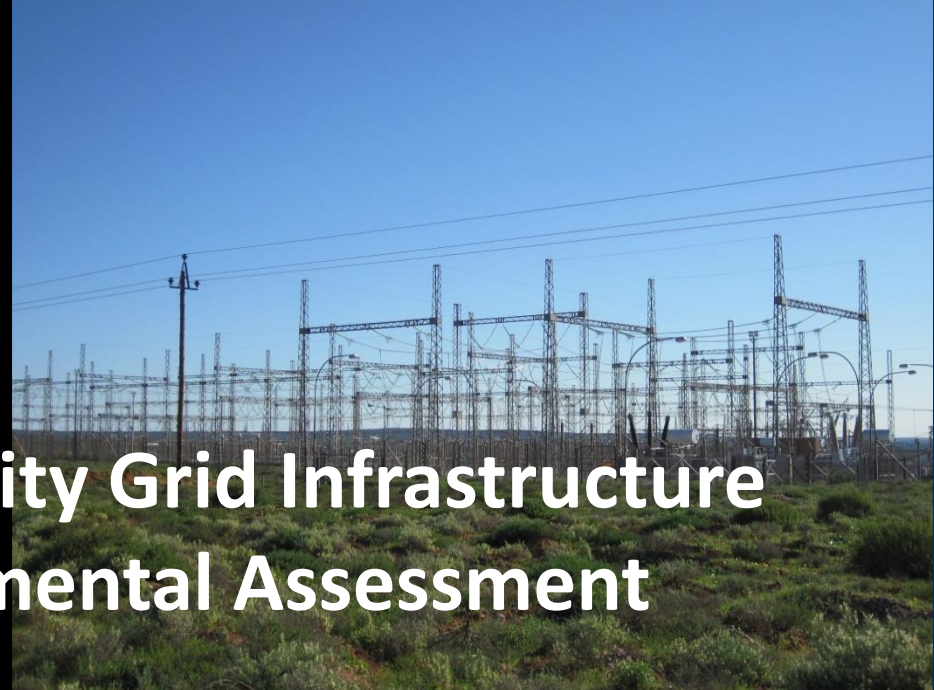




DEA National Electricity Grid Infrastructure Strategic Environmental Assessment



Background and Update Presentation

ERG Meeting

21 July 2015

Presenter: Marshall Mabin



environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

CSIR
our future through science



Introduction and update

RE SEA

- Refining the protocols incorporating proposals that are necessary for Ministers (DoE, DAFF, DMR, DWS and DRDLR) to consider the streamlined authorisation process in the REDZ as well as outside (assessment for everything as no upfront sensitivities and pre-assessment);
- Working with DoE IPPs office to integrate REDZ with BID window 5 (mid-next year);
- FOSAD (ESEID cluster) and Cabinet for endorsement and approval (Sept – Nov 2015);
- Gazetting for comment on REDZ and protocol (Nov – Dec 2015); and
- Gazetting for implementation in January 2016.

EGI SEA

- Gazette corridors in March 2016;
- Gazette for implementation in April – May 2016.

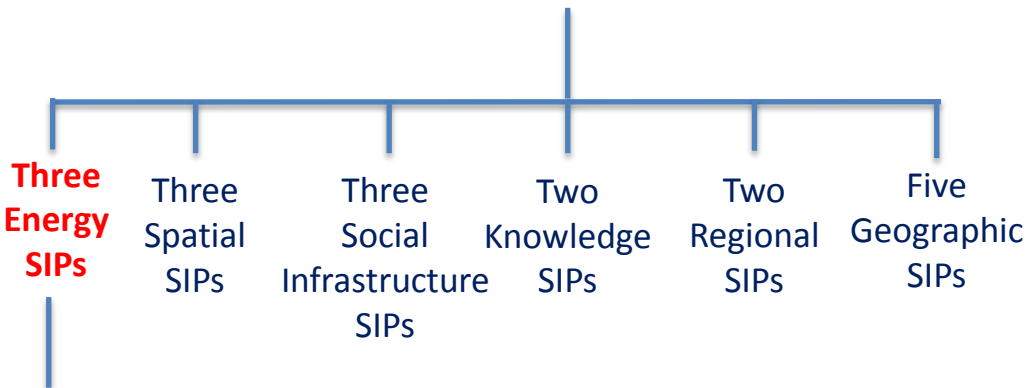
Calls for:

- Investment into a coordinated infrastructure program to create jobs
- Movement towards a low carbon economy prioritising renewable energy resources
- The reduction of constraints to development



Achieved through:

1. 18 Strategic Integrated Projects (SIPs)

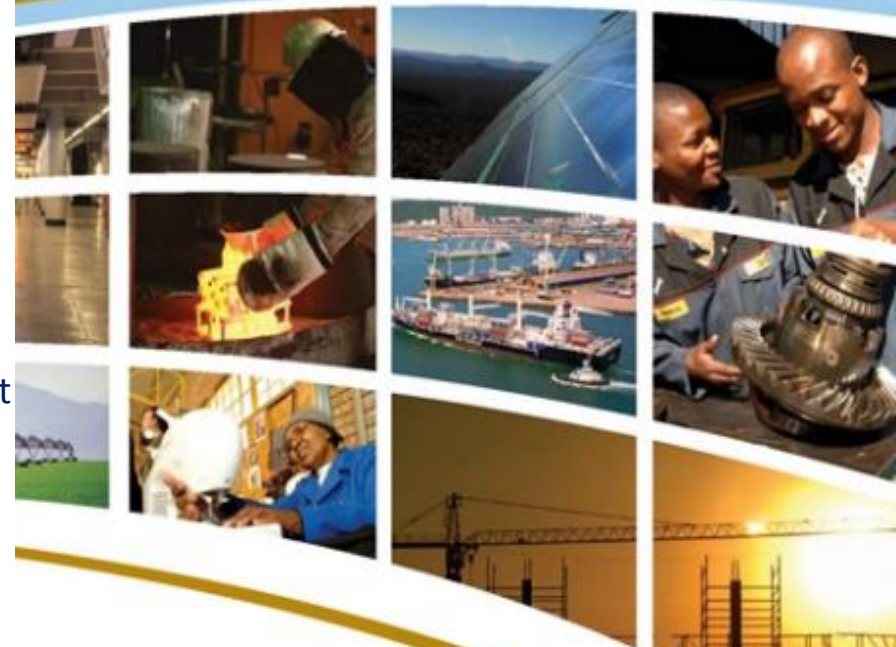


- SIP 8: Greening energy in support of South African Economy
- SIP 9: Electricity generation to support socio-eco development
- SIP 10: Electricity transmission and distribution for all**

2. Predictable environmental regulatory framework

- Simplifies and accelerates the approval process for environmental authorisations and permits.

A SUMMARY OF THE SOUTH AFRICAN NATIONAL INFRASTRUCTURE PLAN



Background to EGI SEA



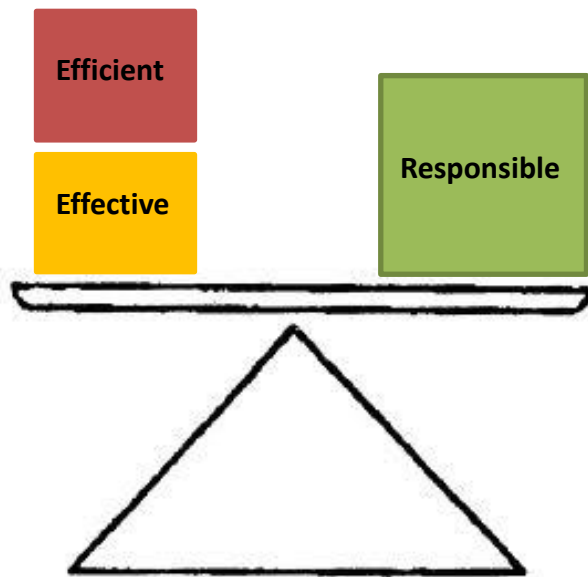
- Fundamental shift in South Africa's energy generation footprint
- Current grid network inadequate to meet demands of diversifying energy mix
- Most of easy capacity been accessed
- Need to expand grid and do it quickly to bring new generation online
- **Problem:** Disconnect between development time line for generation vs. grid expansion
 1. Protracted Environmental Authorisation and permitting process
 - Long time frame for EIAs
 - Additional Permitting requirements
 - Cascading authorisation process
 - EIA locks Eskom into predefined route
 - High incidence of appeal
 - Authorisations expire
 2. Servitude negotiation and acquisition
- **Solution:**
 1. Strategic grid planning to identify priority corridors early
 2. Create favourable regulatory conditions within corridors
 3. Thus facilitate upfront investment in grid infrastructure within the corridors
- ***DEA undertaking the SEA to assist Eskom with identifying priority corridors and to improve environmental regulatory processes inside the corridors in support of SIP 10***

Vision and Objectives of SEA

Vision for the SEA: *Strategic Electrical Grid Infrastructure (EGI) is expanded in an environmentally **responsible** and **efficient** manner that responds **effectively** to the country's economic and social development needs.*

Objectives of the SEA:

- Identify strategic corridors to support backbone of electricity transmission up to 2040.
- Refine the corridors based high level suitability from an environmental, economic and social perspective.
- Undertake scoping level environmental pre-assessment of the corridors
- Create a development protocol to inform additional environmental assessment requirements inside of the corridor
- Facilitate streamlined environmental authorisation of EGI (Tx and Dx) development inside of corridors
- Promote integrated decision-making between authorising authorities
- Enable Eskom greater flexibility when negotiating servitudes
- Support upfront strategic investment (certainty)
- Allow for the Incorporation of environmental considerations at earliest stage of grid planning (**environmental issues early**)



Certainty



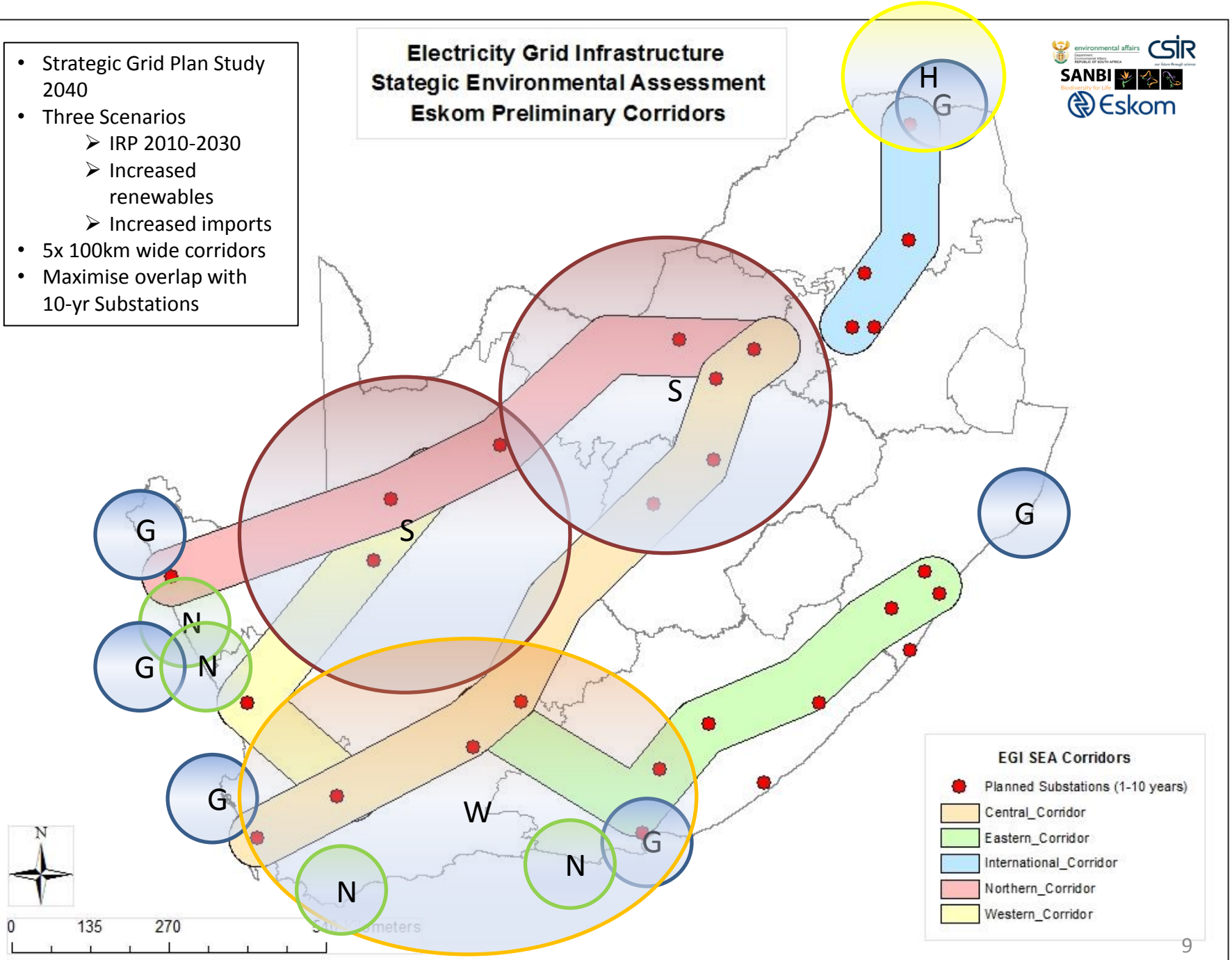
- Currently grid expansion can only be justified where there is sufficient certainty that grid is required (to support either load or generation)
- Project by project in most cases. In the instance of IPPs, only once PBS has been reached.
- High level commitment to EGI corridors creates necessary certainty for Eskom to unlock funding for proactive grid development in these areas;
 - High level commitment = Gazetting
 - Provision under NEMA (Section 24)
 - Infrastructure Development Act (Section 7 and 8)
 - Spatial Planning and Land Use Management Act (Chapter 8)
- In turn, high level commitment creates a conducive environment for private investment in these areas, for both generation and energy consuming industries.



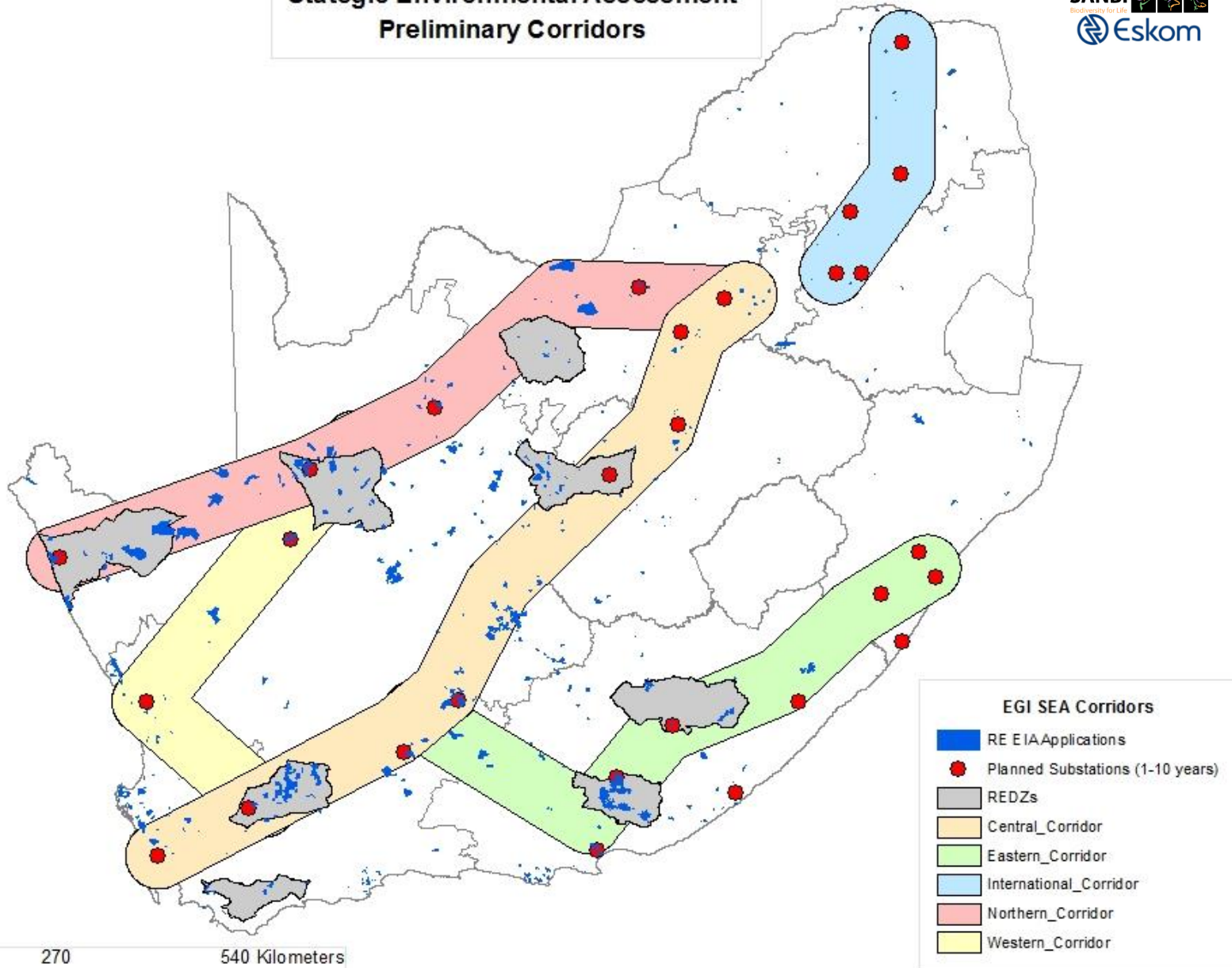
- Currently environmental consideration only included once routing alternatives have been identified.
 - Higher risk of environmental show stoppers
 - Greater assessment costs and conditional mitigation measures
 - Higher opportunity costs (appeals, delays)
- By incorporating environment considerations upfront in development of routing alternatives:
 - Negates the risk of environmental ‘show stoppers’ upfront
 - Facilitates upfront investment (purchasing of strategic servitudes)
 - Enables least environmental cost path determination
 - Reduces need for mitigation and overall assessment cost
 - Reduces risk of appeals and delays

- Strategic Grid Plan Study 2040
- Three Scenarios
 - IRP 2010-2030
 - Increased renewables
 - Increased imports
- 5x 100km wide corridors
- Maximise overlap with 10-yr Substations

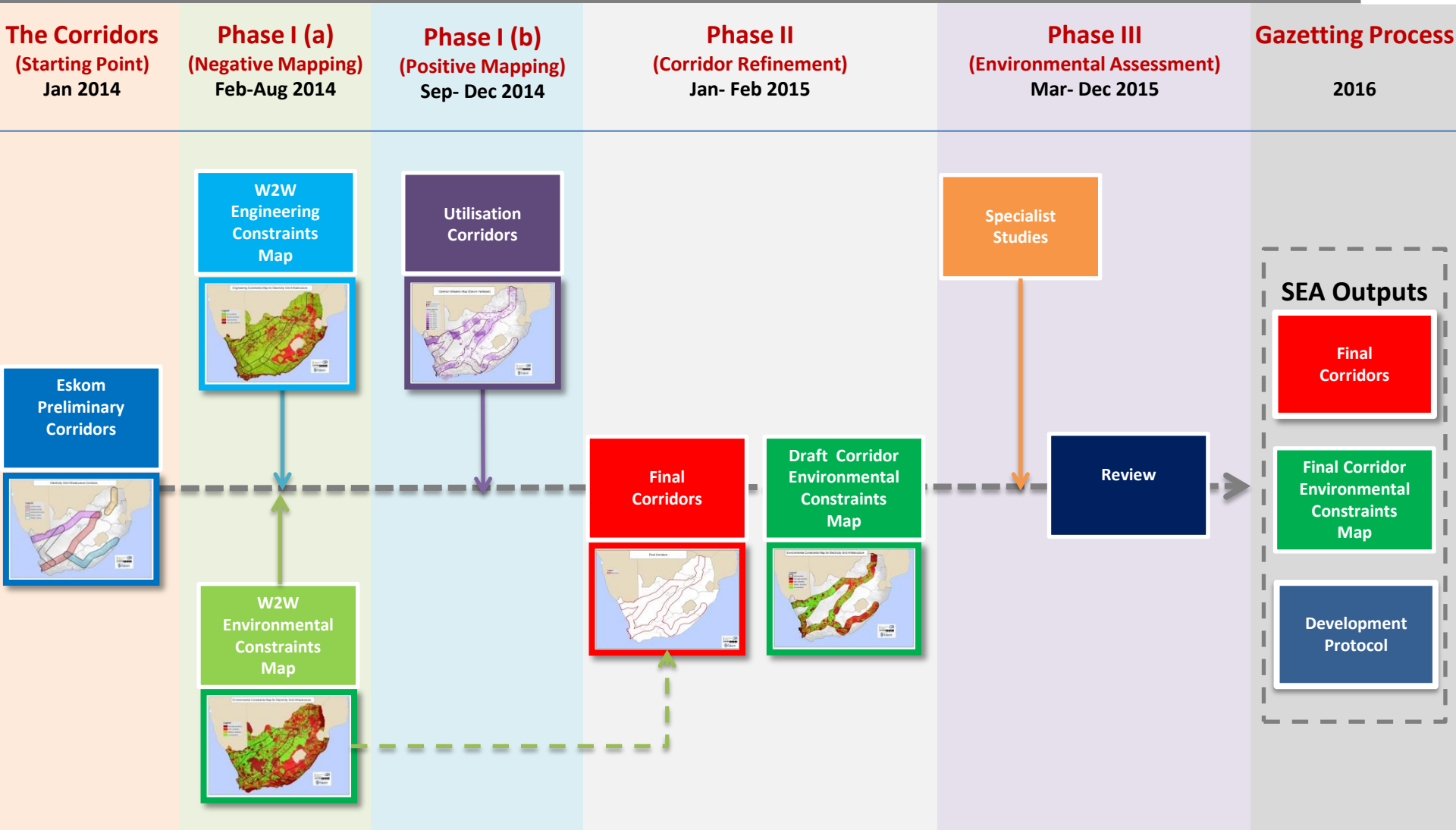
Electricity Grid Infrastructure Strategic Environmental Assessment Eskom Preliminary Corridors



Electricity Grid Infrastructure Strategic Environmental Assessment Preliminary Corridors



EGI SEA PROCESS

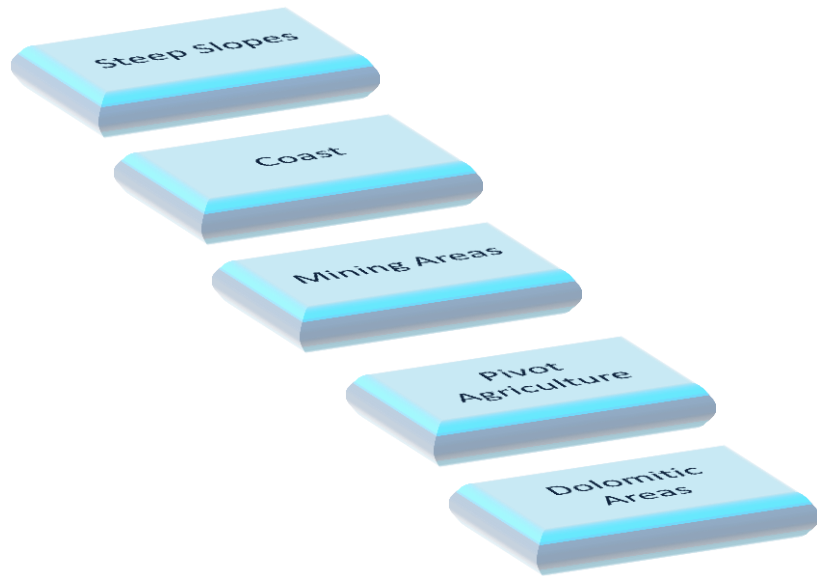


PARTICIPATION:

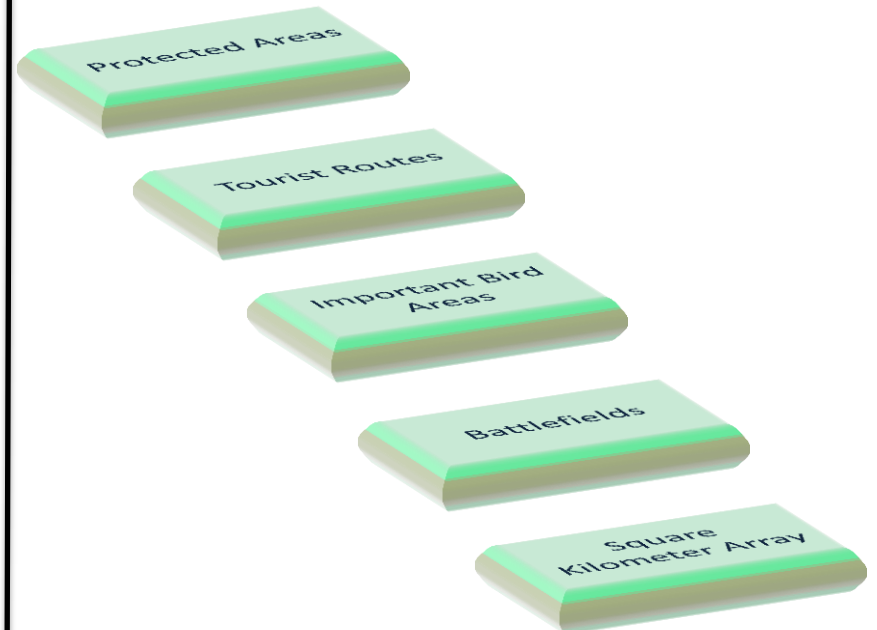
Project Steering Committee, Expert Reference Group, National, Provincial, Local Government, BUSA, Chamber of Mines, Chamber of Commerce, Energy Intensive User Group, SAPVIA, SAWEA, SASTELA, IPP Office, Eskom, Transnet, CEF, Industrial Development Corporation, Civil Aviation Authority, Endangered Wildlife Trust, Birdlife South Africa, Cape Nature, Ezemvelo Wildlife, SANBI, and other key stakeholders.

Phase Ia: Negative Mapping Outputs

W2W Engineering Constraints Map



W2W Environmental Constraints Map



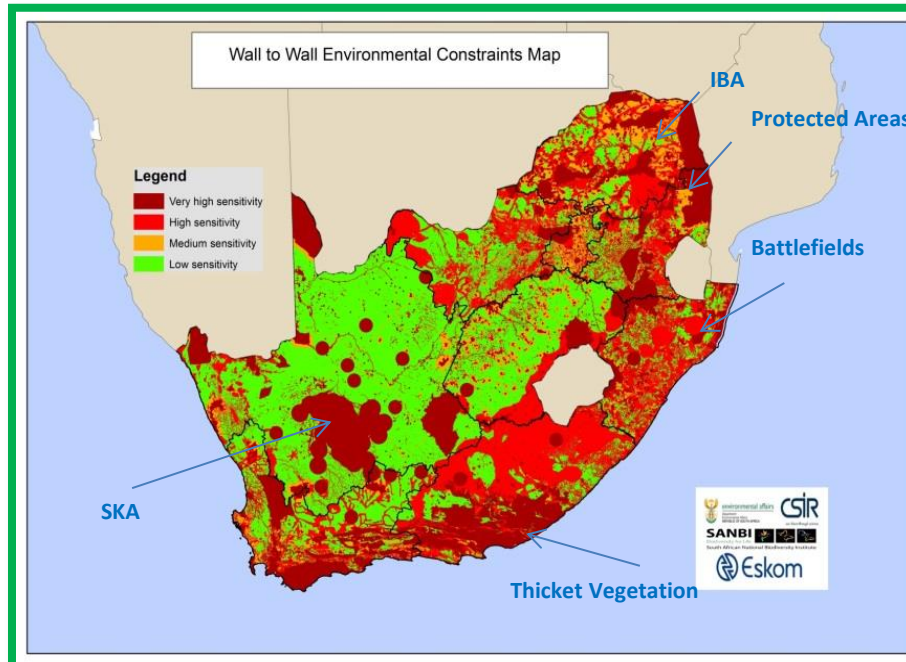
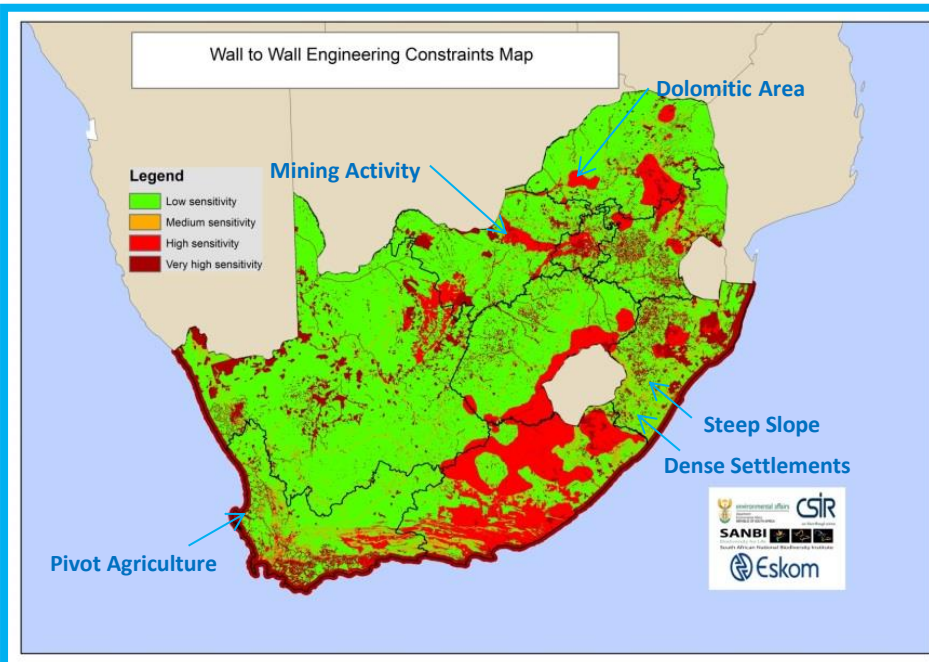
Phase Ia: Negative Mapping Outputs

W2W Engineering Constraints Map

Engineering Constraints Categorisation		
Very High	The lifetime cost associated with development in this area is greater than 150% the baseline lifetime cost index.	>1.5X
High	The lifetime cost associated with development in this area is between 120% and 150% the baseline lifetime cost index.	>1.2X<1.5X
Medium	The lifetime cost associated with development in this area is between 100% and 120% the baseline lifetime cost index.	>X<1.2X
Low	The lifetime costs associated with development in this area is less than 1.5 times the baseline lifetime cost index.	X

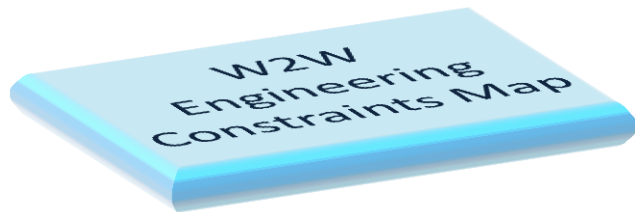
W2W Environmental Constraints Map

Environmental Constraints Categorisation	
Very High	The area is rated as extremely sensitive to the negative impact of electricity grid infrastructure development. As a result the area will either have very high conservation value, very high existing/ potential socio-economic value or hold legal protection status.
High	The area is rated as being of high sensitivity to the negative impact of electricity grid infrastructure development. As a result the area will either have high conservation value and or existing/potential socio-economic value.
Medium	The area is rated as being of medium sensitivity to the negative impact of electricity grid infrastructure development. As a result the area will either have medium levels of conservation value and/or medium levels of existing/potential socio-economic value.
Low	Area is considered to have low levels of sensitivity in the context of electricity grid infrastructure development.



Phase II: Corridor Refinement Process (Pinch Point Analysis)

Phase 1a: Overlays



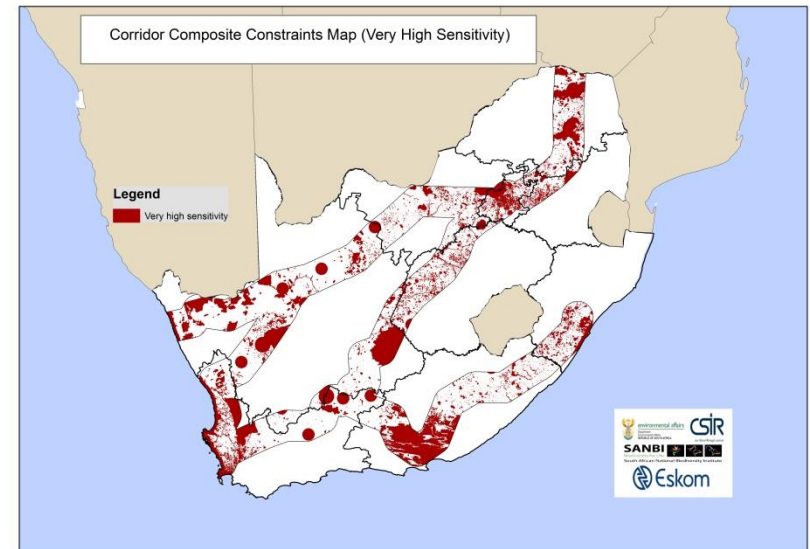
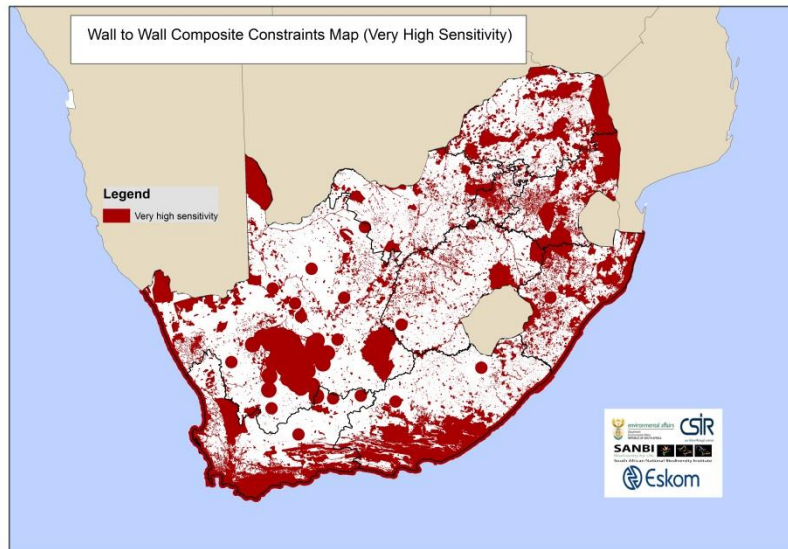
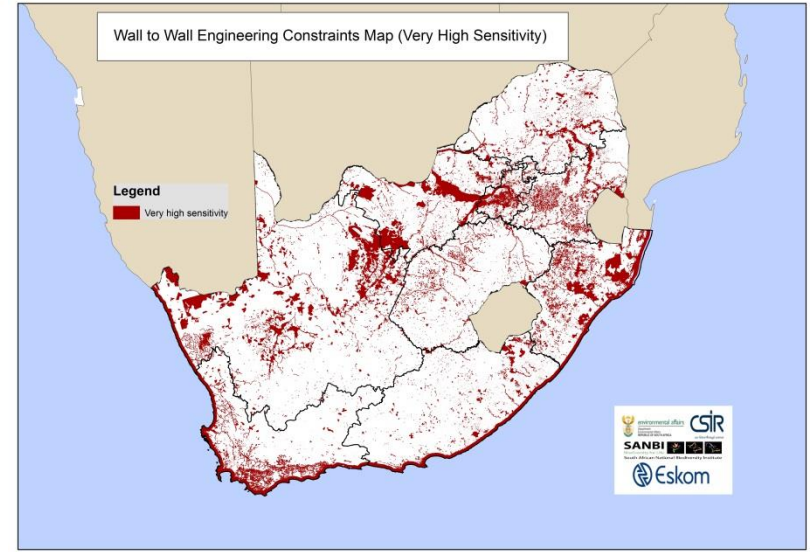
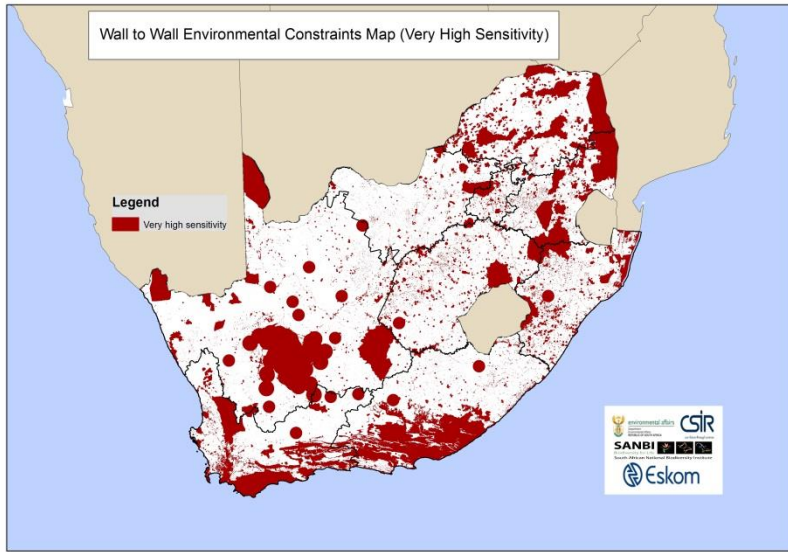
Phase 1b: Foundation

Pinch Point Analysis

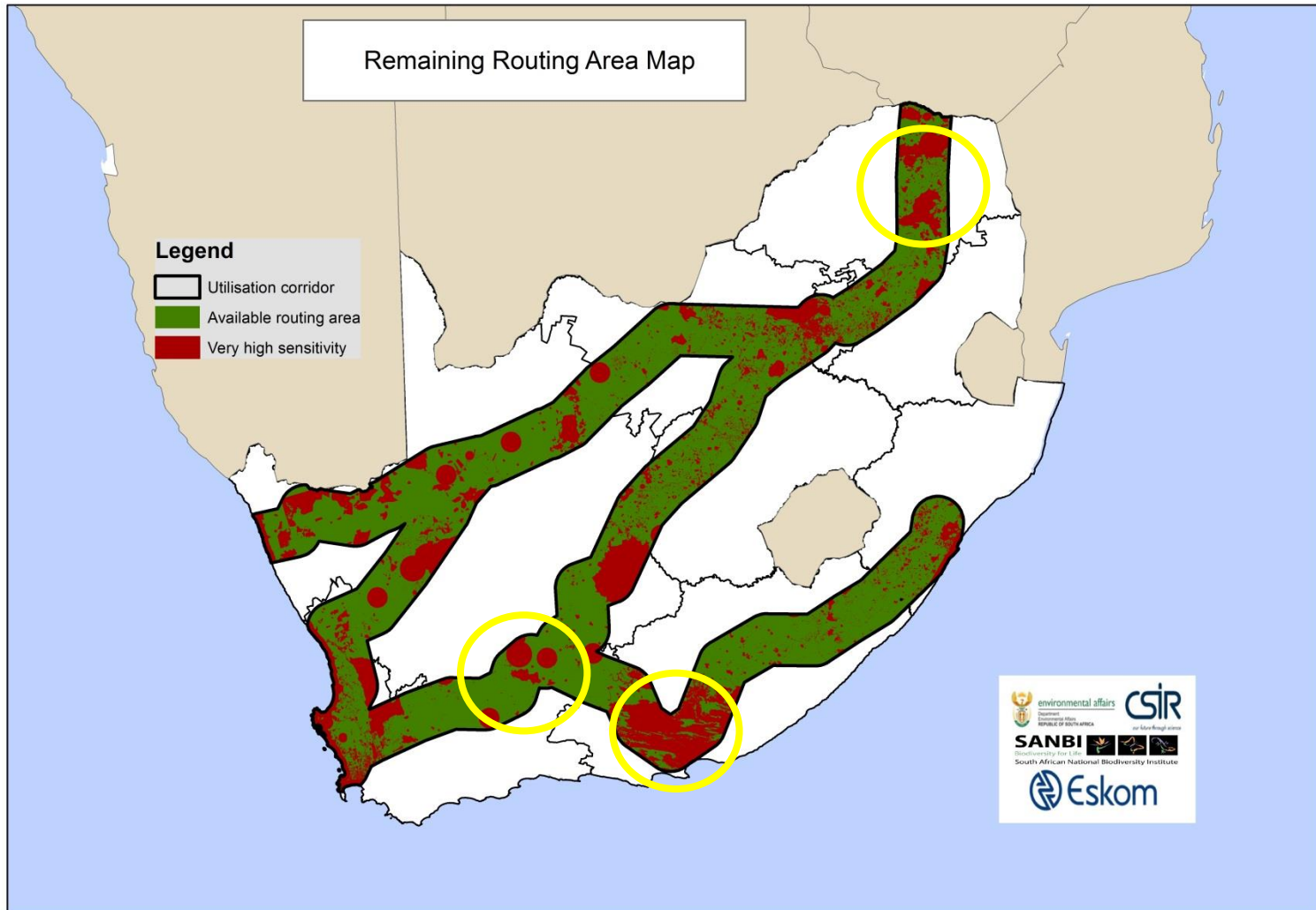
- Combine VH sensitivity areas
- Merge remaining routing area (compositions of H, M and L sensitivities);
- Overlay with land parcels dataset;
- Routing analysis
- Identify partial (<5 unique routing options) and complete (no routing options) pinch points for each corridor;
- Adjust corridor in direction of relief, where possible.



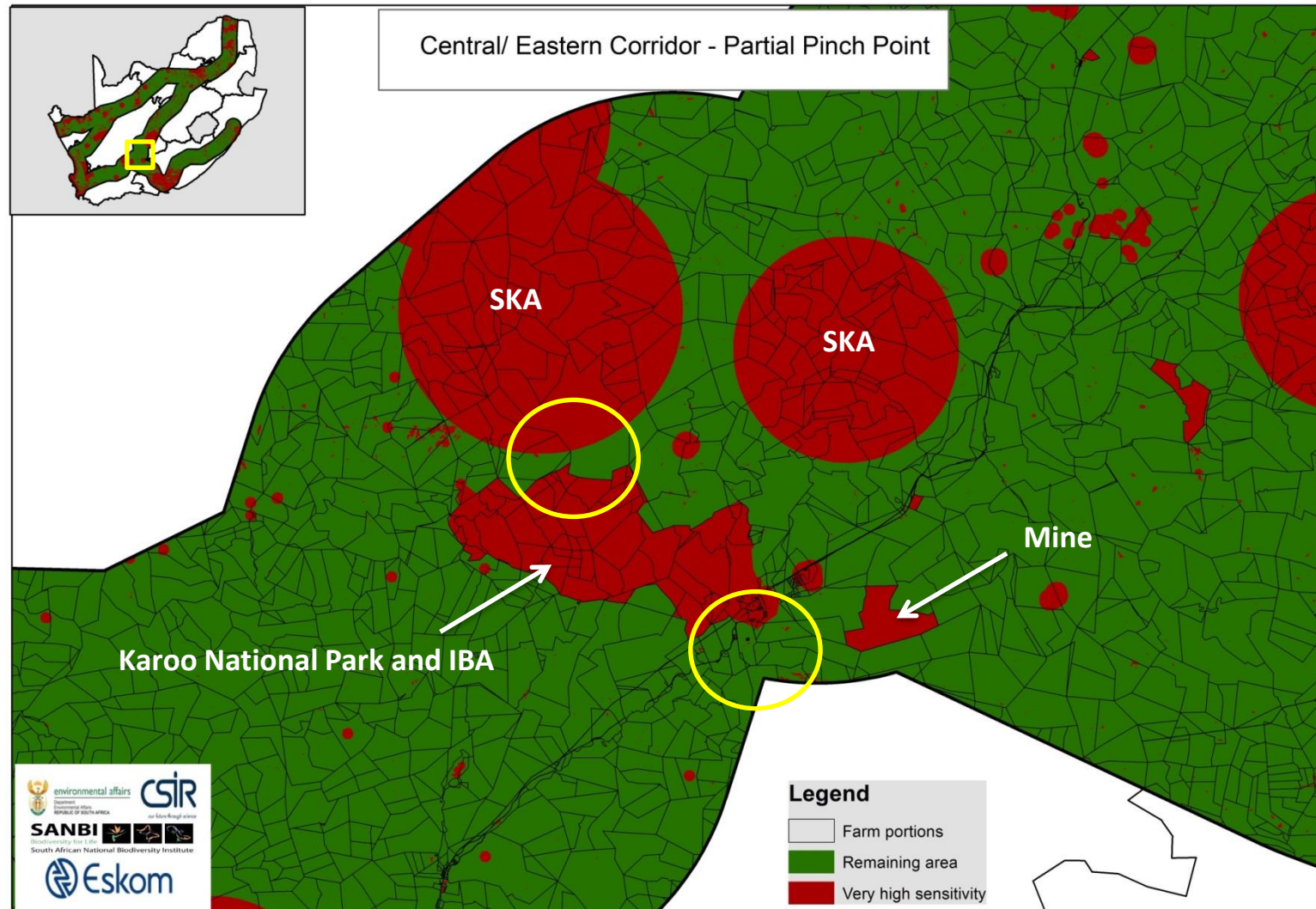
Constraints Map Overlay (Very High Sensitivity)



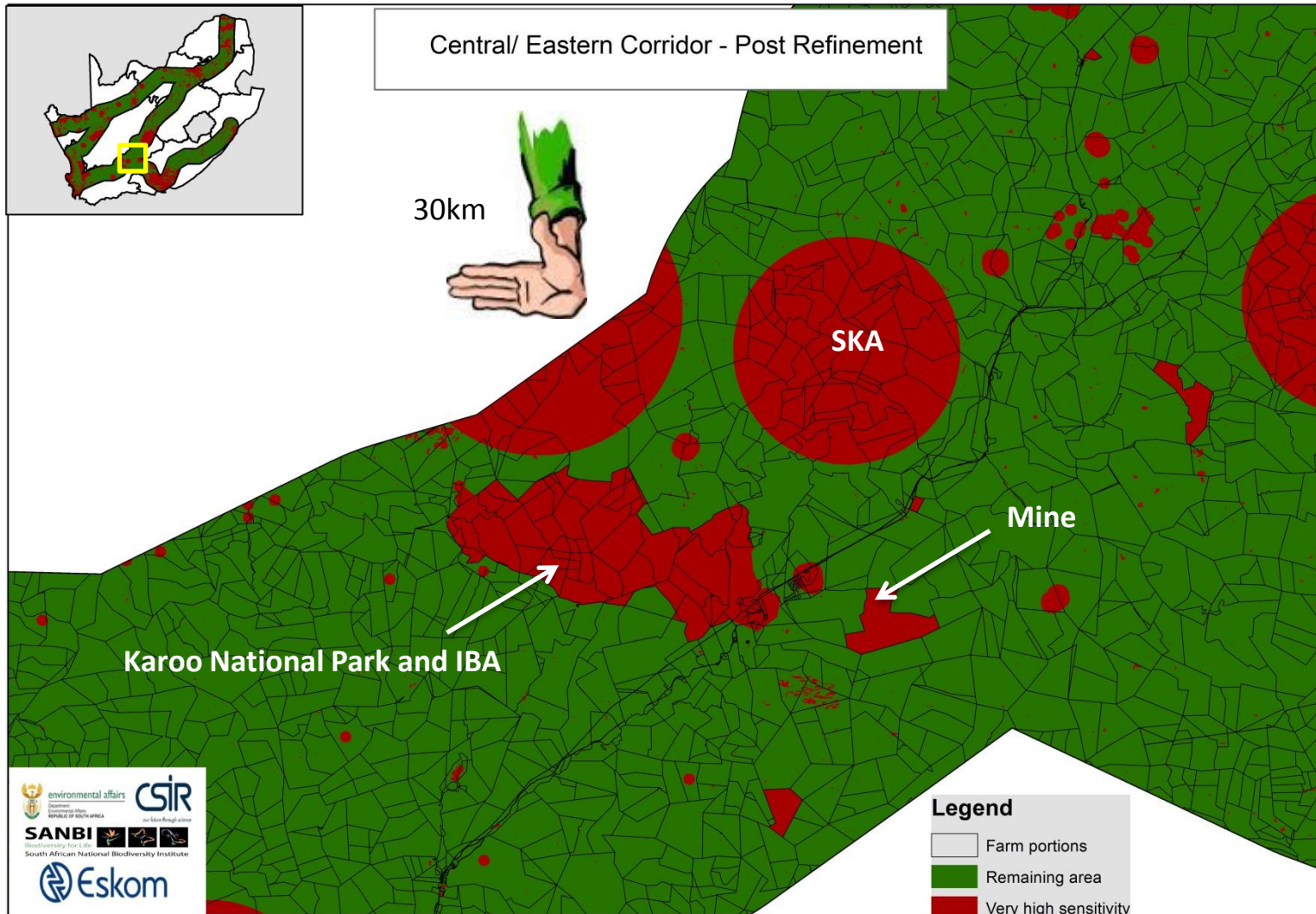
Remaining Routing Area



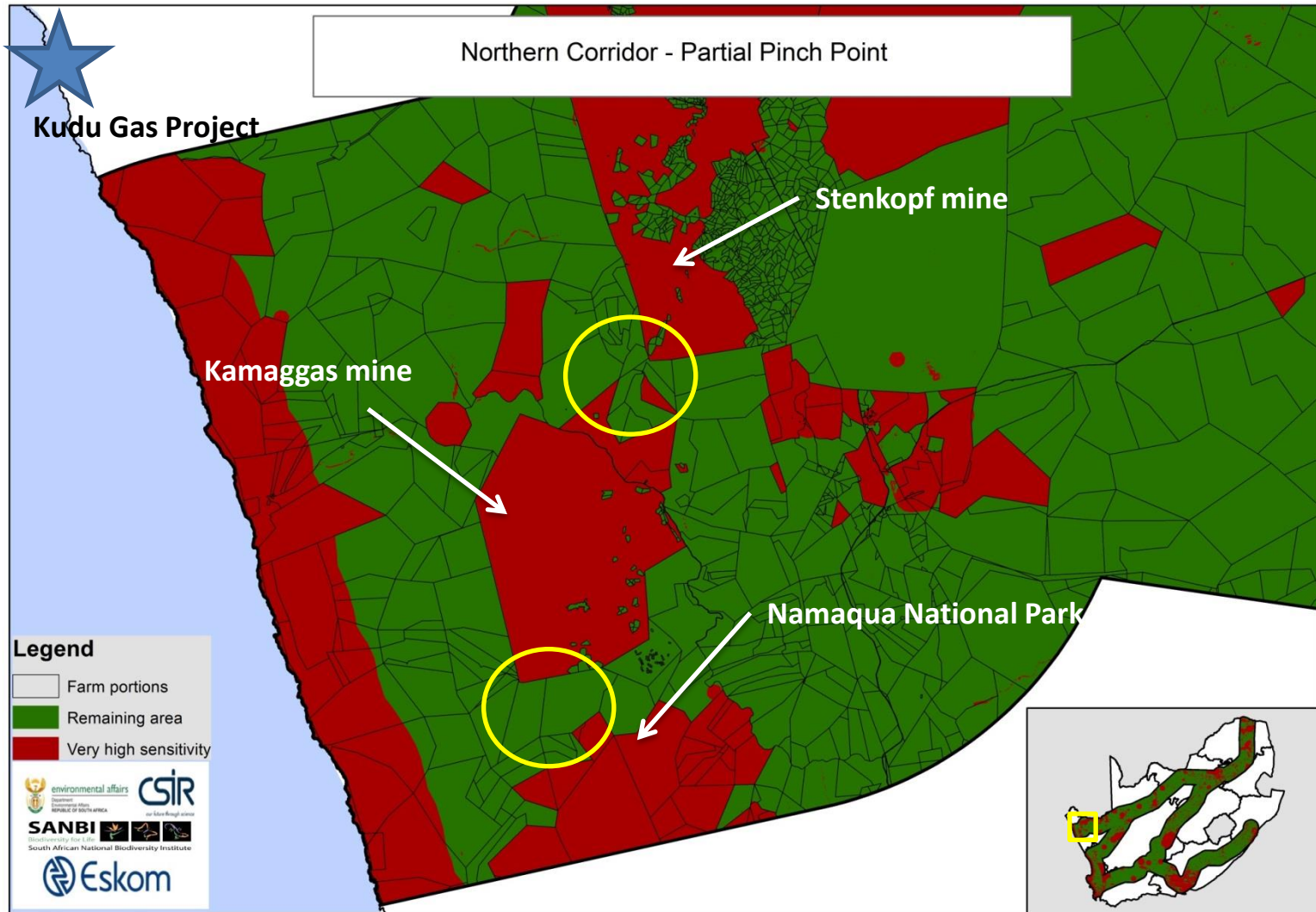
Central/ Eastern Corridor- Partial Pinch Point



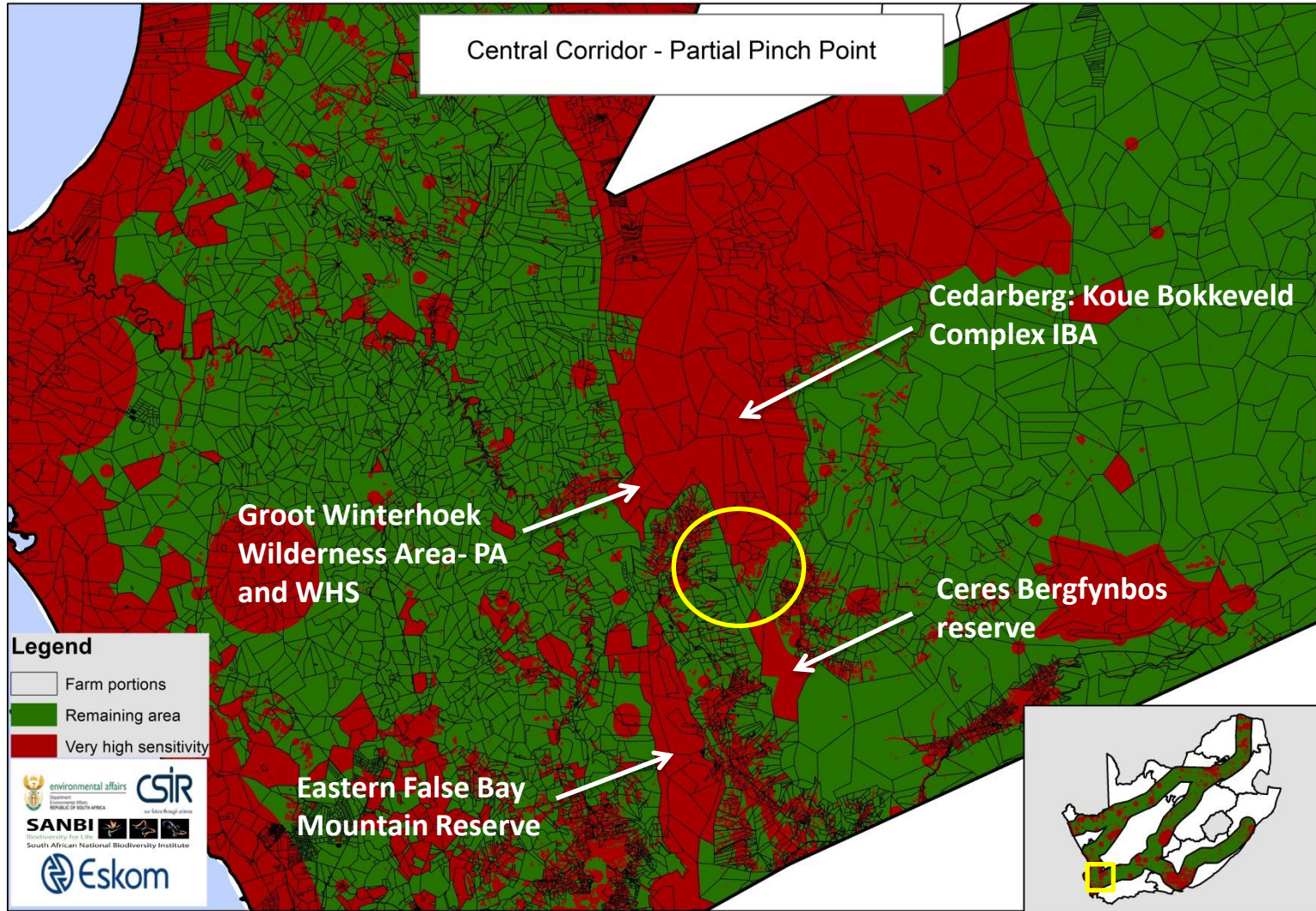
Central/ Eastern Corridor- Post Refinement



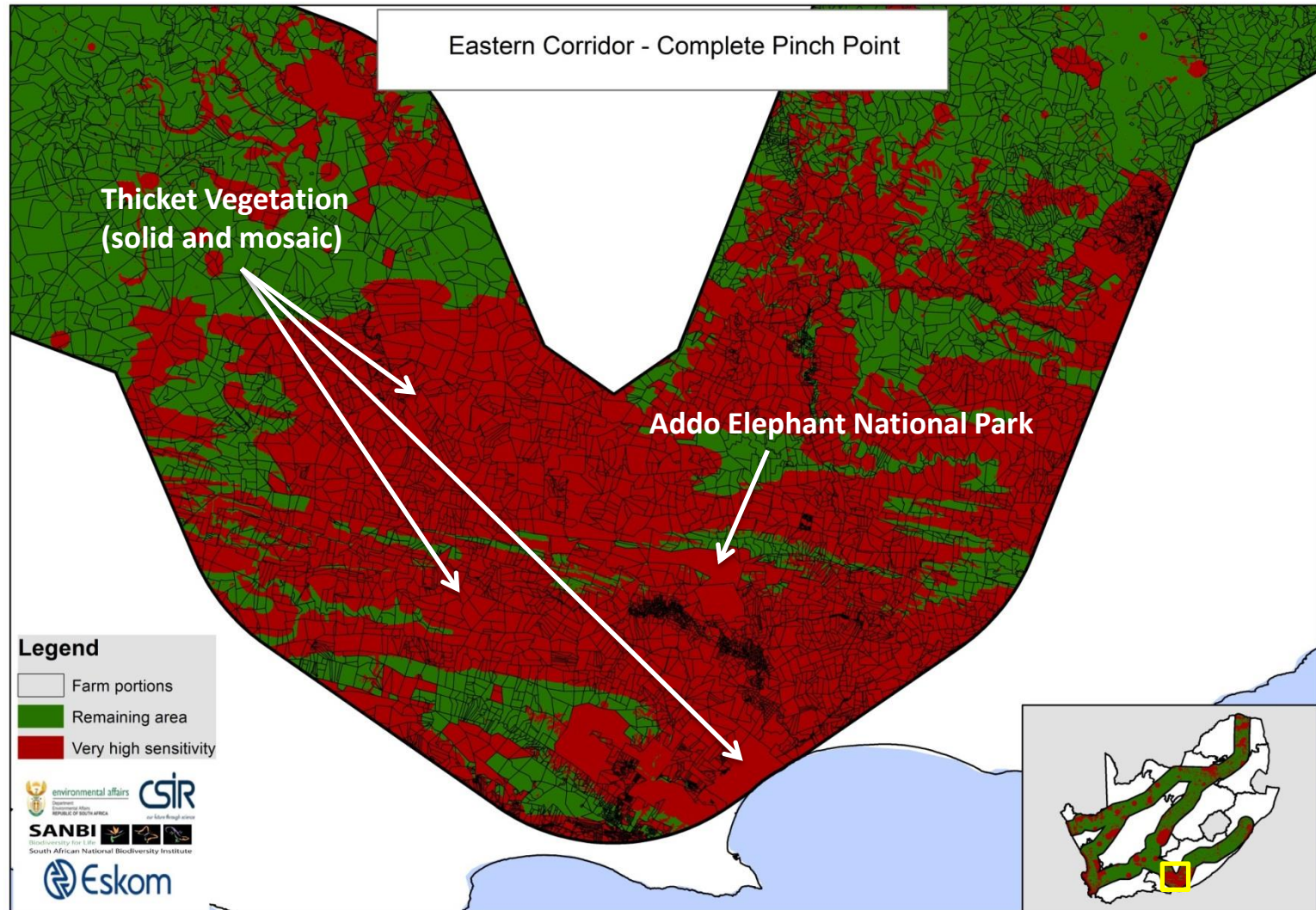
Northern Corridor- Partial Pinch Point



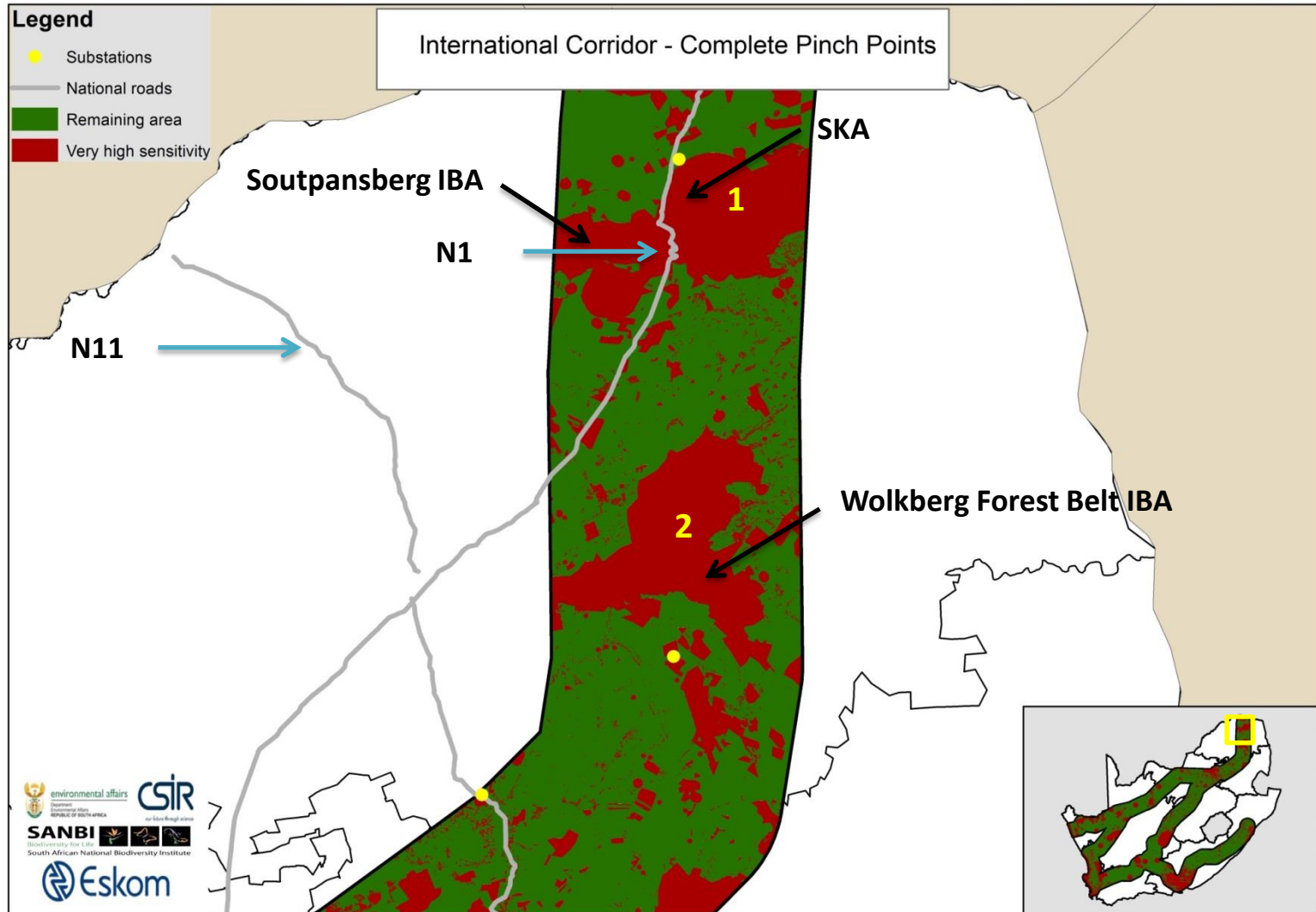
Central Corridor- Partial Pinch Point



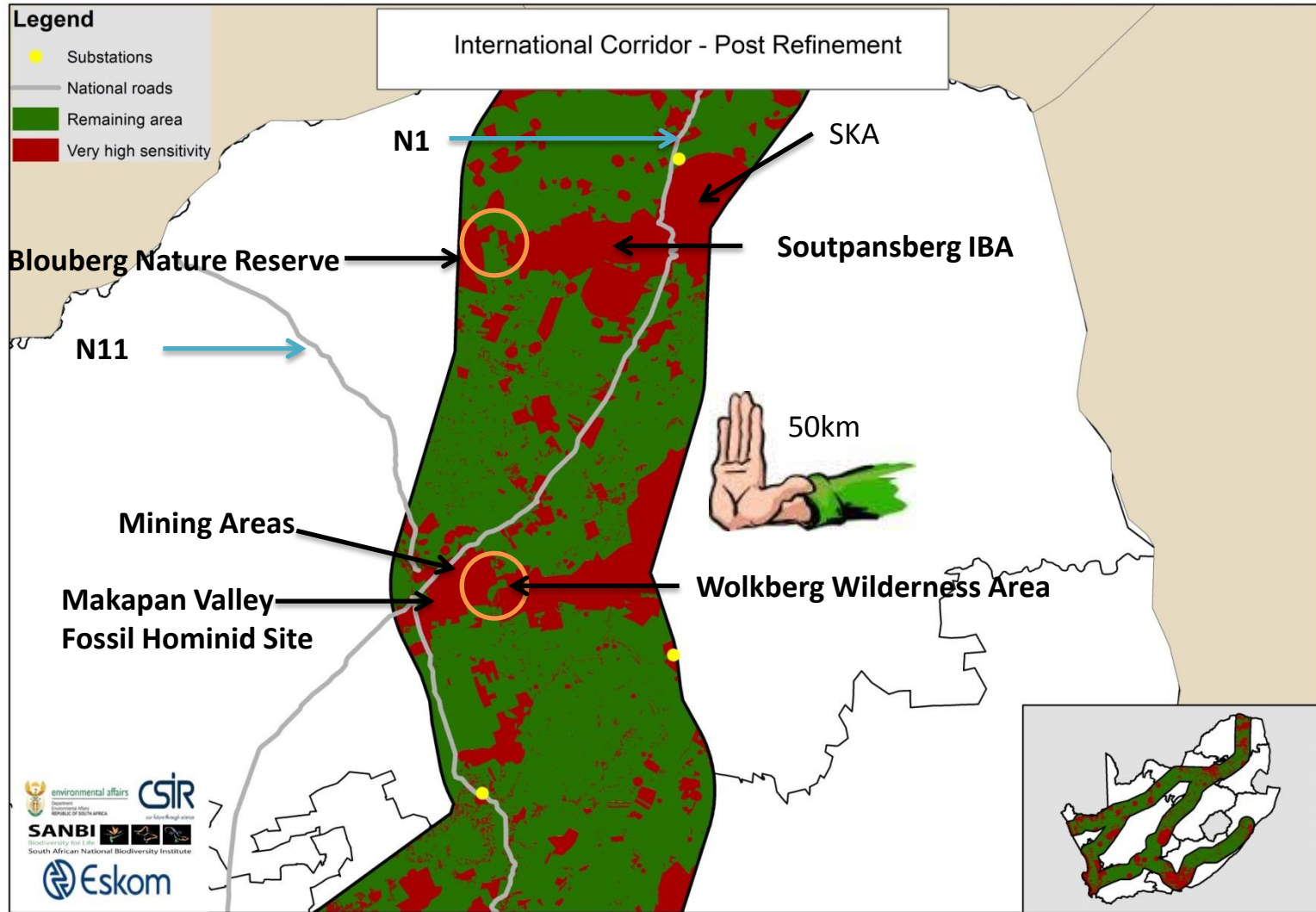
Eastern Corridor- Complete Pinch Point



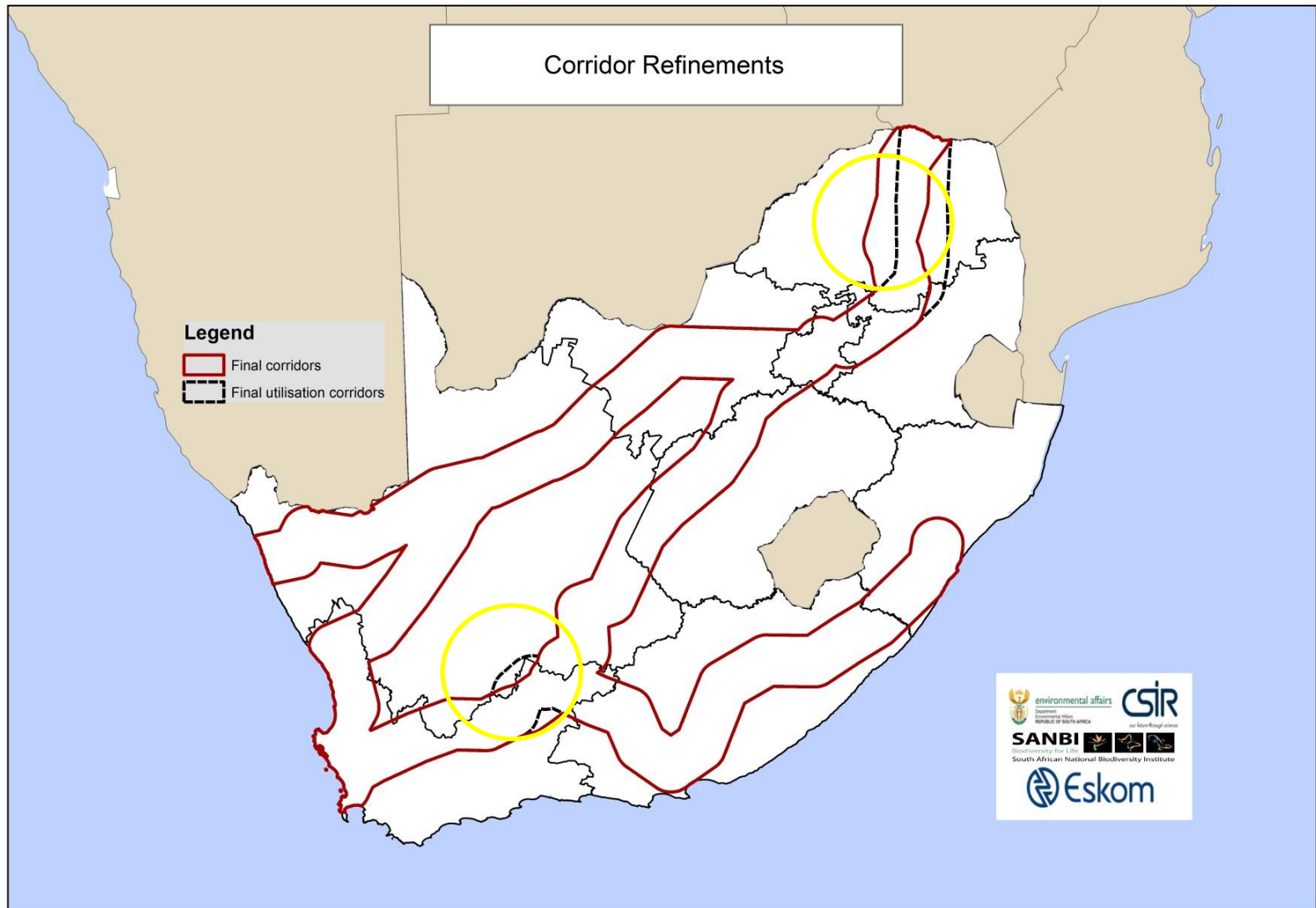
International Corridor- Complete Pinch Points



International Corridor- Post Refinement

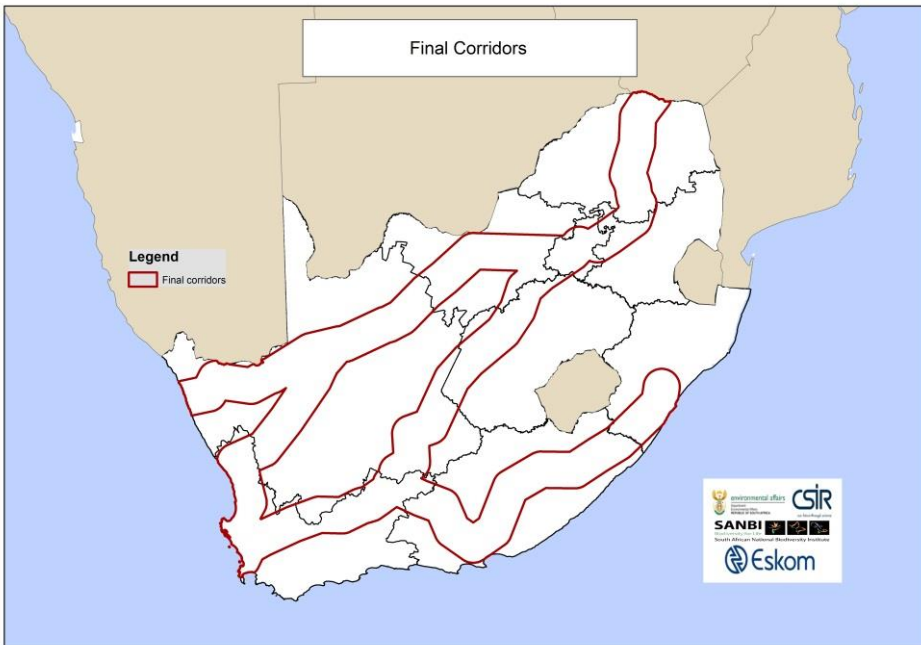


Pinch Point Corridor Refinements

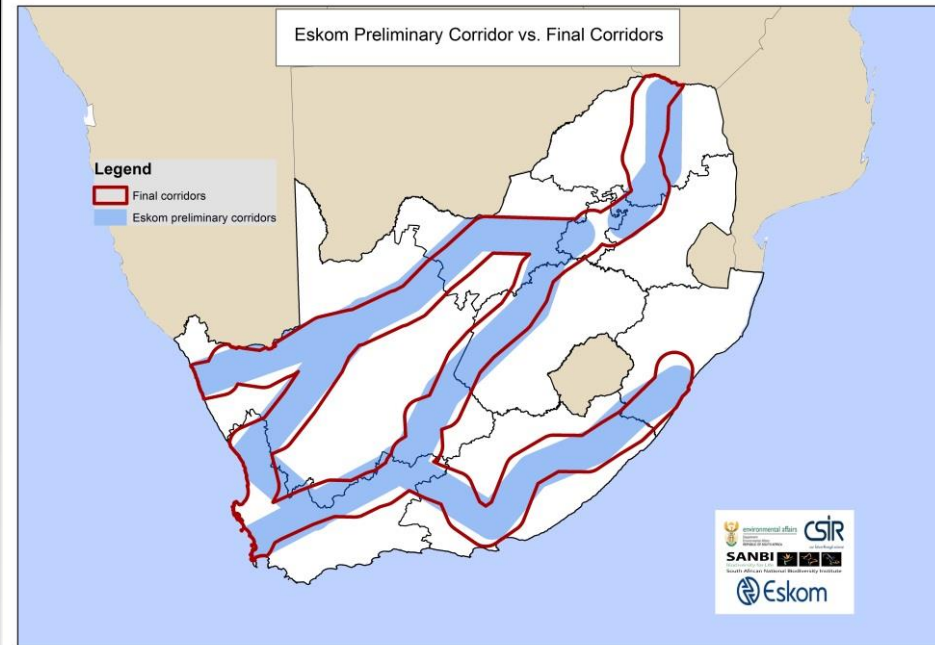


Final Corridors

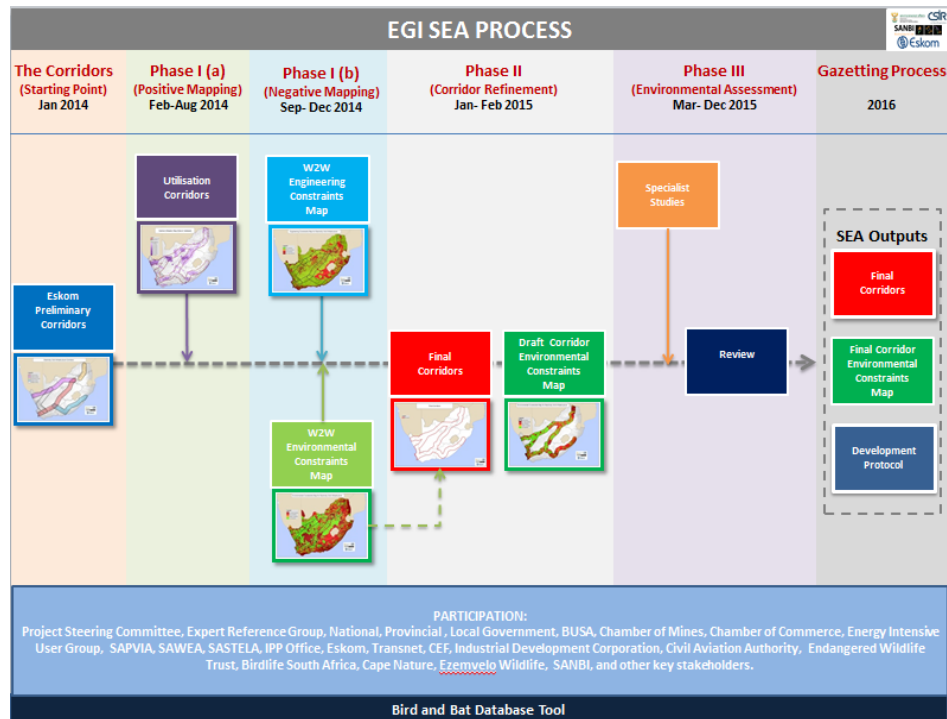
Final Corridors



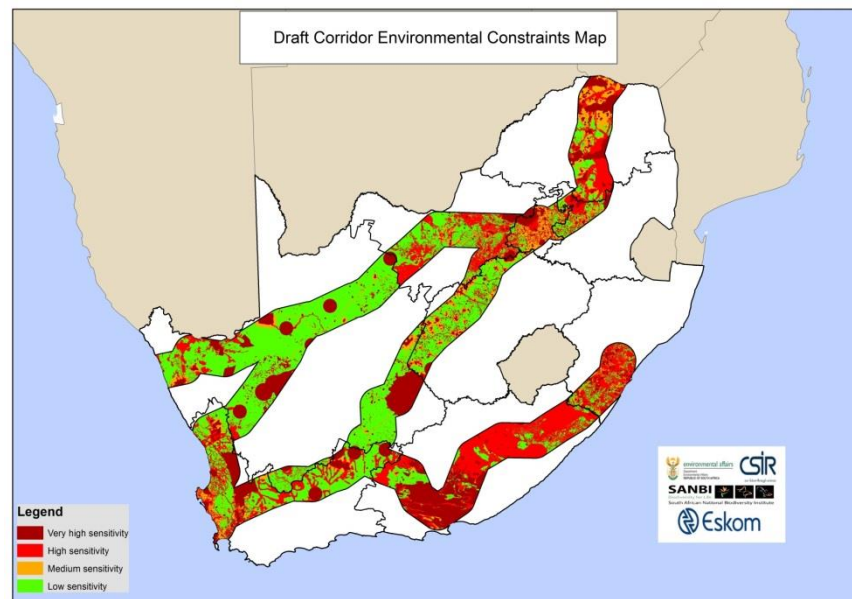
Final Corridors vs Eskom Preliminary Corridors



EGI SEA Process



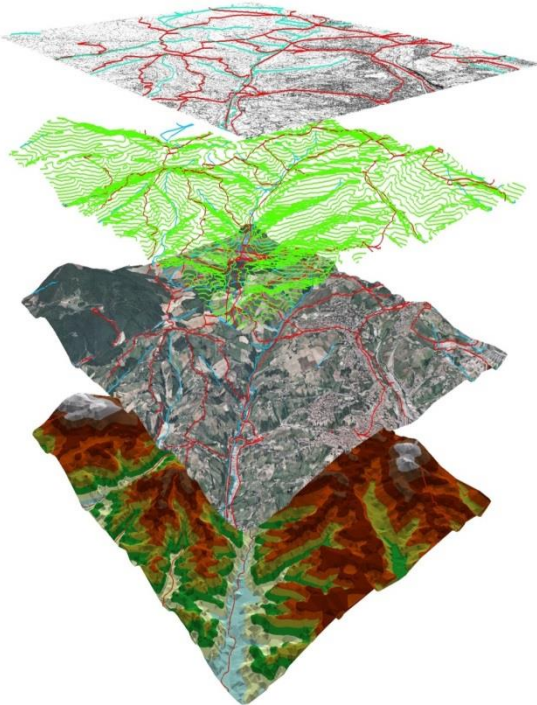
Draft Corridor Environmental Constraints Map



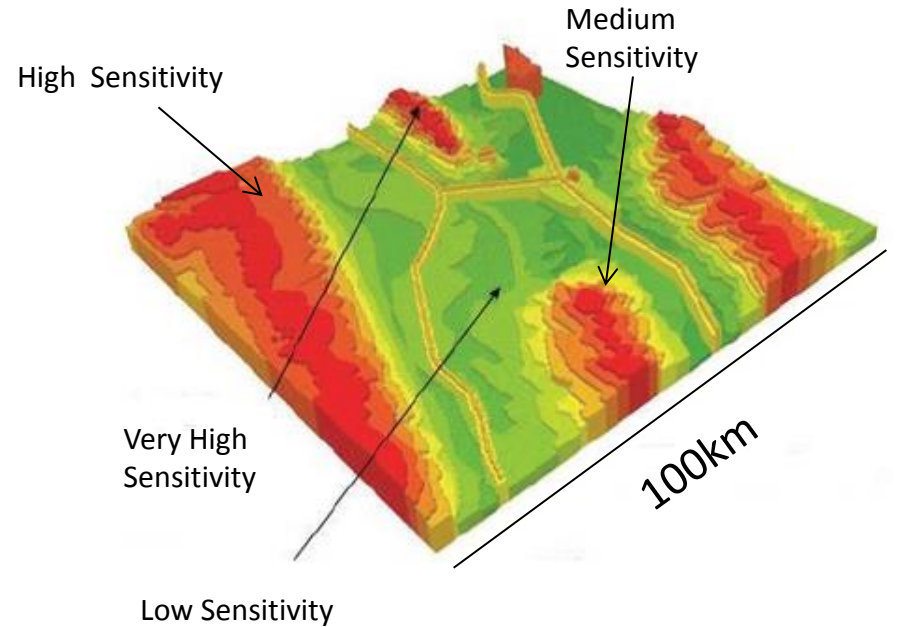
Phase III Scoping Level Pre-assessments

SEA Environmental Aspects

- **Agriculture**
- **Visual Impact**
- **Heritage**
- **Terrestrial & Aquatic Biodiversity**
- **Birds**
- **Socio-Economic**
- Civil Aviation
- Defence
- SKA
- Mining



Four Tiered Sensitivity Map



Site Specific Development Protocol

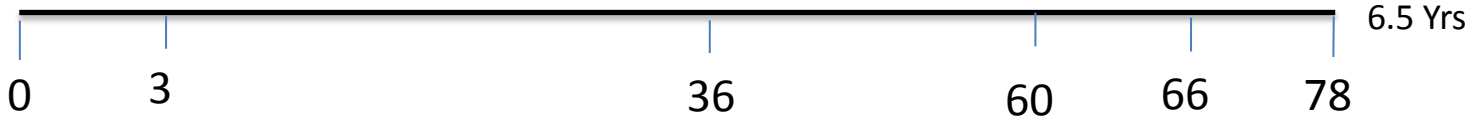
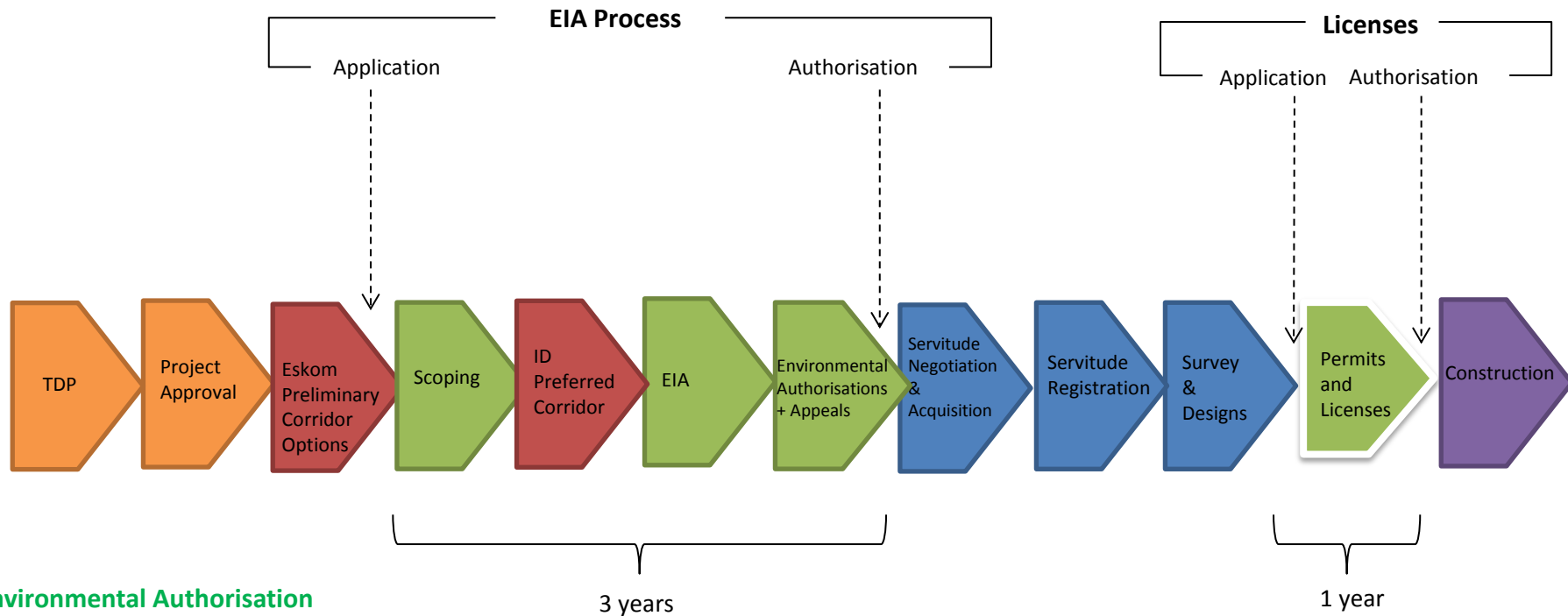
Colour	Sensitivity	Further assessment requirements
Dark red	Very High	Comprehensive Visual Impact Assessment (VIA)
Red	High	Landscape Compliance Statement
Orange	Medium	Landscape Compliance Statement
Green	Low	Site walk-through

Existing Eskom & EA Process: 200km 400Kv Power Line

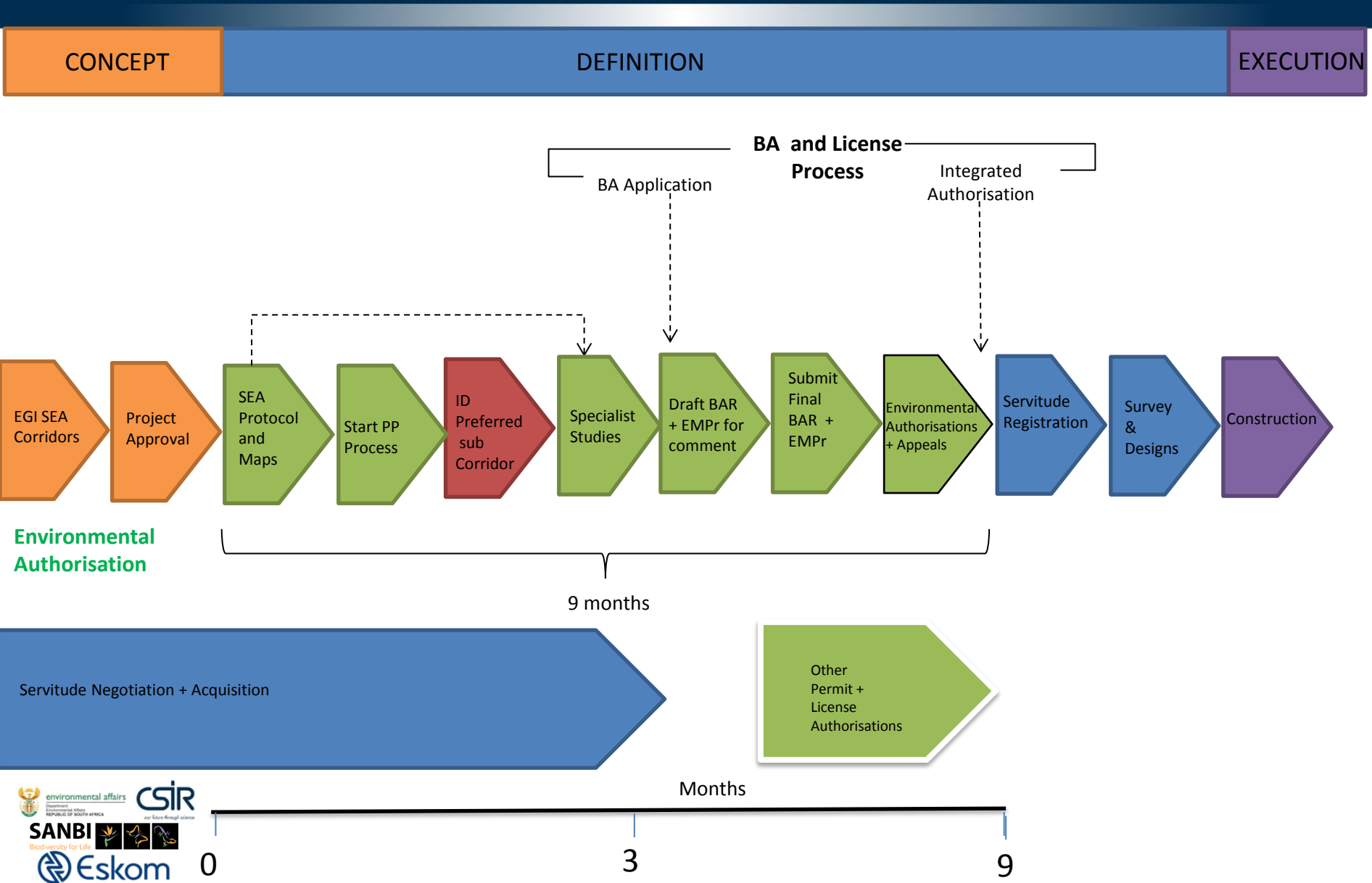
CONCEPT

DEFINITION

EXECUTION

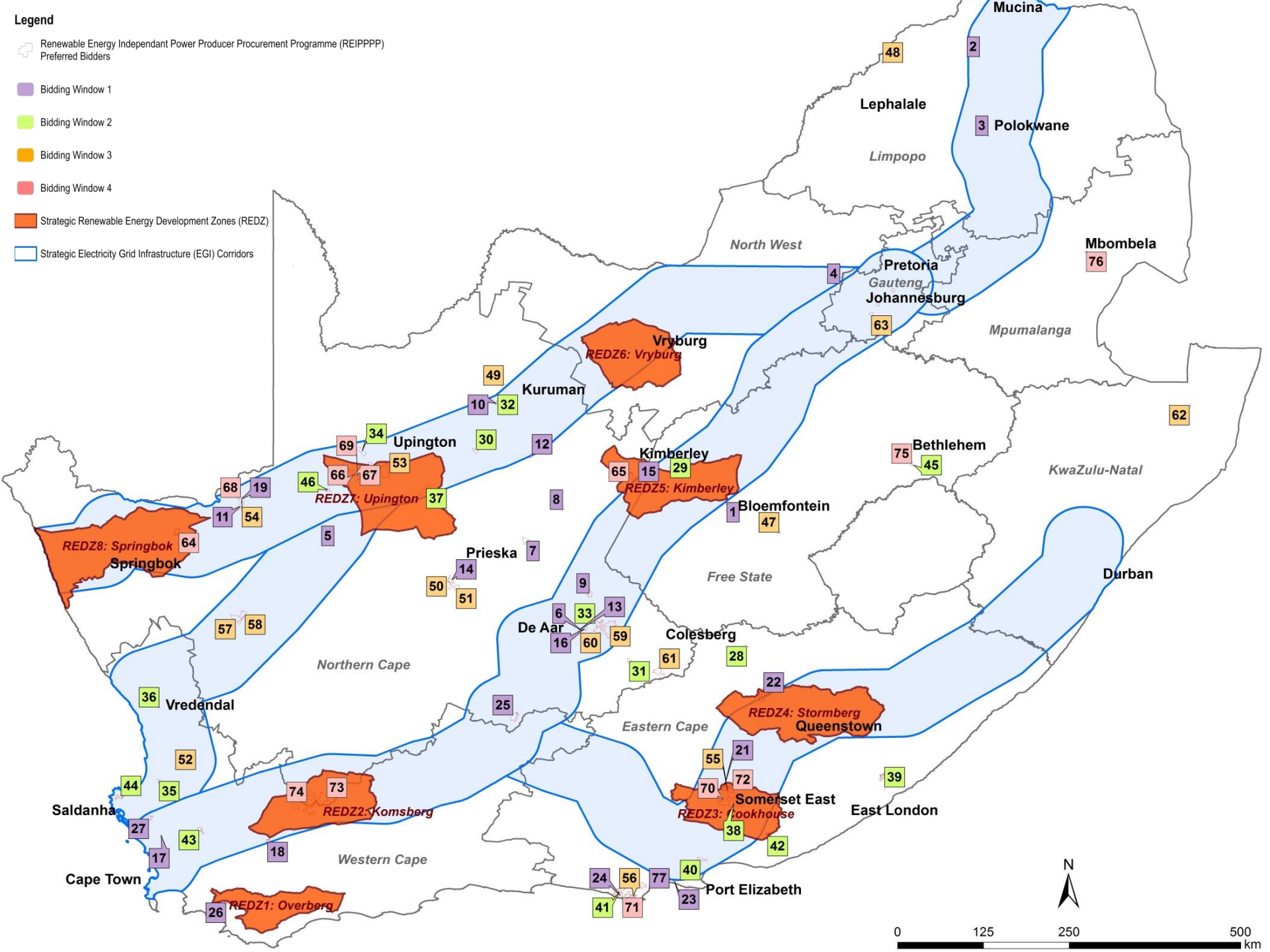


Possible New Eskom & EA Process: 200km 400Kv Power Line



Legend

- Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) Preferred Bidders
- Bidding Window 1
- Bidding Window 2
- Bidding Window 3
- Bidding Window 4
- Strategic Renewable Energy Development Zones (REDZ)
- Strategic Electricity Grid Infrastructure (EGI) Corridors



Thank you

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S Zwane- DEA: szwane@environment.gov.za

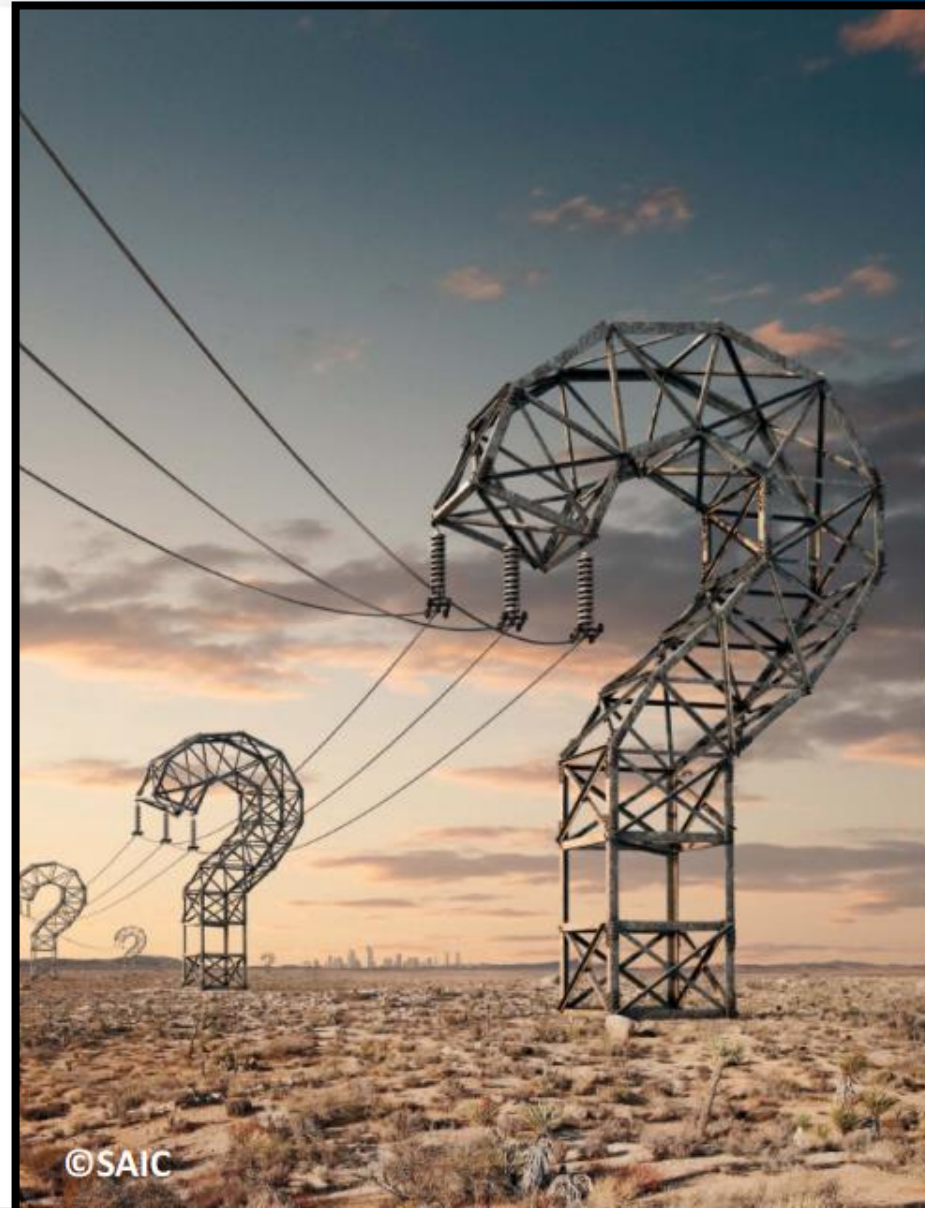
R Marais- Eskom: MaraisRo@eskom.co.za

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Thank you

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