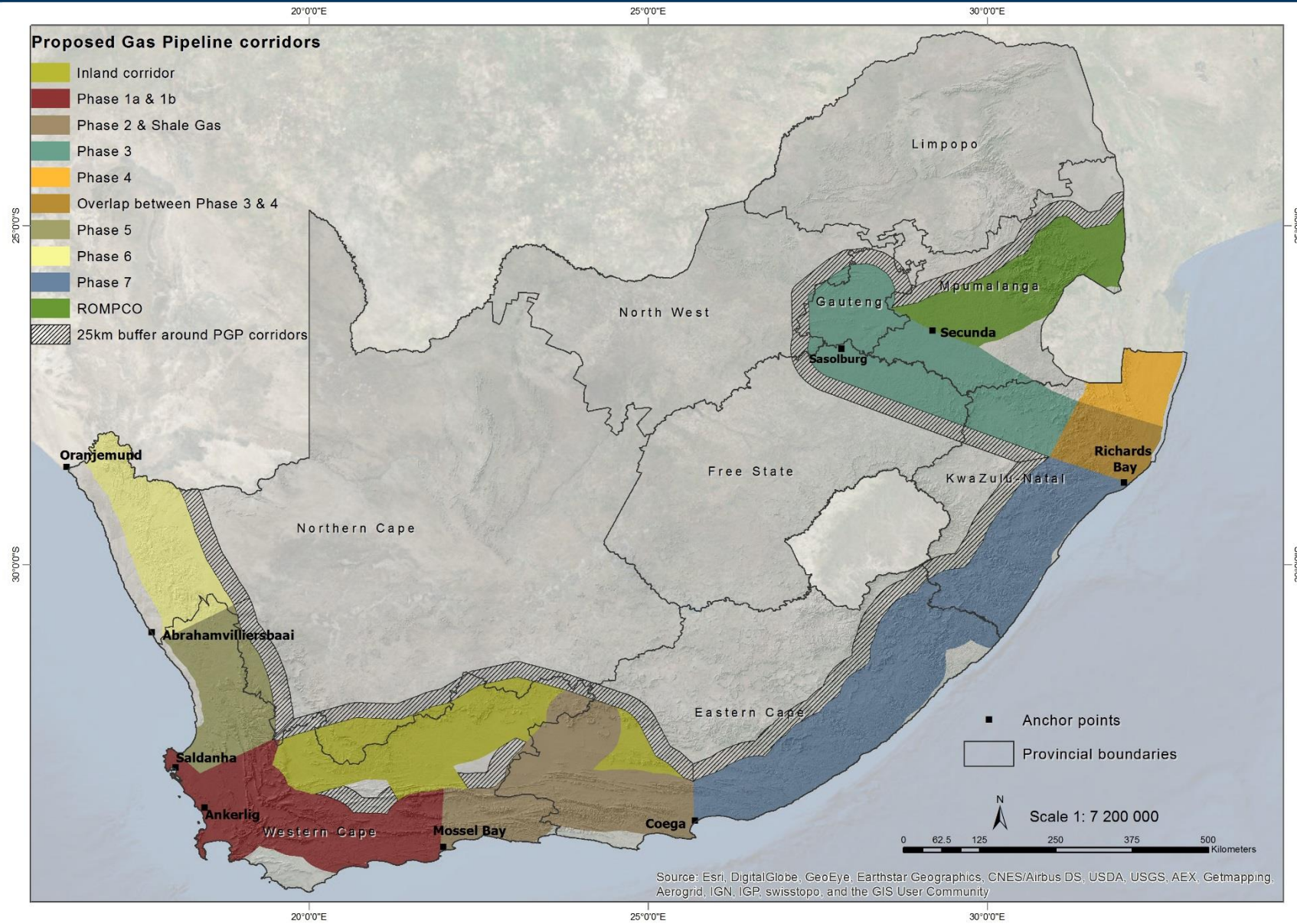
Pinch points



Corridor Refinement

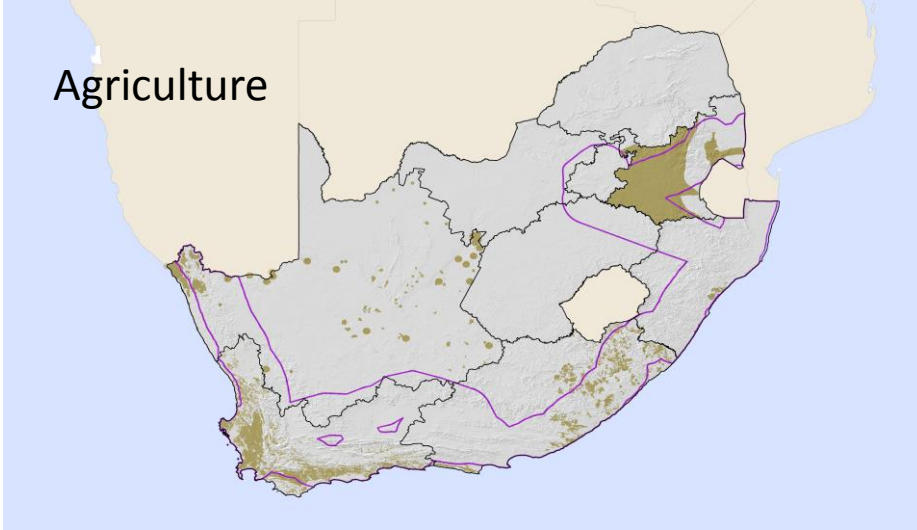


Corridors for Specialist Assessment

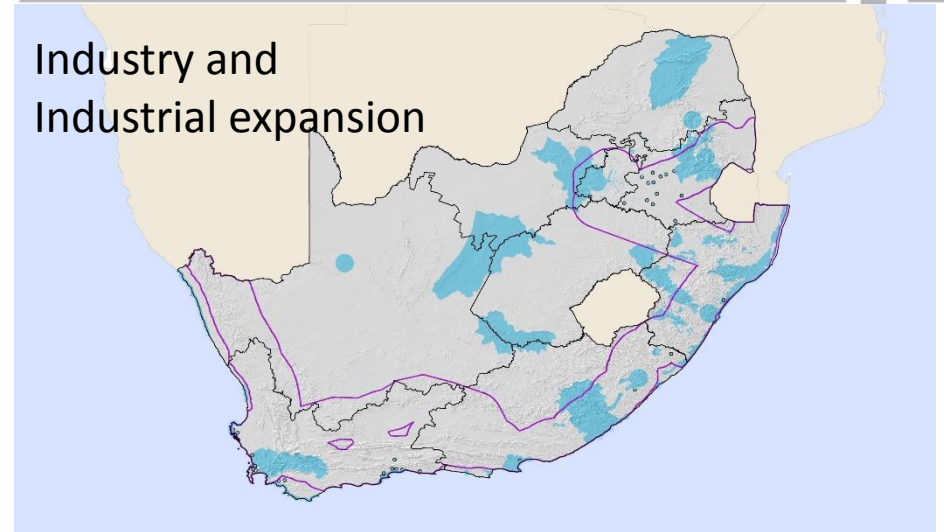


Demand Mapping Refinement

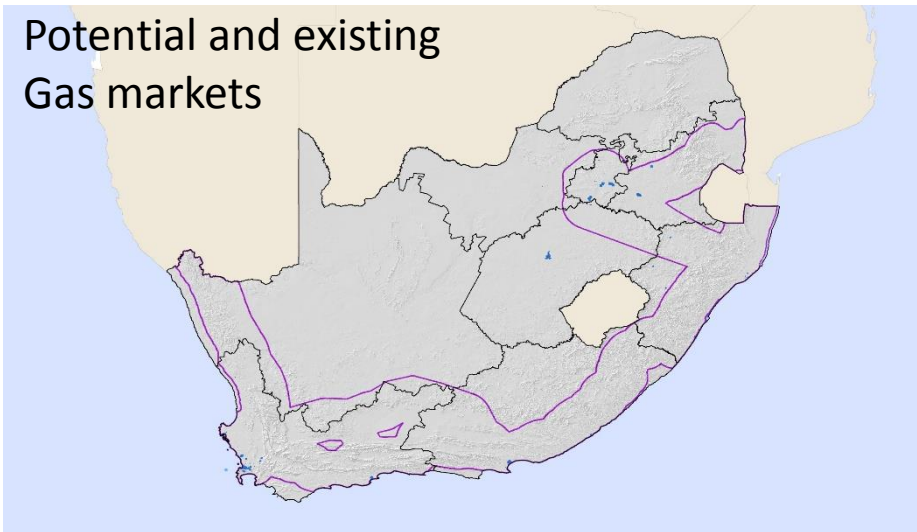
Agriculture



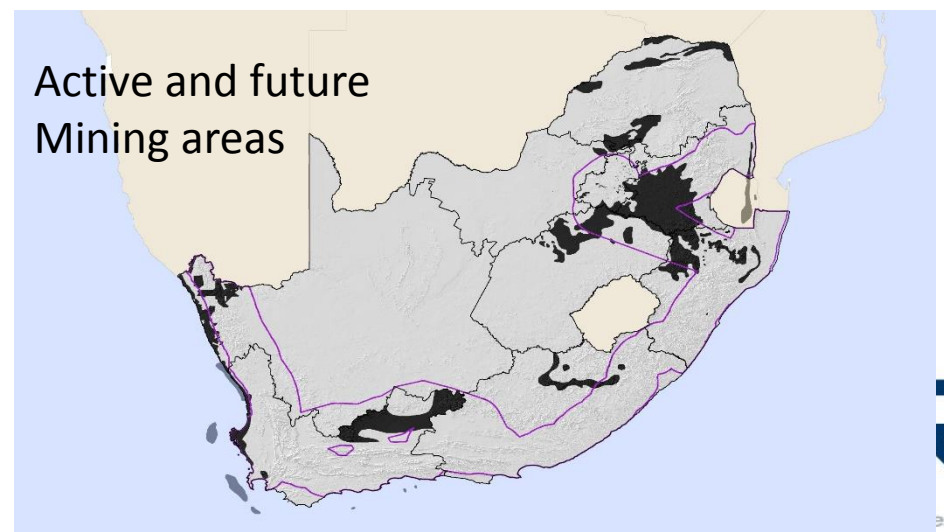
Industry and
Industrial expansion



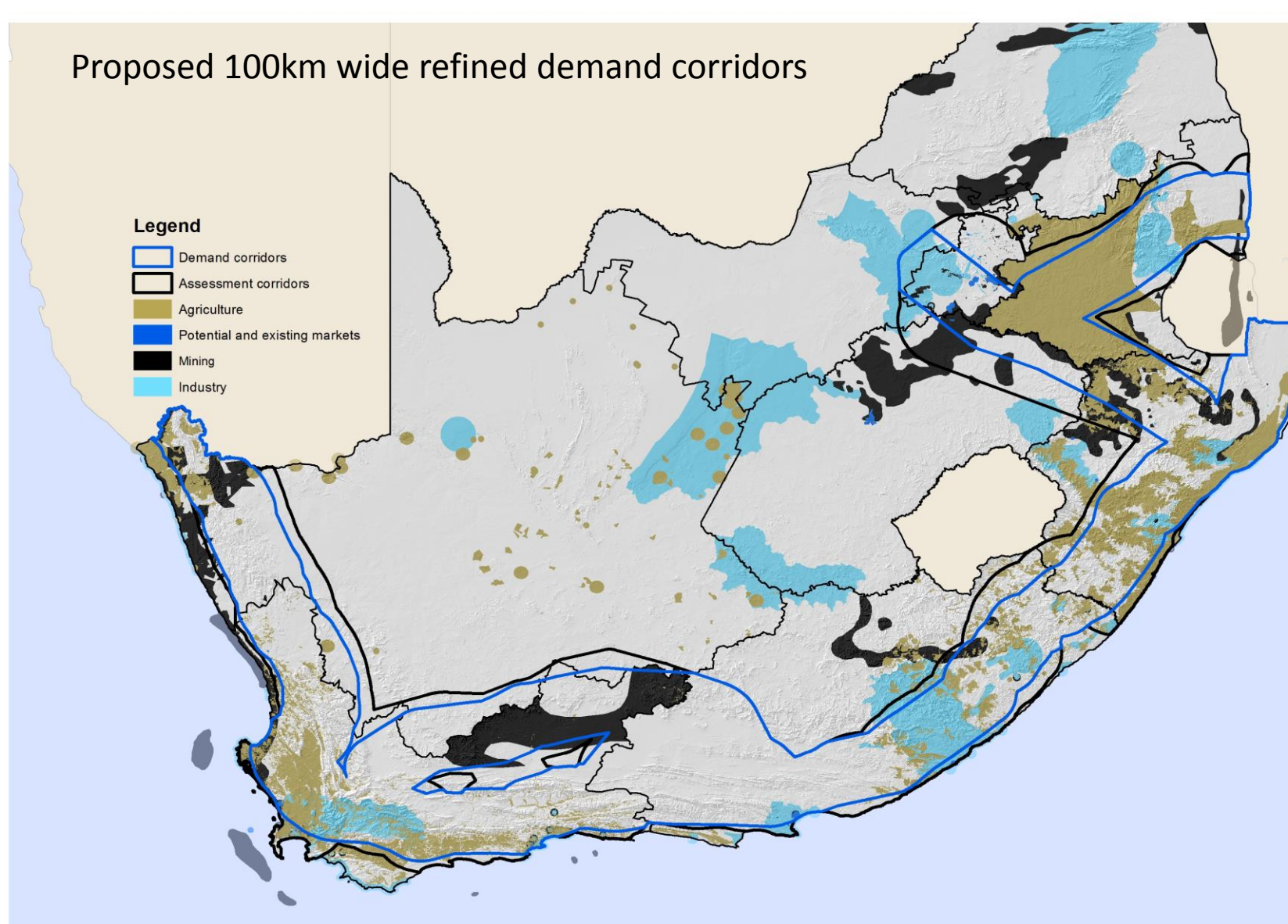
Potential and existing
Gas markets



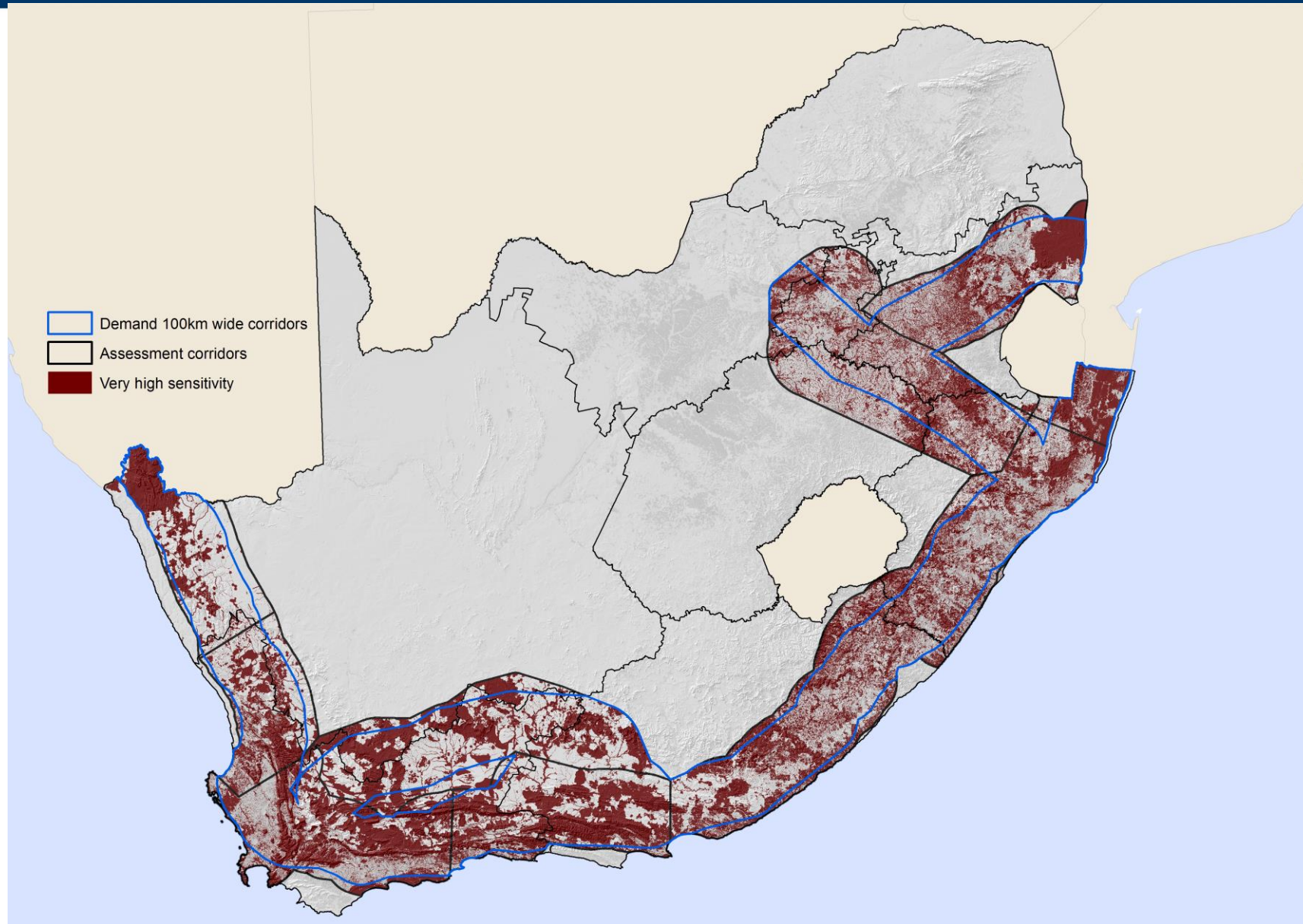
Active and future
Mining areas



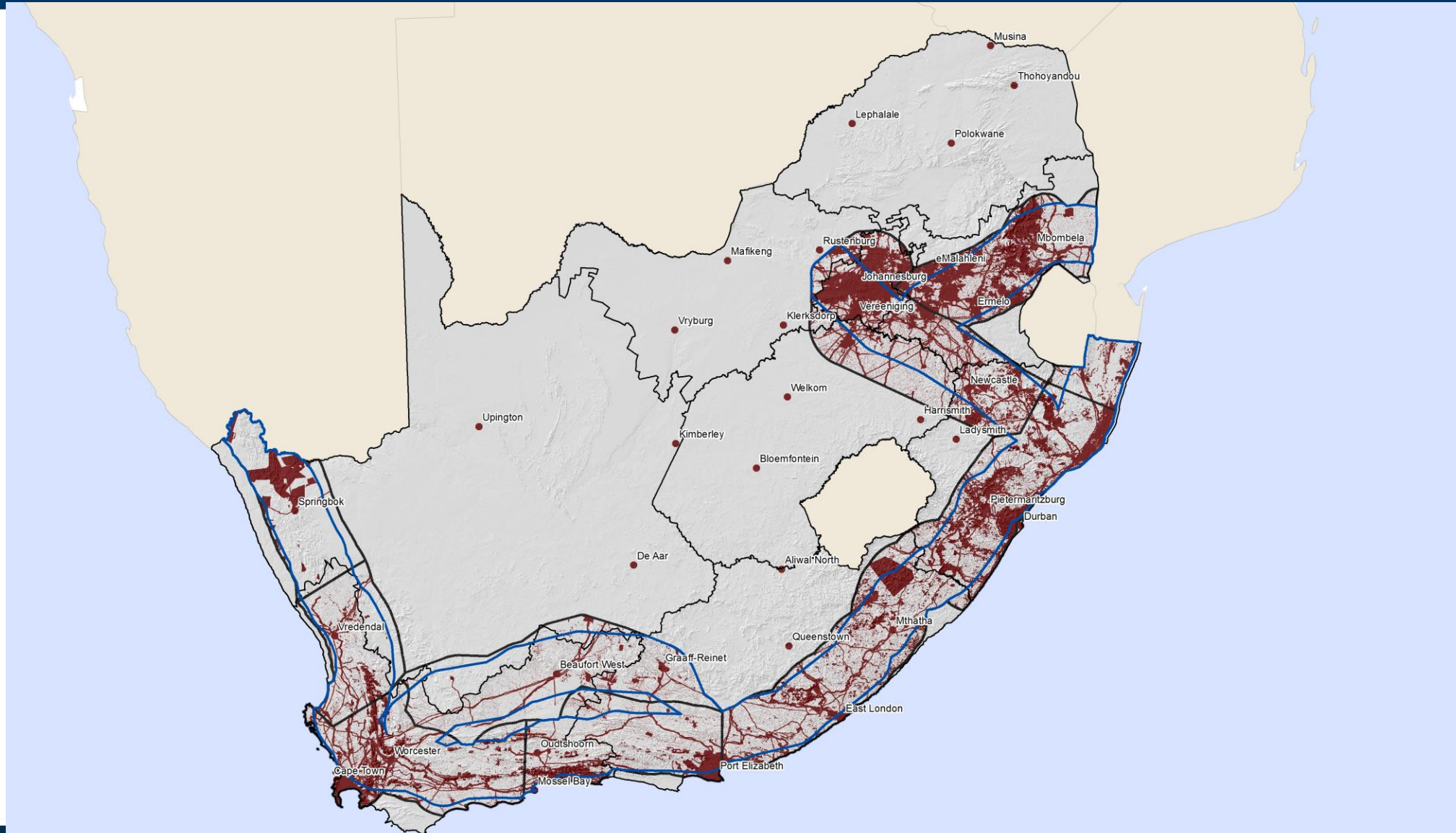
Demand Mapping for Gas



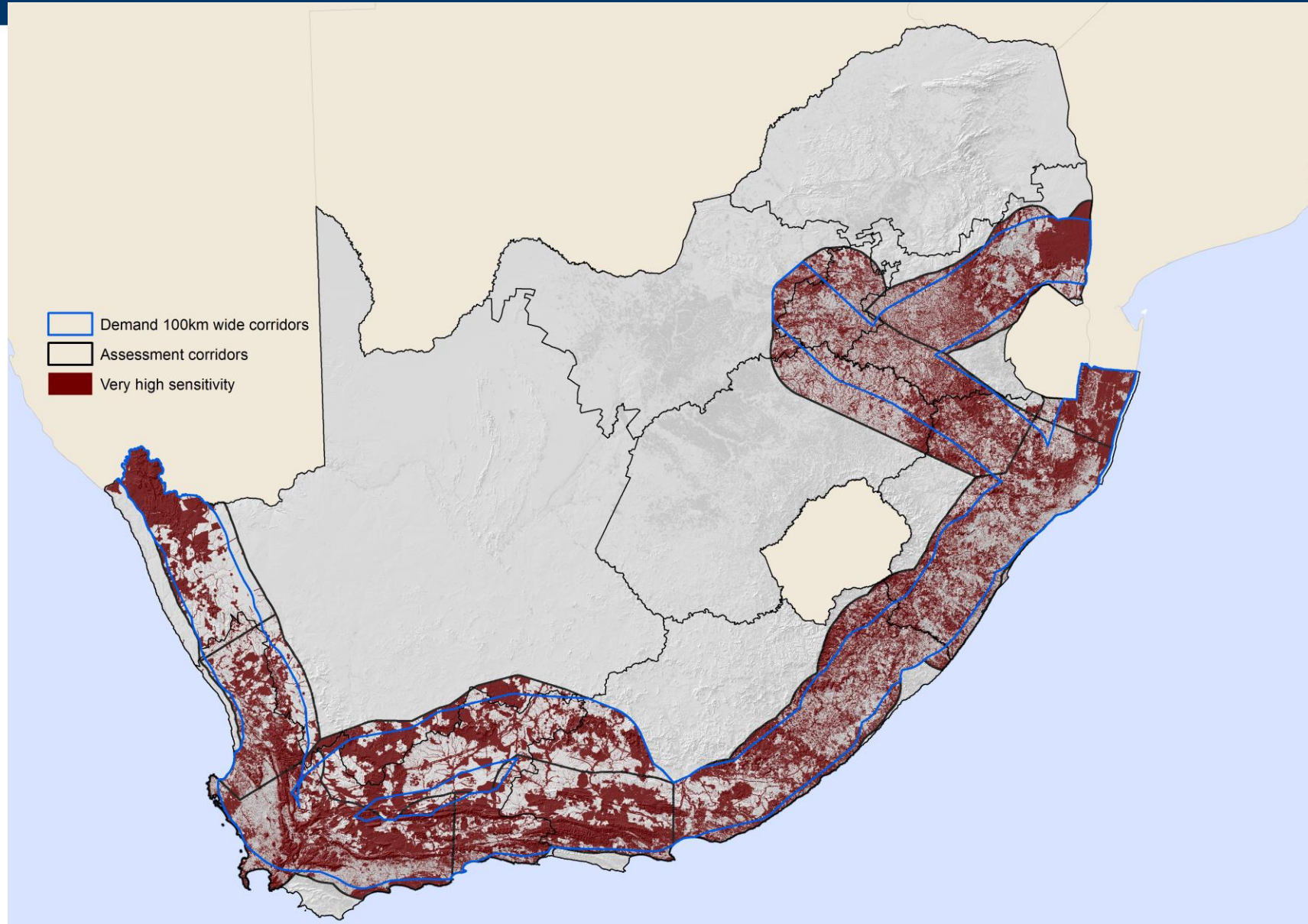
100km wide Demand mapping corridors - VH Environmental Constraints



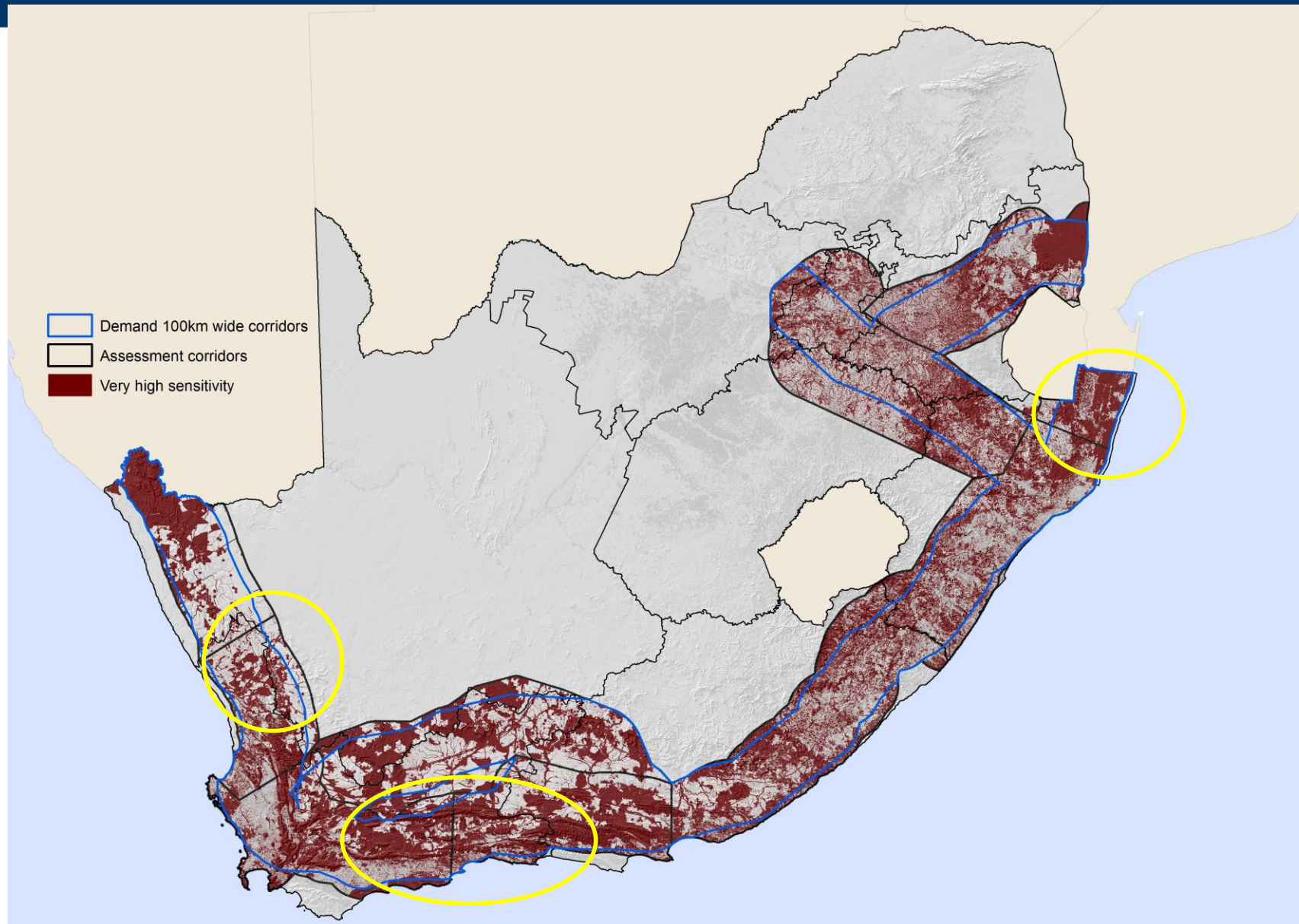
100km wide Demand mapping corridors - VH Engineering Constraints



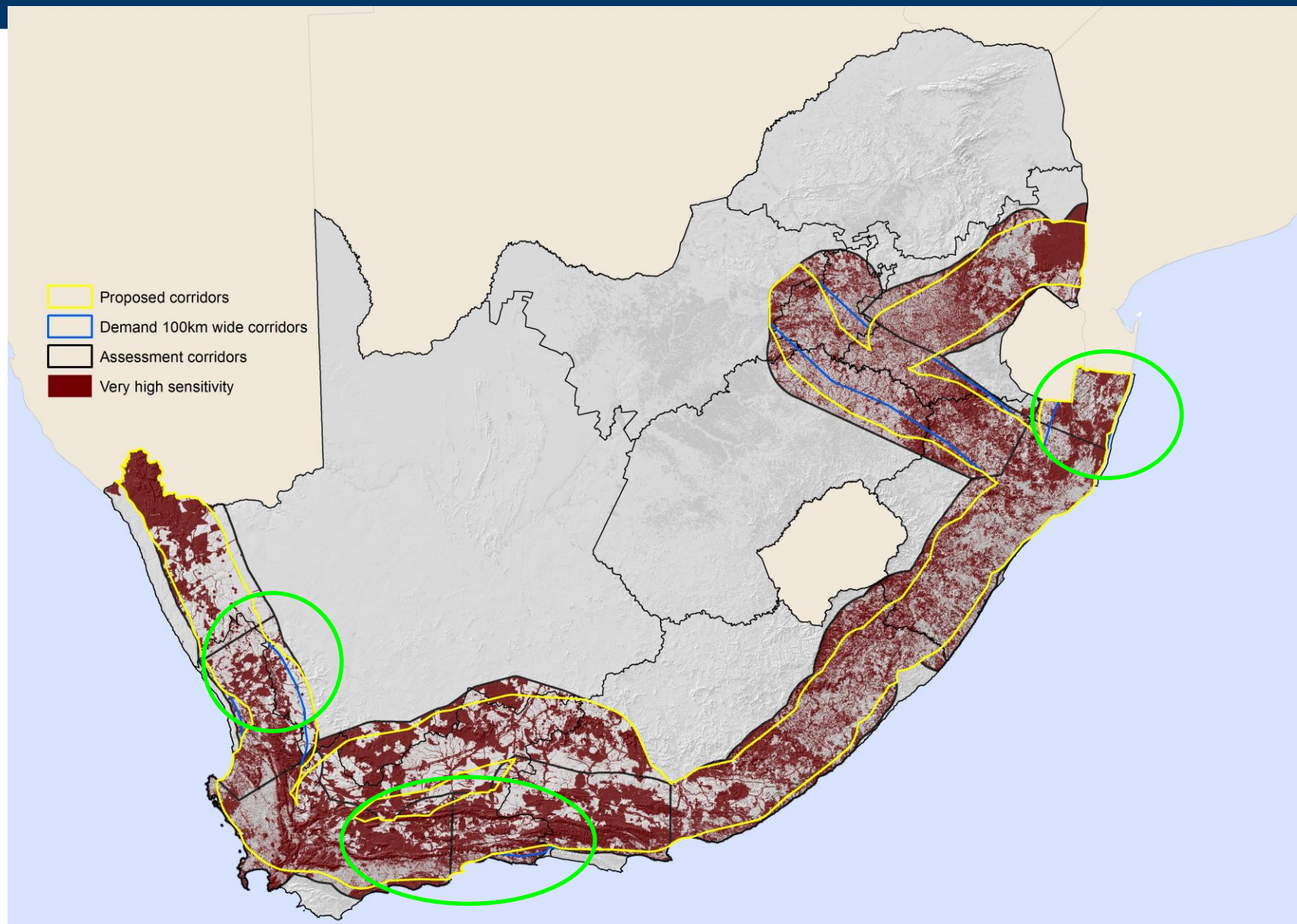
100km wide Demand mapping corridors- VH Eng and Env Constraints



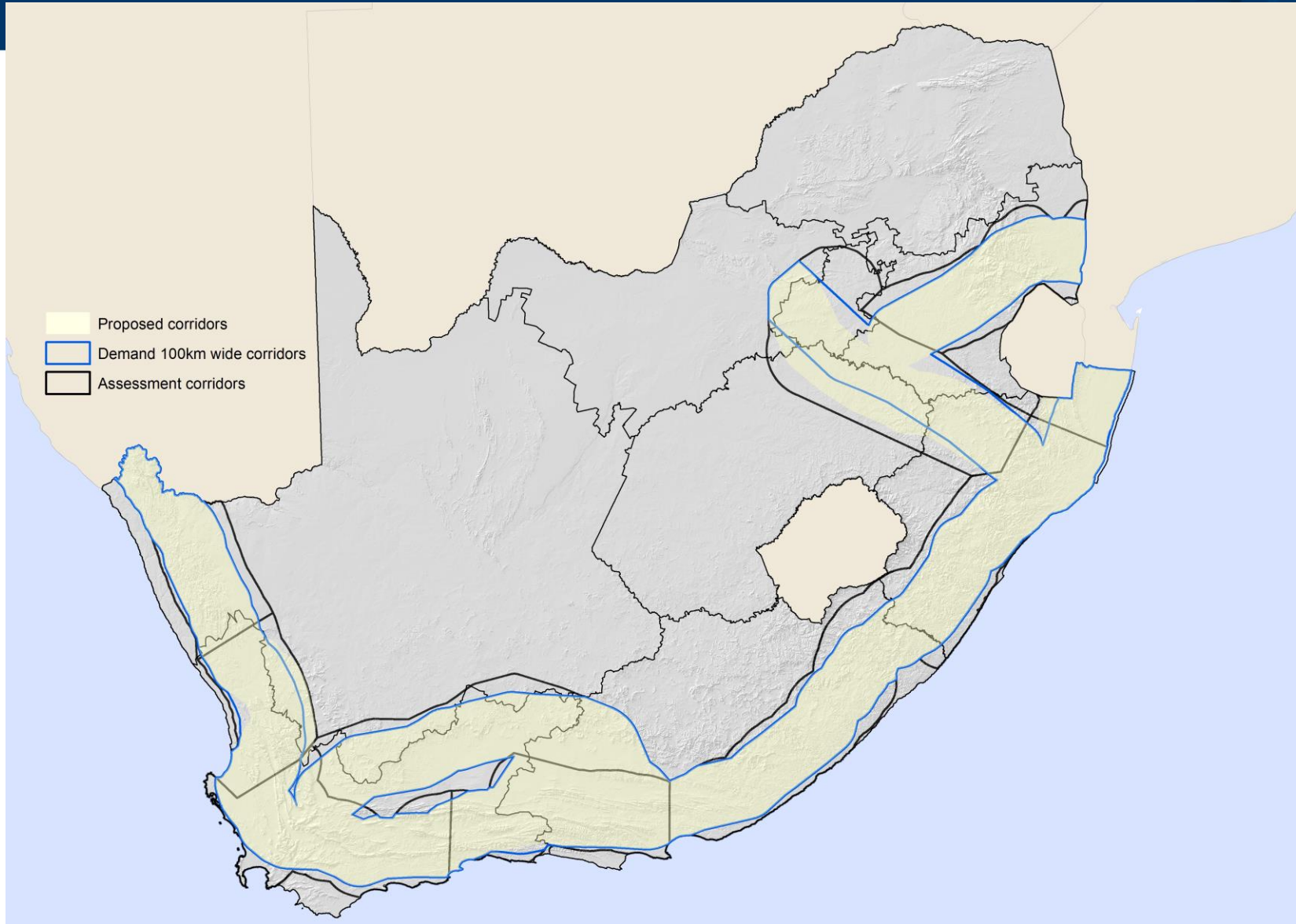
Potential Pinch Points



Proposed Corridors

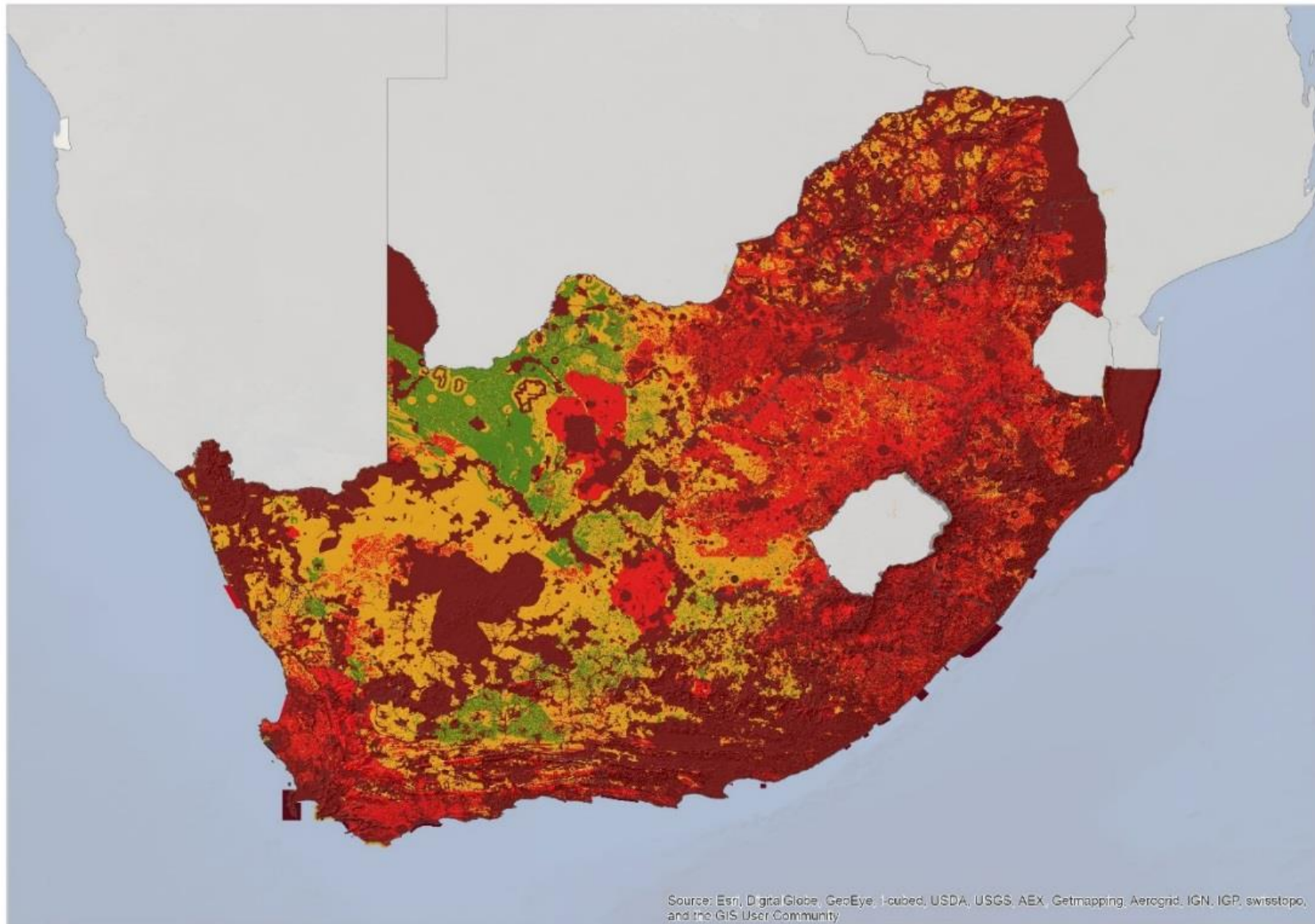


Proposed Gas Corridors and Assessment Corridors

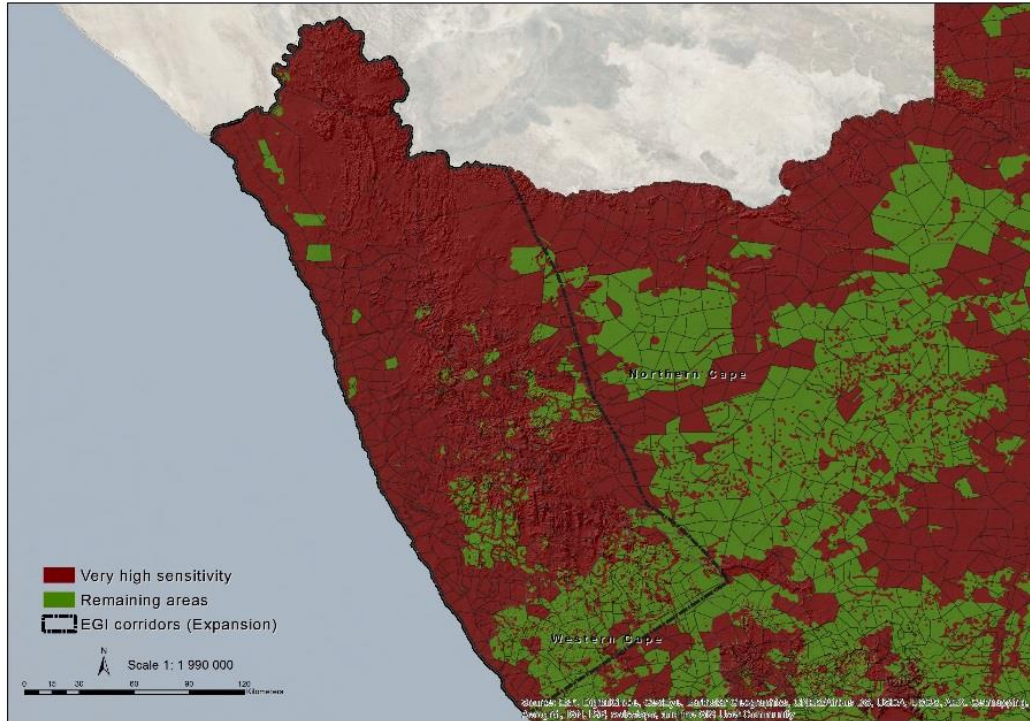


Electricity Grid Infrastructure Pinch point Analyses

Wall to wall Environmental Constraints EGI

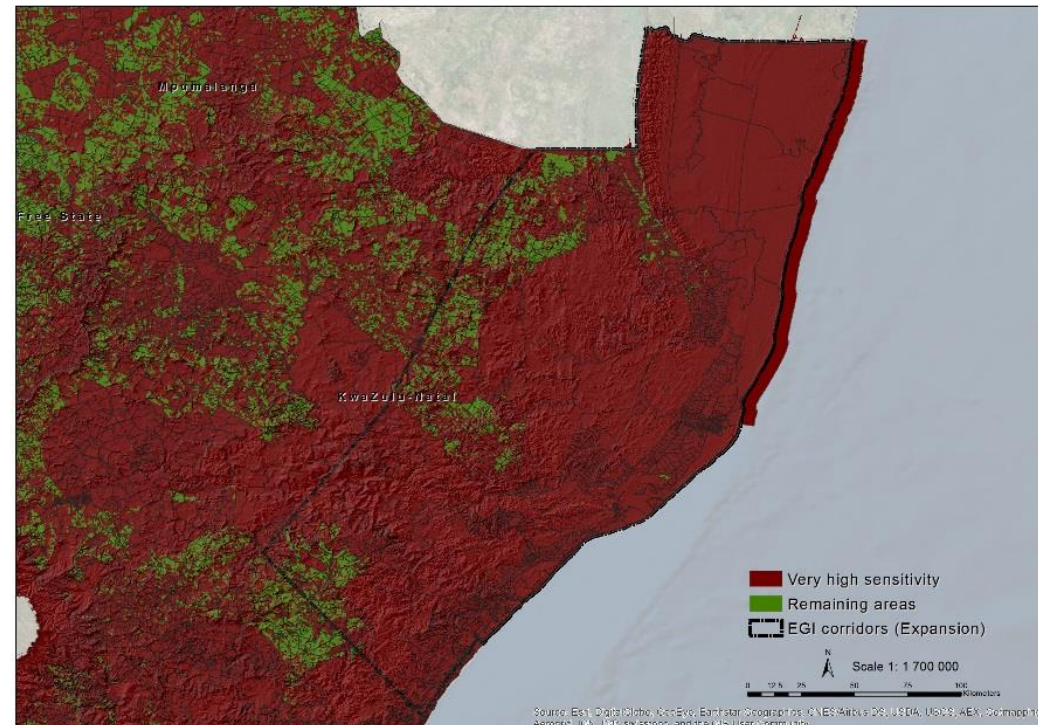


Very high Eng and Enviro Constraints for 125km wide corridors



No shift because of:

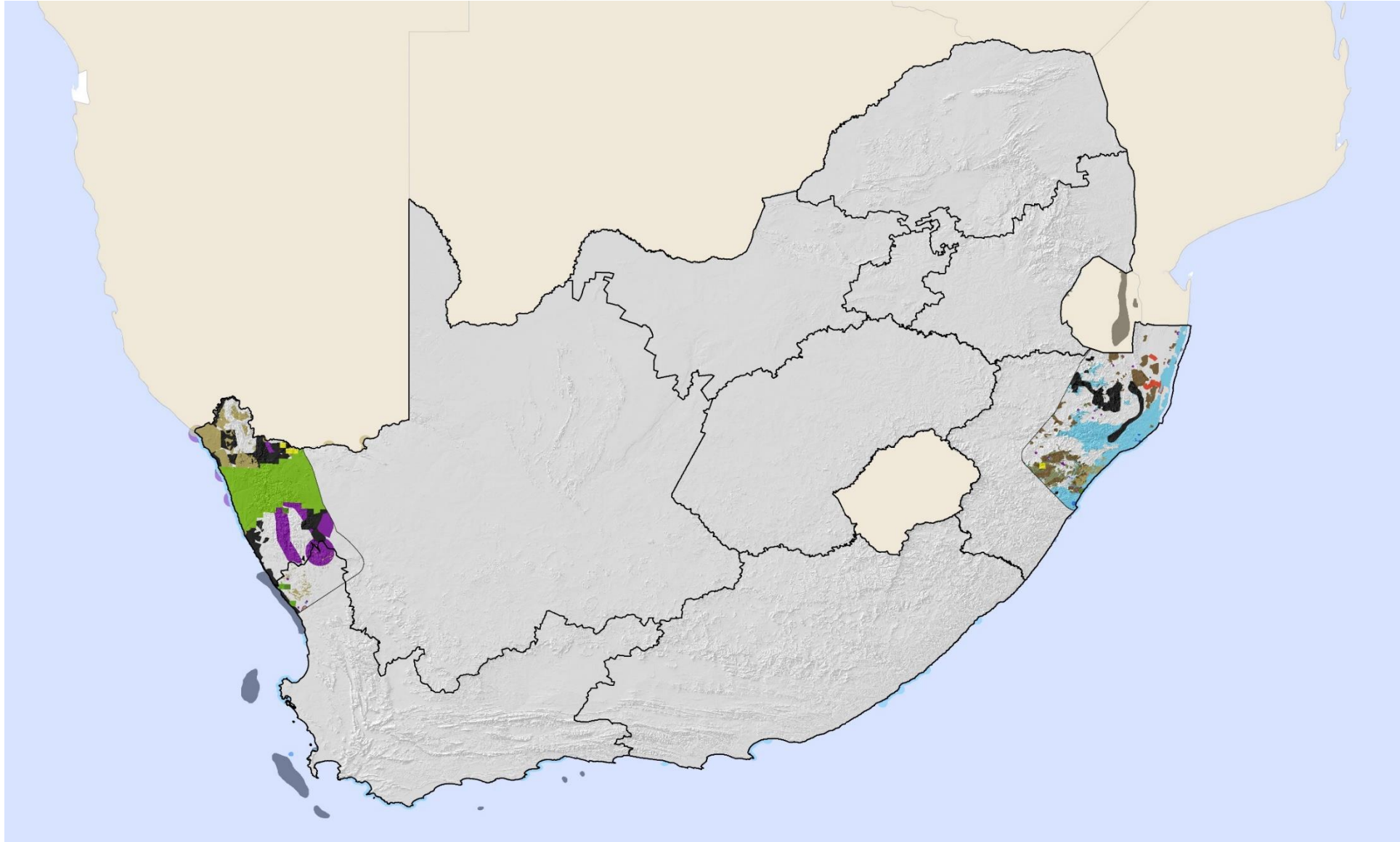
- Orange river width inward
- Location of substation
- Location of transmission line



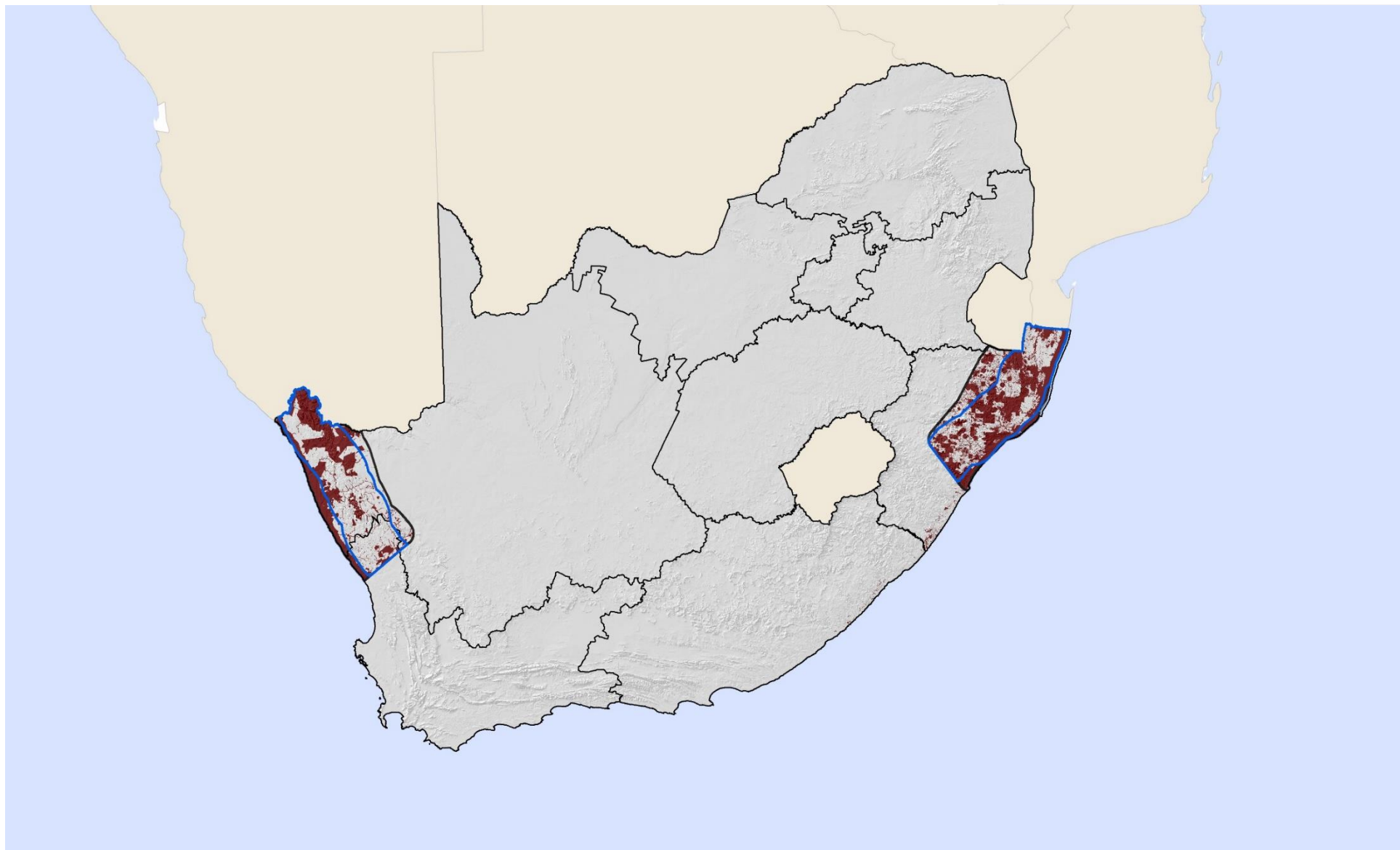
No shift because of:

- Swaziland border

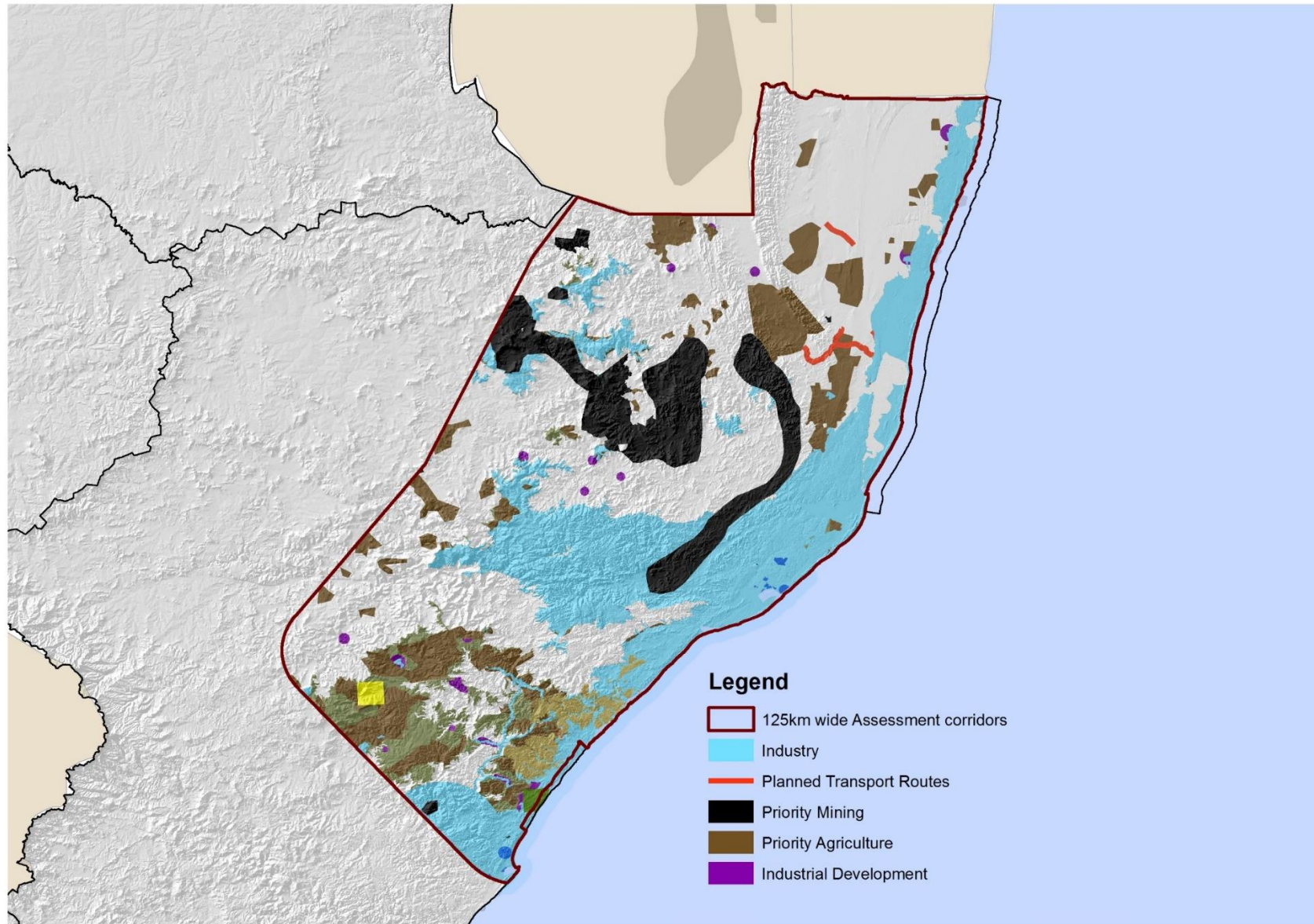
Demand Mapping for EGI Corridors



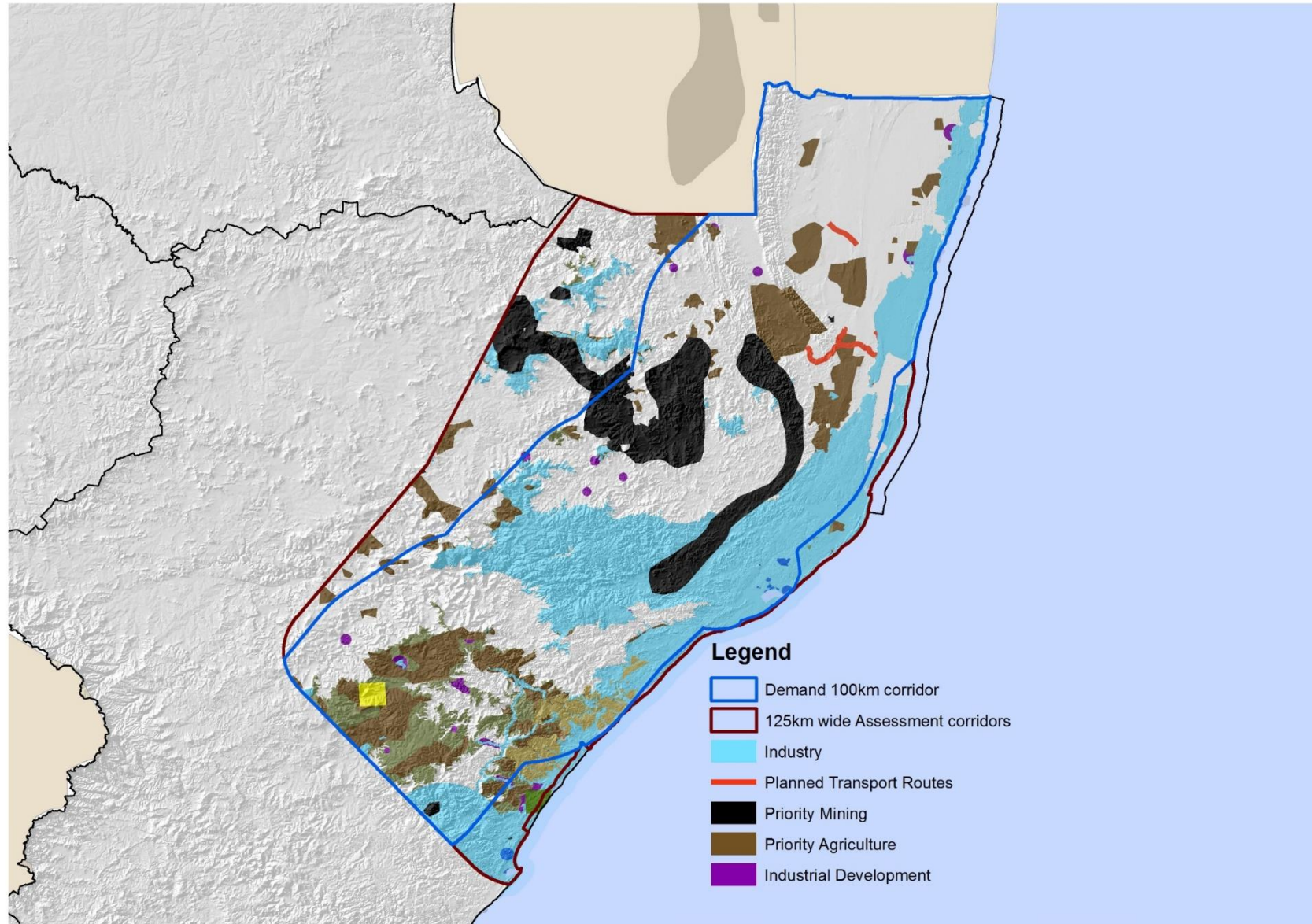
VH Engineering and Envir Constraints



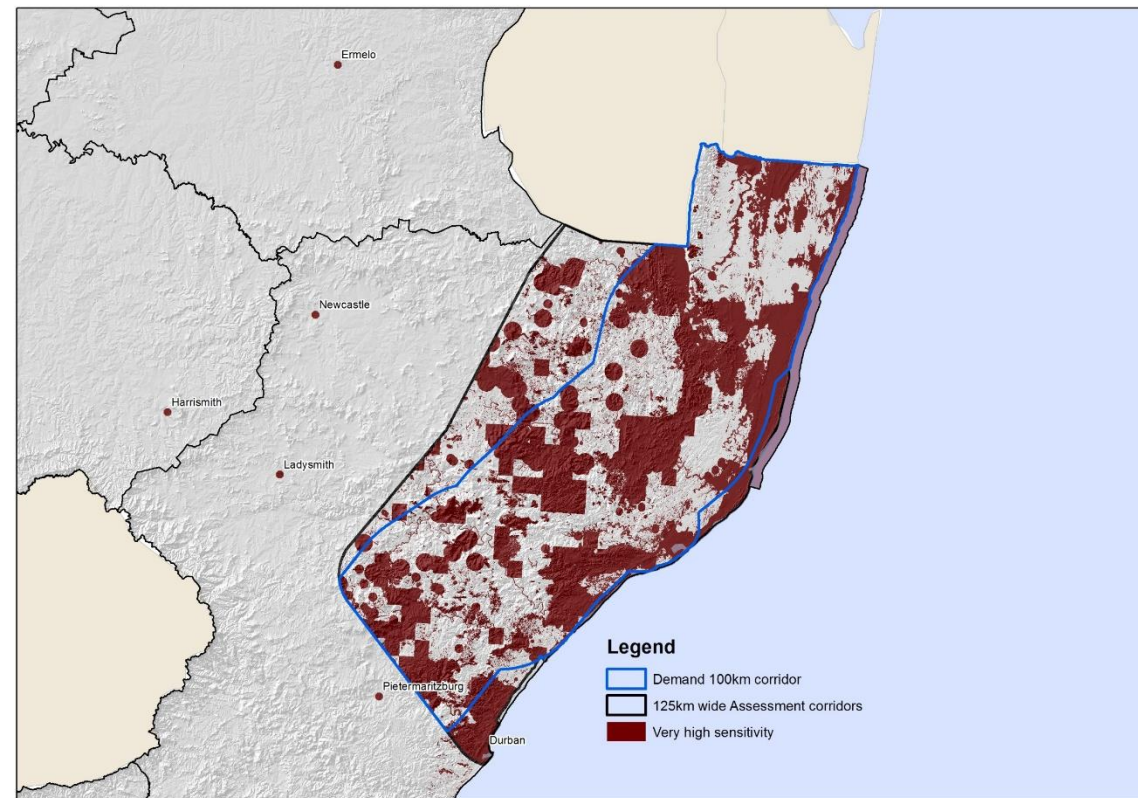
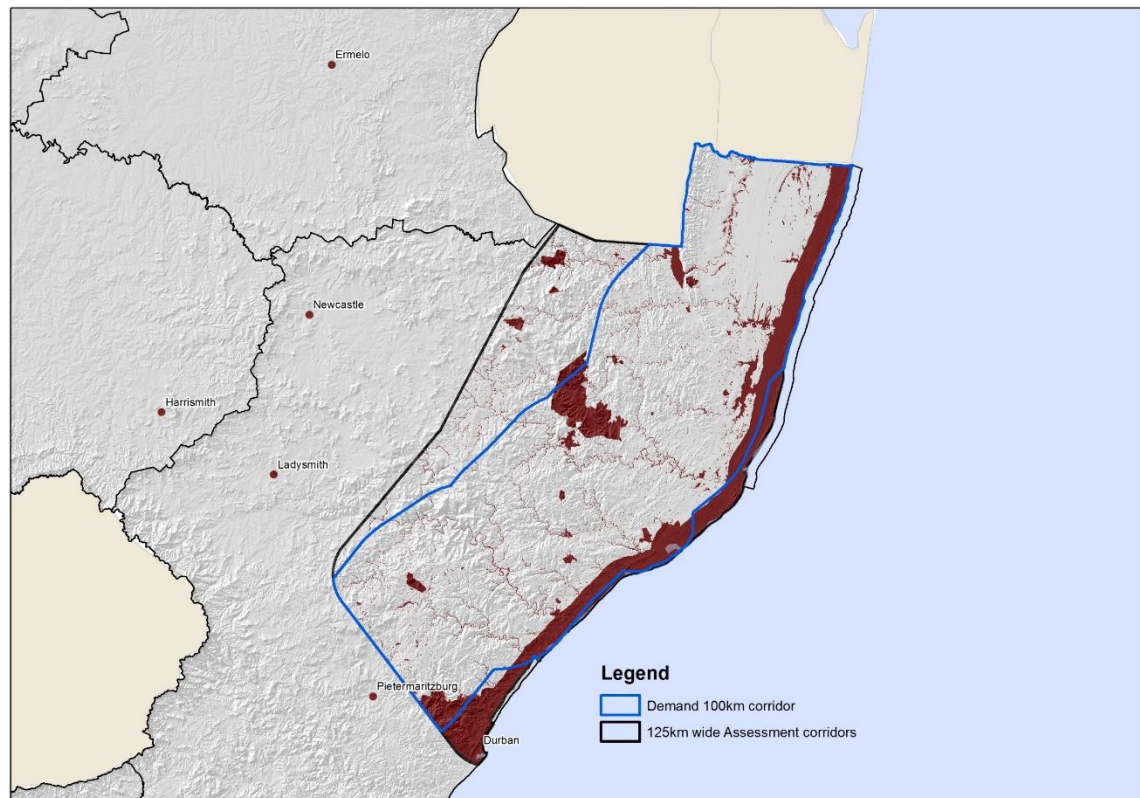
Eastern Corridor: Demand mapping



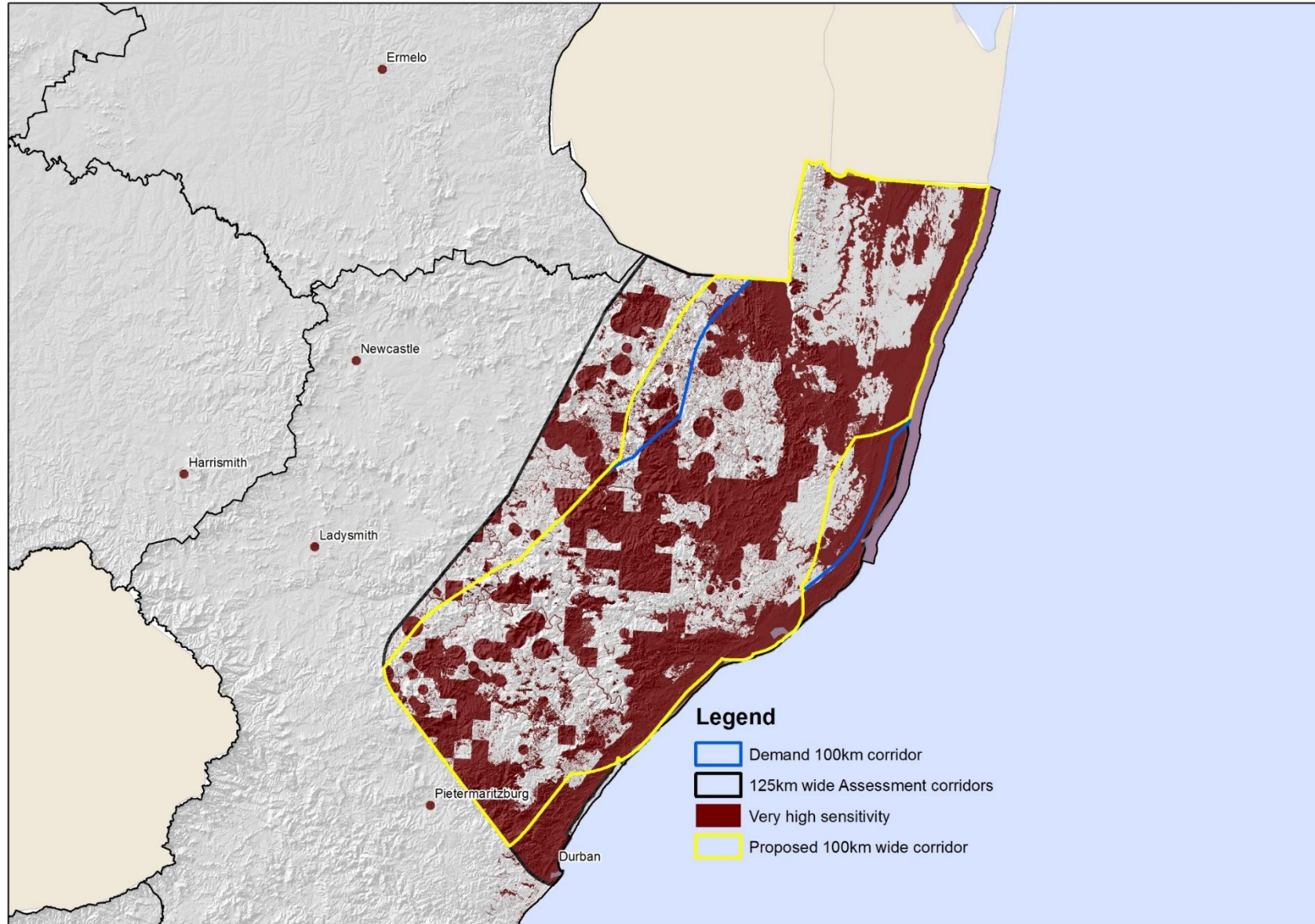
Demand corridor: Eastern Corridor



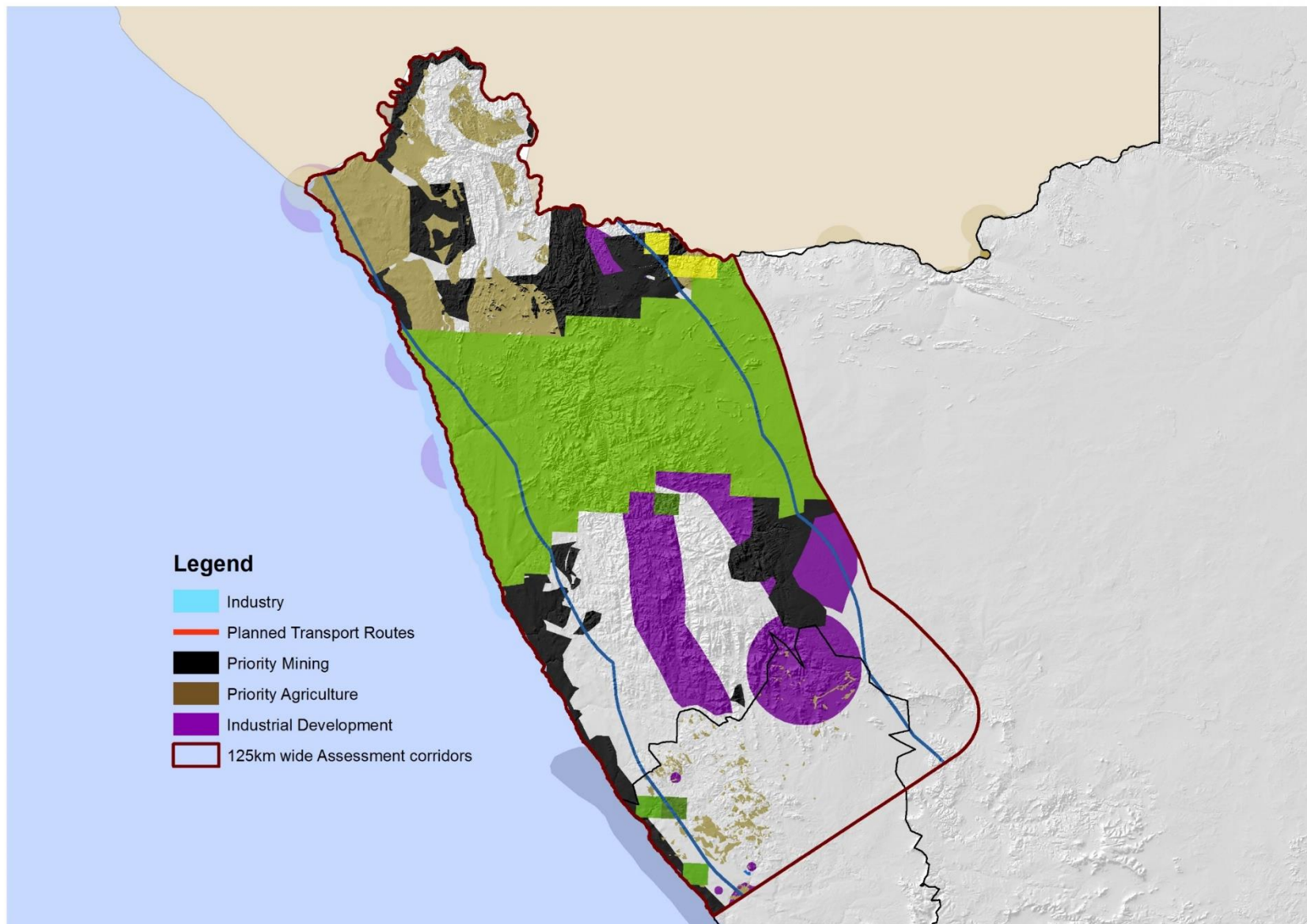
Demand corridor: Eastern Corridor Eng and Env Constraints



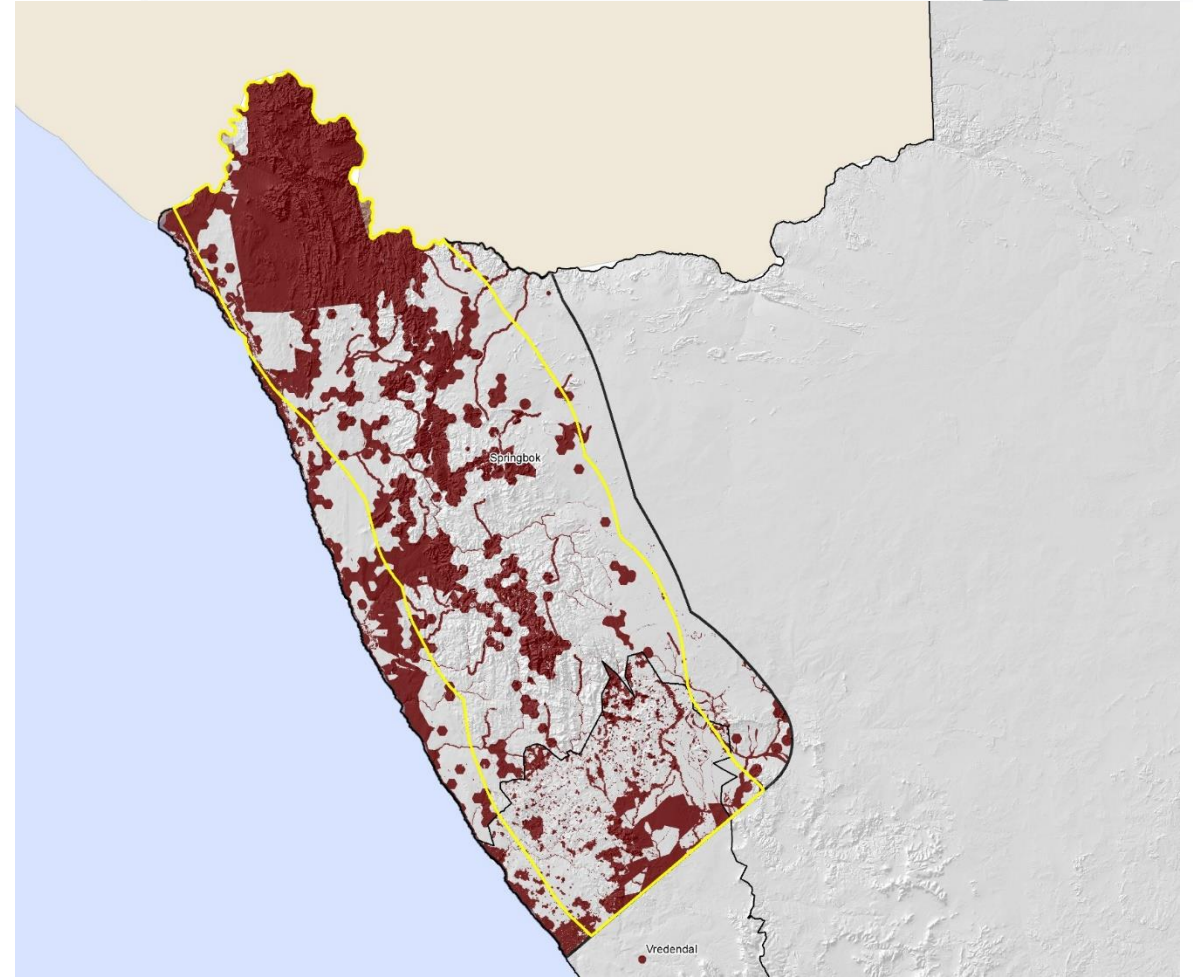
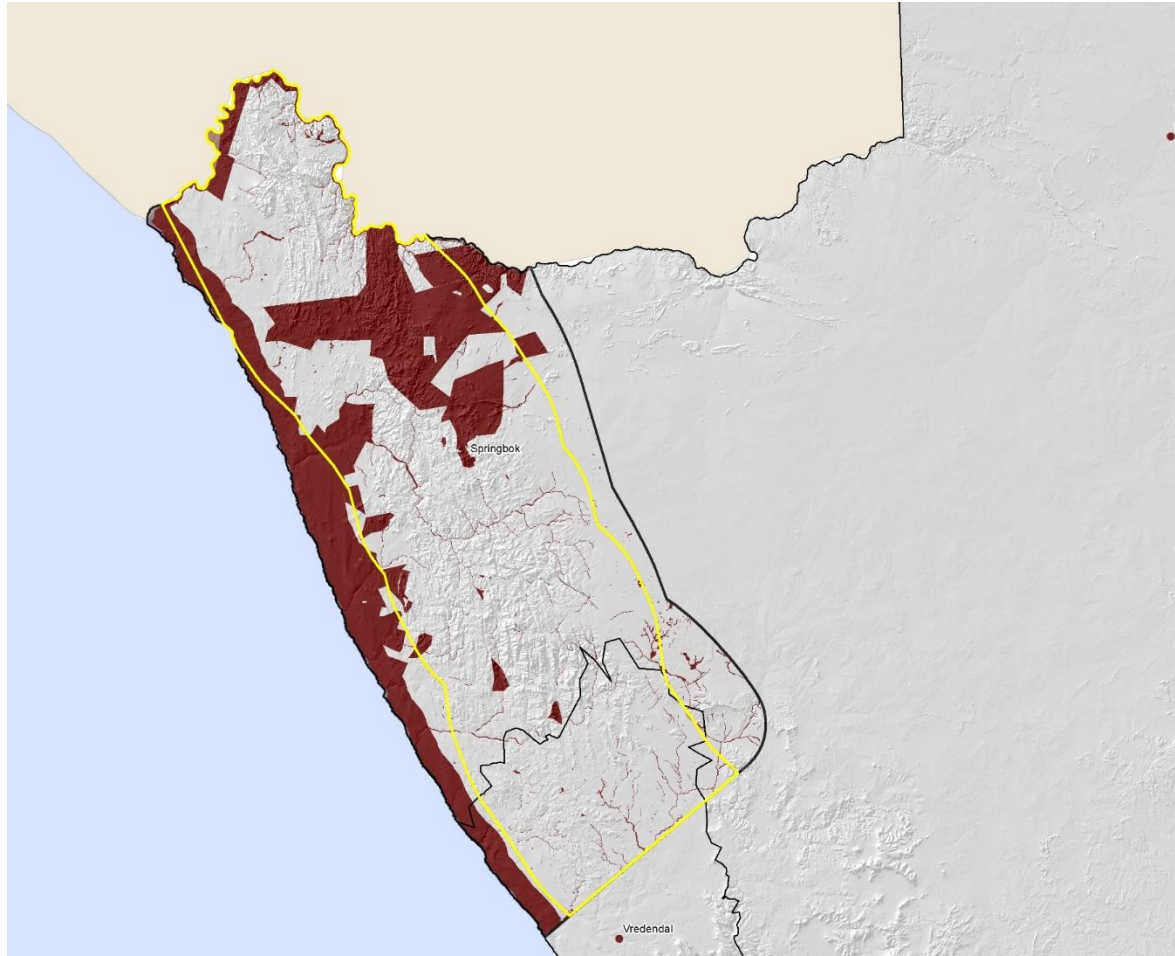
Proposed Eastern Corridor



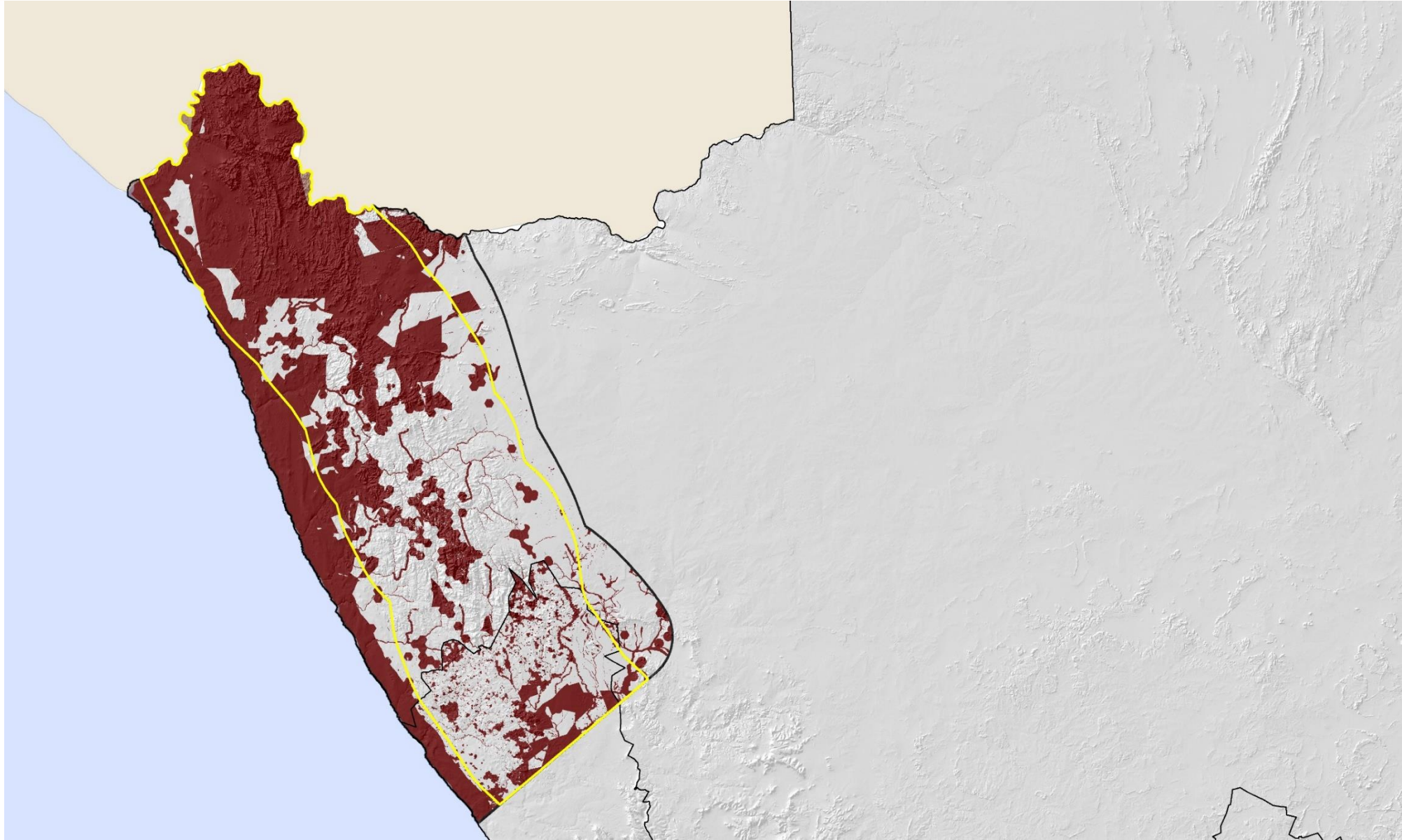
Western Corridor- Demand Mapping



Western Corridor: Environment and Engineering



Western Corridor: Environment and Engineering



Way forward

- Agree on proposed for corridors for the PGP and EGI
- Make any edits required
- Use the final corridors to determine routing options in the corridors



Questions