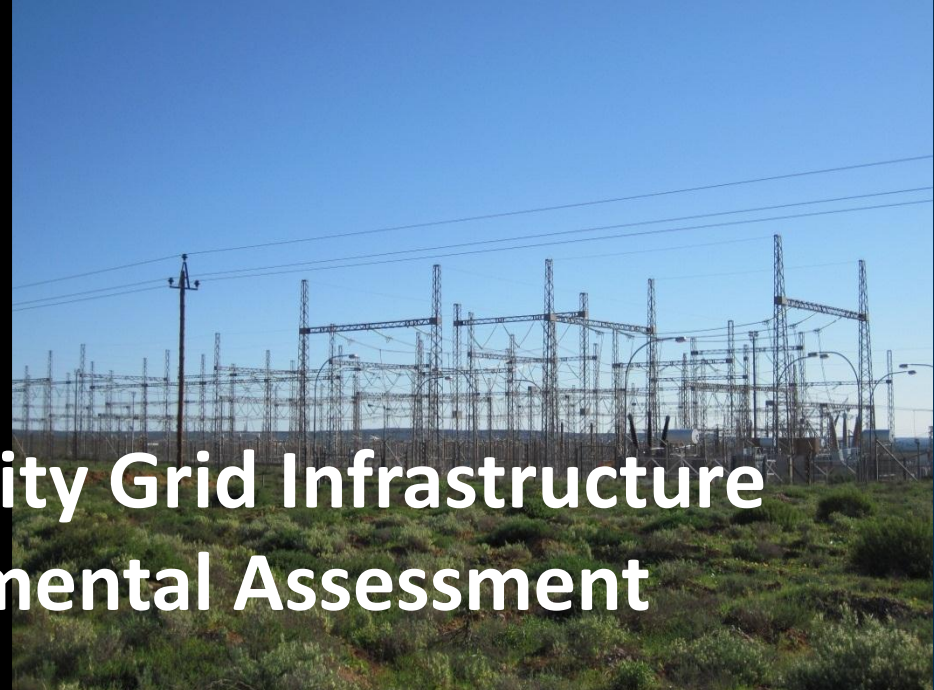




# DEA National Electricity Grid Infrastructure Strategic Environmental Assessment



EGI SEA: Limpopo Provincial and Local Government Workshop

6 November 2014

Presenter: Surprise Zwane &  
Marshall Mabin



environmental affairs  
Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

CSIR  
our future through science



# Strategic Integrated Projects (SIPs)

NATIONAL DEVELOPMENT PLAN 2030

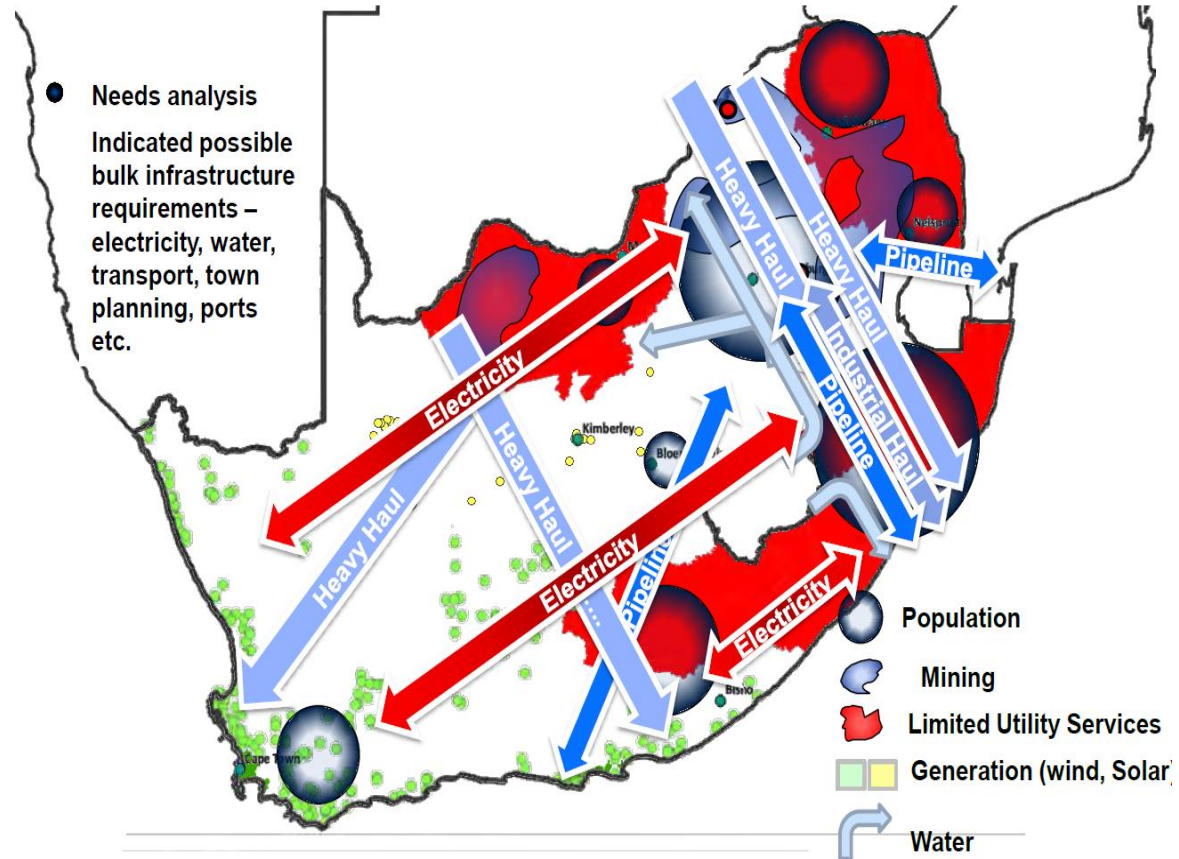
Our future -  
make it work

EXECUTIVE SUMMARY



Needs analysis of infrastructure to support economic development and trade whilst simultaneously addressing the needs of the poor

- Needs analysis  
Indicated possible bulk infrastructure requirements – electricity, water, transport, town planning, ports etc.



# Alignment to NDP Objectives

In response, Government:

- Implement infrastructure priorities in an integrated manner;
- Implement interventions to ensure environmental sustainability;
- Propose regulatory frameworks that are pro-development;
- Transform the difficult regulatory regime in order to speed up economic growth;
- Reform planning systems and promote coordinated intergovernmental planning.



# Three energy related SIPs

## SIP 8: Green energy in support of the South African economy

- Roll out of the Integrated Resource Plan (IRP2010)

## SIP 10: Electricity transmission & distribution

- Expand the transmission and distribution network

## SIP 9: Electricity generation to support socioeconomic development

- Accelerated construction of new electricity generation capacity



# Motivation for SEA

*“We need to respond decisively to the country’s energy constraints in order to create a conducive environment for growth... We will also need to identify innovative approaches to fast-track delivery by government in the energy sector”*- President Jacob Zuma, SONA, June 2014.

## Status Quo

- EIA authorisation takes three (3) years or more for major routes;
- Additional environmental authorisations such as WUL, FCP occur in cascading manner- up to seven (7) years in total;
- EIA authorisations locks Eskom into defined route on individual parcels of land;
- High incident of appeals
- 1000kms of line and substations required all requiring authorisations
- No consideration of accumulative impact

## Result

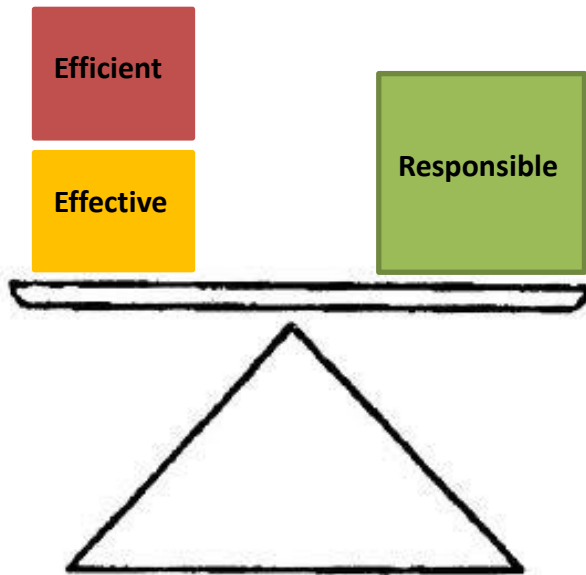
- Transmission infrastructure not available when and where it is required
- Ability for Eskom to undertake long term planning and respond proactively to future future load and generation requirements is limited

# 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.*

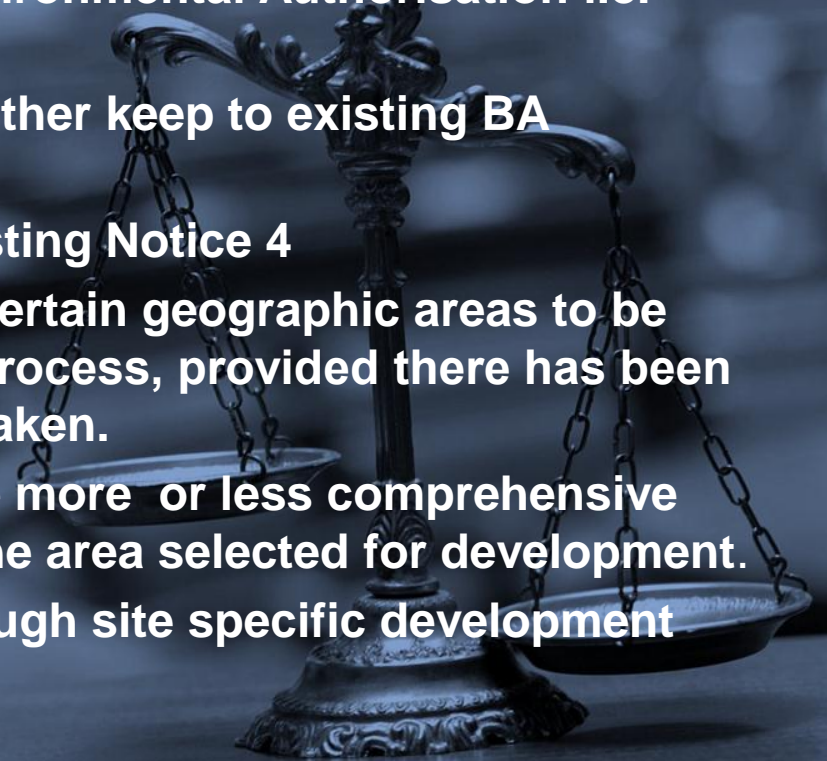
## **Objectives of the SEA:**

- Identify strategic corridors which support electricity transmission needs up to 2040.
- Refine the corridors based high level suitability from an environmental, economic and social perspective.
- Gazette the corridors under the SIP programme
- Facilitate streamlined environmental authorisation for transmission infrastructure development within the corridors
- Promote collaborative governance between authorising authorities
- Develop a site specific development protocol.
- Enable Eskom greater flexibility when undertaking land negotiation.
- Support upfront strategic investment

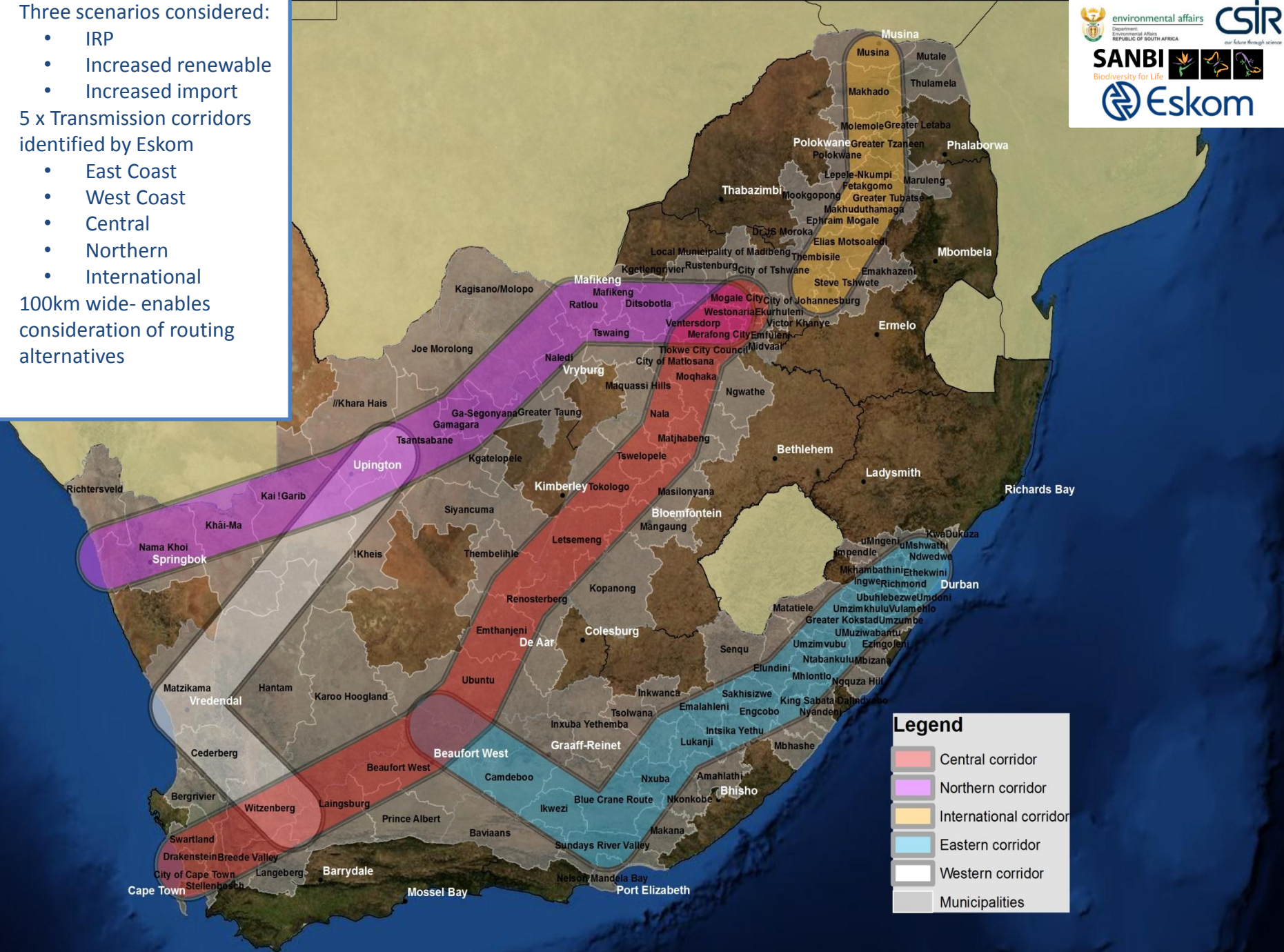


# SEA: Legal context

- SEA not taking away the need for Environmental Authorisation i.e. NOT 'delisting' activities
- SEA will not lead to a new process, rather keep to existing BA process, but adapt.
- New EIA regulations make way for Listing Notice 4
- Allows for certain listed activities in certain geographic areas to be authorised through an 'adapted' BA process, provided there has been some form of pre-assessment undertaken.
- Level of BA assessment can either be more or less comprehensive than current process depending on the area selected for development.
- Level of assessment determined through site specific development protocol



- Three scenarios considered:
  - IRP
  - Increased renewable
  - Increased import
- 5 x Transmission corridors identified by Eskom
  - East Coast
  - West Coast
  - Central
  - Northern
  - International
- 100km wide- enables consideration of routing alternatives



**Legend**

- Central corridor
- Northern corridor
- International corridor
- Eastern corridor
- Western corridor
- Municipalities



# EGI SEA APPROACH

**Phase I**  
**(Constraints Mapping)**  
Jan-Aug 2014

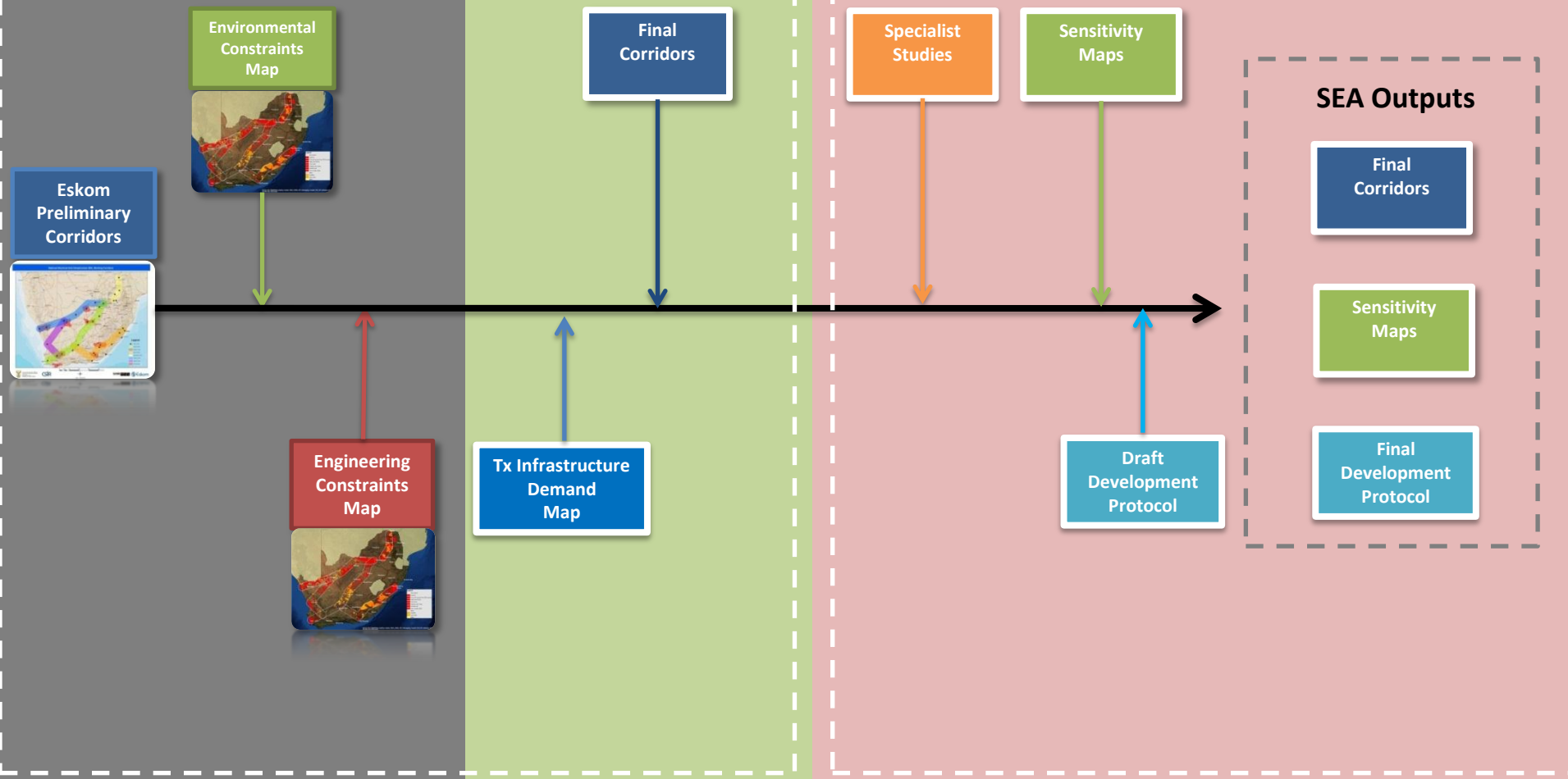
**Phase II**  
**(Opportunities Mapping)**  
Sep- Jan 2015

**Phase III**  
(Feb-Dec 2015)

## Corridor Refinement

## Environmental Assessment

### SEA Outputs



Participation

Bird and Bat Database Tool

# Environmental Constraints Map

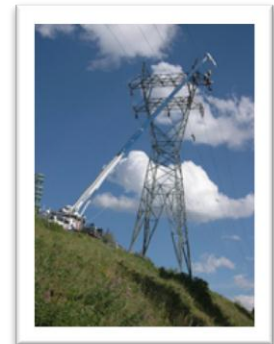
- Impact of 'Transmission Infrastructure on the Environment'
- A GIS based spatial mapping exercise to determine very high sensitive environmental features within and in proximity to the preliminary Eskom corridors;
- Broad range of environmental features considered as part of the sensitivity assessment, including:

- **Biophysical:**
  - Conservation areas
  - Endangered and sensitive habitats
  - IBAs
- **Cultural**
  - Archaeological sites
  - Proclaimed natural heritage sites
- **Socio Economic**
  - Square Kilometre Array
  - Runway restrictions
  - Tourist routes
  - Game farms and hunting areas



# Engineering Constraints Map

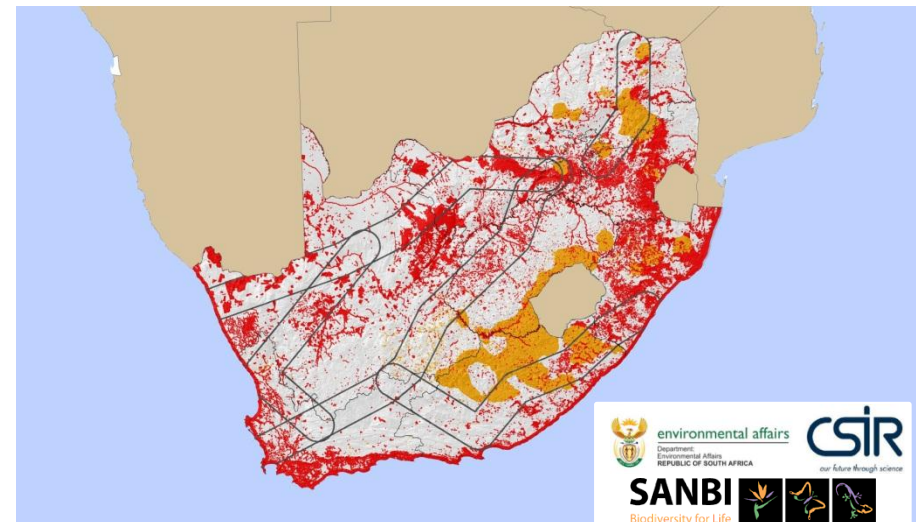
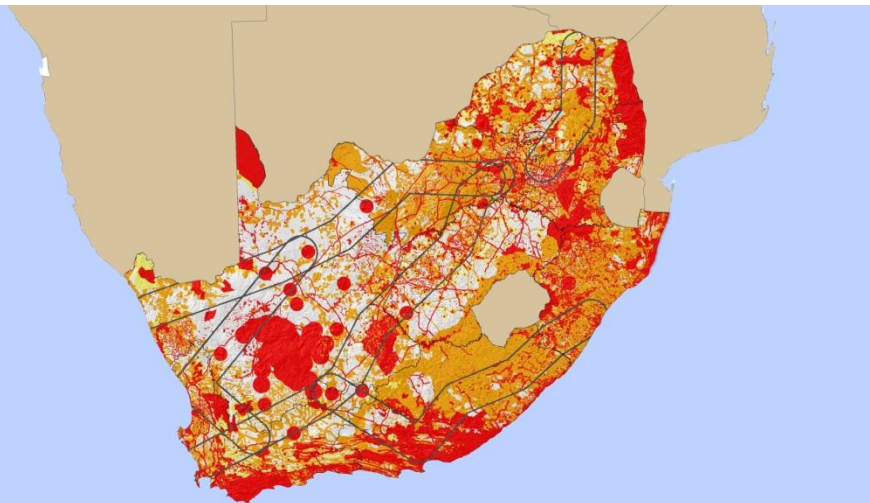
- Impact of 'Environment on Transmission Infrastructure'
- ***'A feature (natural or unnatural) which represents a significant cost to Eskom when developing or operating transmission line infrastructure on or in proximity to that feature'***
- Baseline Cost Index (BCI) or 'X': represents optimal development/operating conditions i.e. best case cost scenario
- ***'Lifetime cost associated with the development and operation of 1km of 400kV line over a 20 year period assuming optimal development and operating conditions'***
- Types of engineering constraints include:
  - Urban areas
  - Intensive agricultures
  - Coast
  - Mining areas
  - Slope
  - Dolomite



# Constraints Categories and Draft Mapping Outputs

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

| Engineering Constraints Categories |   |            |
|------------------------------------|---|------------|
| Level of Constraint                | Description   | BCI Rating |
| Very High                          | The lifetime cost associated with development in this area is <b>&gt;150% the BCI.</b>              | >1.5X      |
| High                               | The lifetime cost associated with development in this area is <b>between 120% and 150% the BCI.</b> | >1.2X<1.5X |
| Medium                             | The lifetime cost associated with development in this area is <b>between 100% and 120% the BCI.</b> | >1X<1.2X   |
| Low                                | Baseline Cost Index (BCI)   | 1X         |



# Transmission Infrastructure Demand Mapping

## Demand (Opportunities) Mapping

### • Question

- Where should transmission infrastructure be expanded to support future bulk load demand?
- Where should transmission infrastructure be expanded to support the evacuation of future bulk energy generation activities?

### • Answer

- Determine where future bulk load likely to be located
- Determine where future bulk energy generation likely to occur



### • Approach

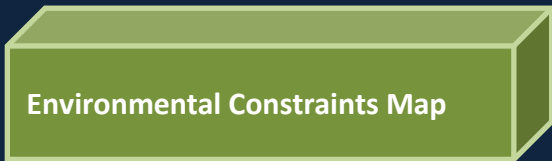
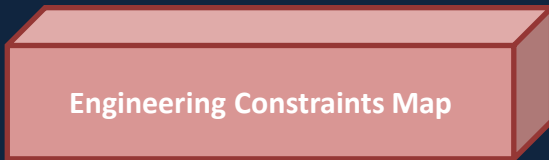
- Review of national economic policies and strategies (SEZs, IDZs, SIPs)
- Review of provincial and local government spatial development frameworks
- Consultation with provincial/local government
  - Validate outputs from spatial plans review
- Consultation with industry (bulk consumers and generators)
  - Seek inputs through spatial exercise



# November Consultation Schedule

| Type       | Location         | Province               | Date              |
|------------|------------------|------------------------|-------------------|
| Workshop 1 | Pretoria         | Gauteng and Mpumalanga | November 4        |
| Workshop 2 | Pretoria         | Bulk User/Generator    | November 5        |
| Workshop 3 | <b>Polokwane</b> | <b>Limpopo</b>         | <b>November 6</b> |
| Workshop 4 | Bloemfontein     | Free State             | November 11       |
| Workshop 5 | Kimberly         | Northern Cape          | November 12       |
| Workshop 6 | Mahikeng         | North West             | November 17       |
| Workshop 7 | Cape Town        | Western Cape           | November 25       |
| Workshop 8 | Pietermaritzburg | KwaZulu-Natal          | November 27       |
| Workshop 9 | East London      | Eastern Cape           | November 28       |

# Corridor Refinement Process

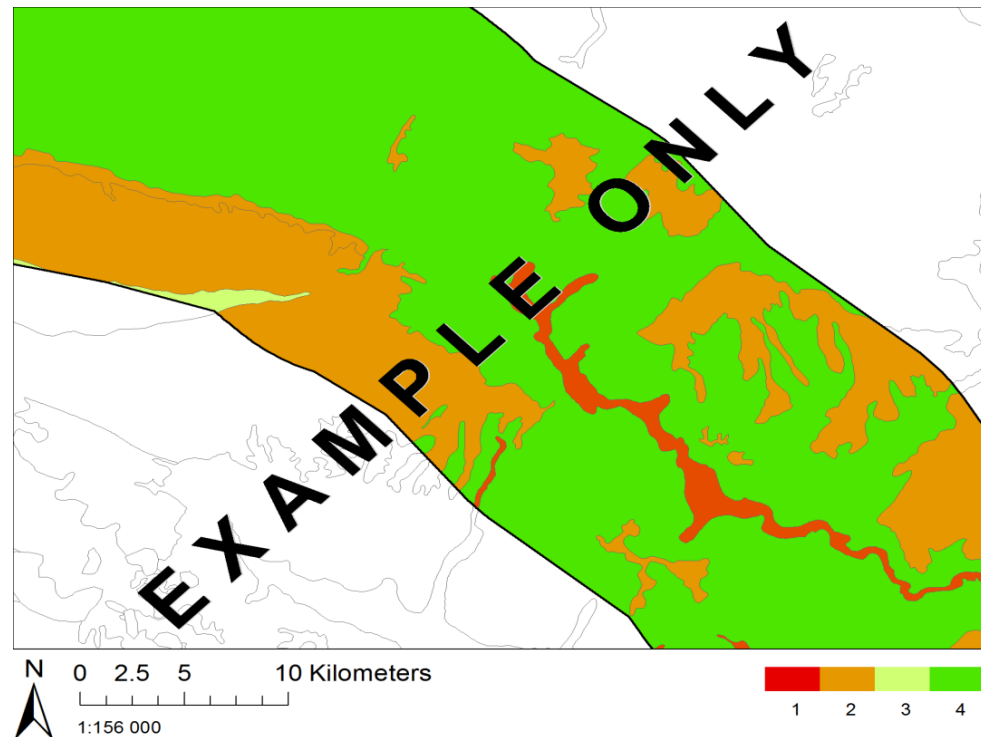


Optimal Corridor  
Positioning

# Phase III: Environmental Assessment

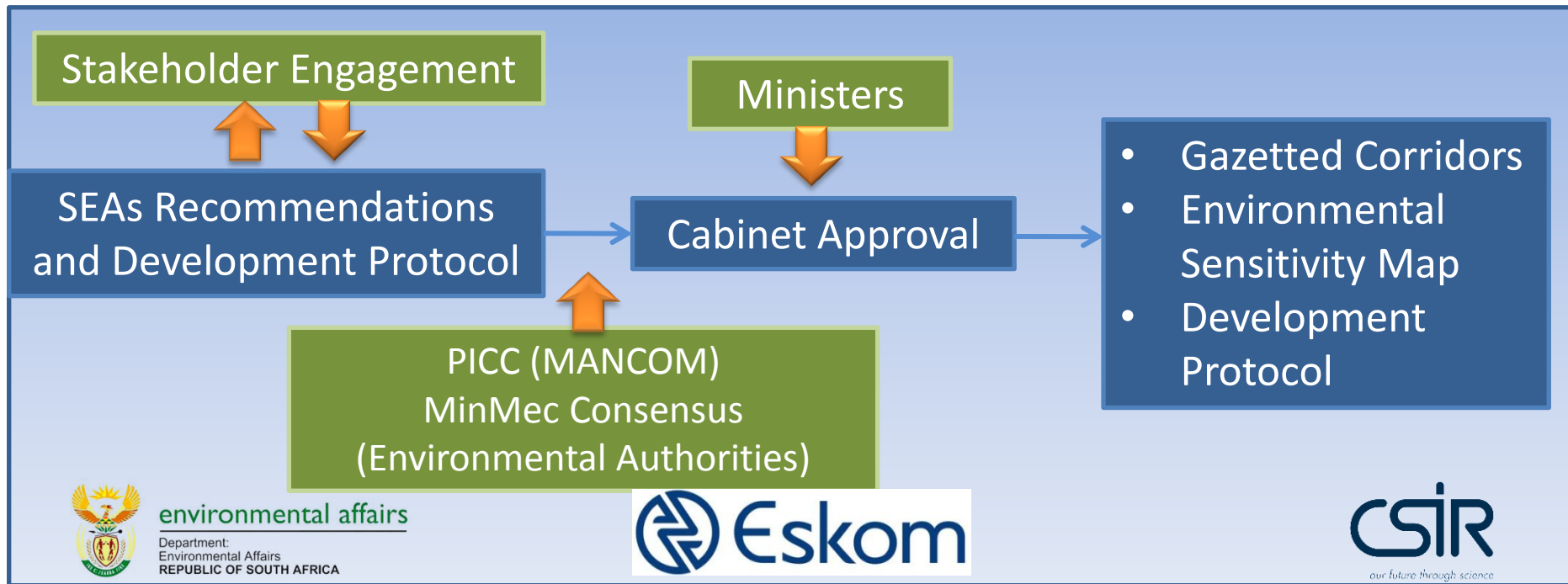
- **Specialist Studies**

- Undertake scoping level assessment of area within the corridors;
  - Ecological Assessment
  - Bird Assessment
  - Heritage Assessment
  - Visual Impact Assessment
- Create sensitivity map for each assessment type in each of the corridors
- Assist in the creation of the development protocol
  - Specifies minimum assessment requirements
  - Proposed mitigation measures





# Cabinet Approval Process



# Thank you for your attention

**DEA National Electricity Grid Infrastructure SEA  
to facilitate the efficient and effective expansion of key strategic  
transmission infrastructure in South Africa**

**Webpage: <https://egi.csir.co.za/>**

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