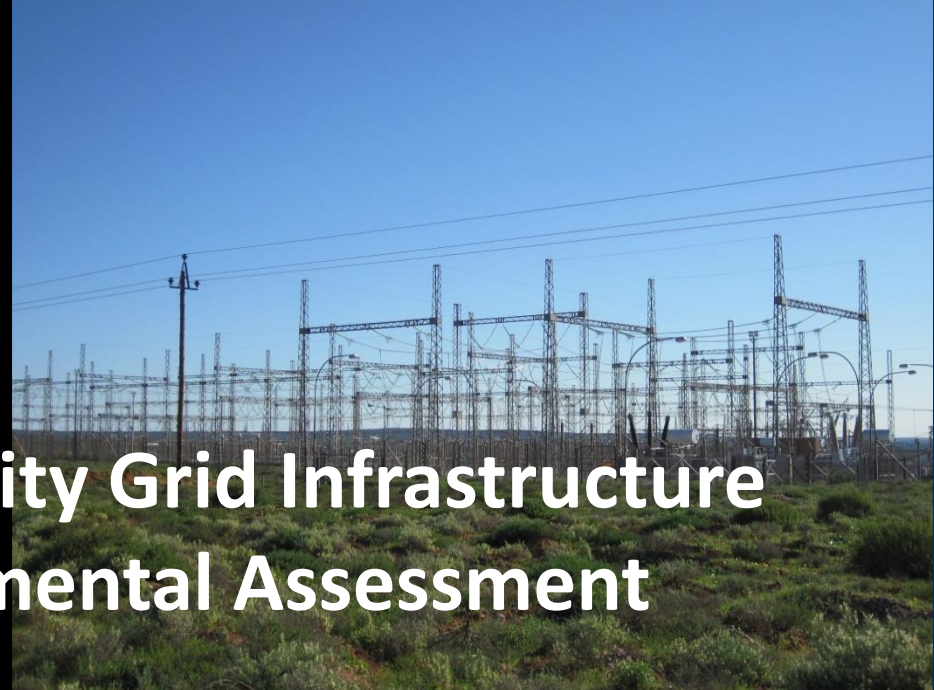




# DEA National Electricity Grid Infrastructure Strategic Environmental Assessment



EGI SEA: Eastern Cape Provincial and Local Government Workshop

28 November 2014

Presenter: Surprise Zwane &  
Marshall Mabin



environmental affairs  
Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

CSIR  
our future through science

**SANBI**  
Biodiversity for Life



**Eskom**

# Strategic Integrated Projects (SIPs)

NATIONAL DEVELOPMENT PLAN 2030

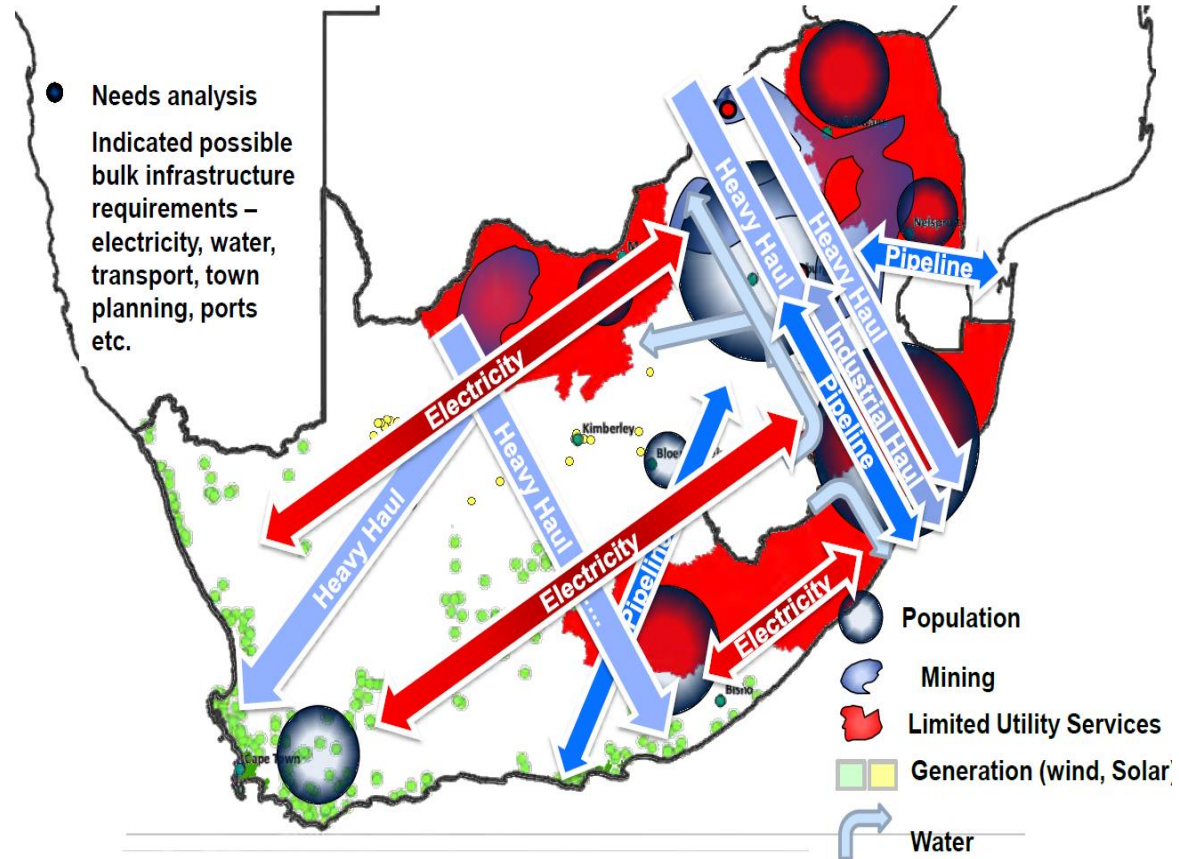
Our future -  
make it work

EXECUTIVE SUMMARY



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

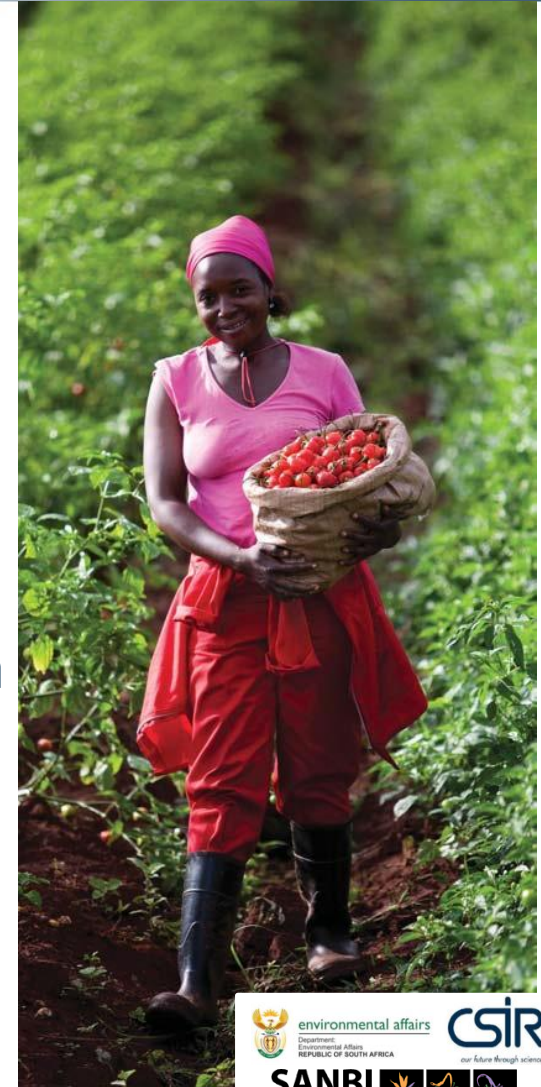
- Needs analysis  
Indicated possible bulk infrastructure requirements – electricity, water, transport, town planning, ports etc.



# 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



# Electrical Grid Infrastructure SEA Project Team

## Project Coordinator: DEA

**Dee Fischer**  
Project Coordinator

**Surprise Zwane**  
Project Manager

## Project Partner: Eskom

**Ronald Marais**  
Head of Strategic Transmission Planning

**Kevin Leask**  
Chief Transmission Engineer

## Environmental Consultants: CSIR

**Paul Lochner**  
SEA Project Leader

**Marshall Mabin**  
EGI SEA Project Manager

## Joint Service Provider: South African National Biodiversity Institute

Jeffrey Manuel and Fahiema Daniels

# 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.*

## Environmental Authorisation 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;
- 1000kms of line and substations required all requiring authorisations
- High incident of appeals
- Limited validity period for Environmental Authorisation

## Result

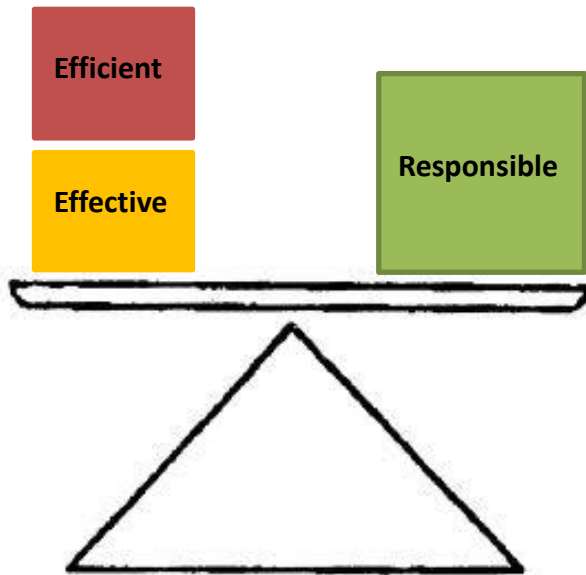
- Transmission infrastructure not available when and where it is required
- Ability for Eskom to undertake long term planning and respond proactively to future load and generation requirements is limited

# 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.*

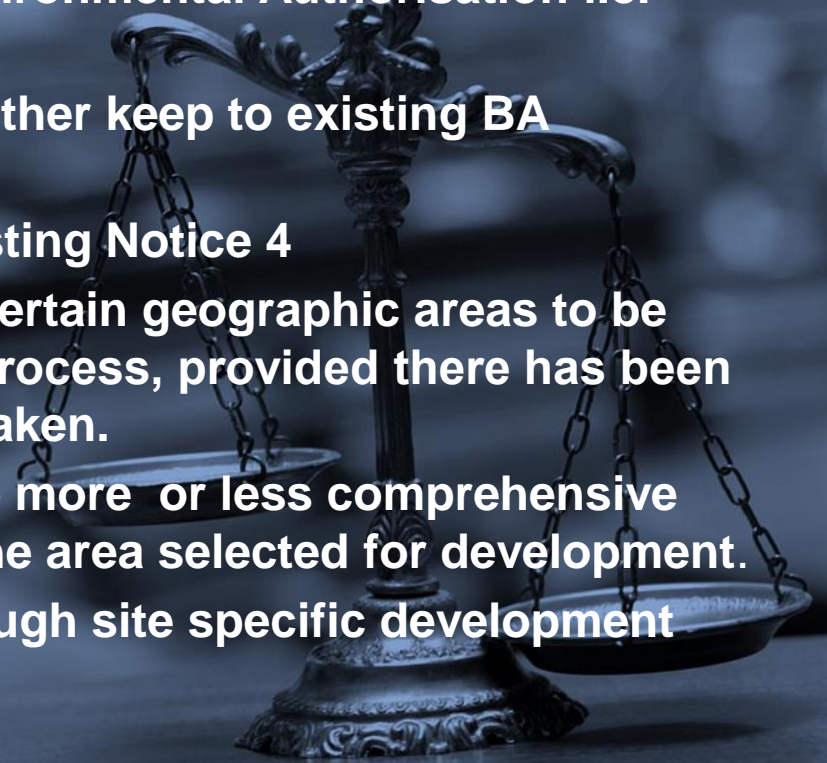
## **Objectives of the SEA:**

- 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



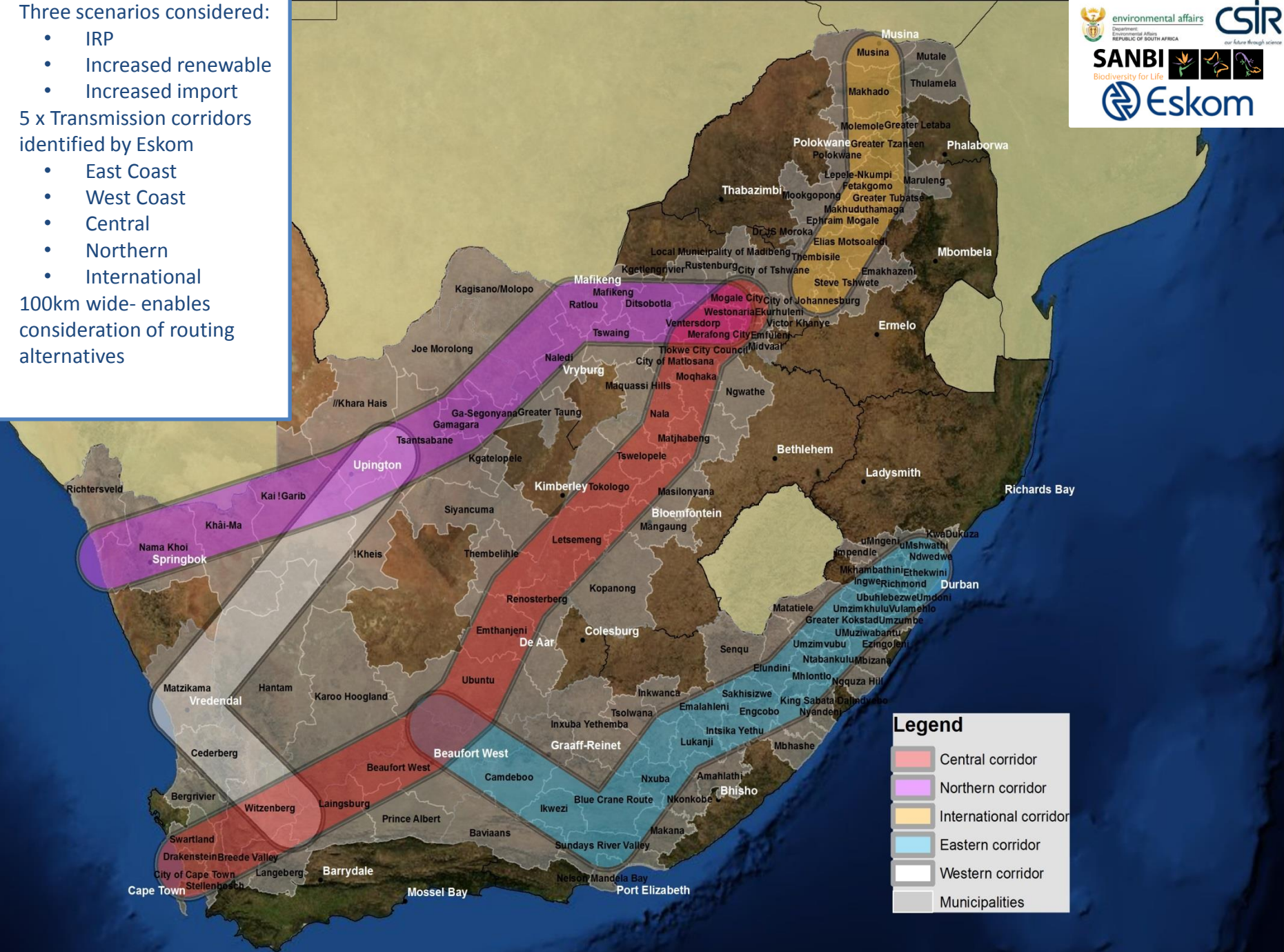
# SEA: Legal context

- 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

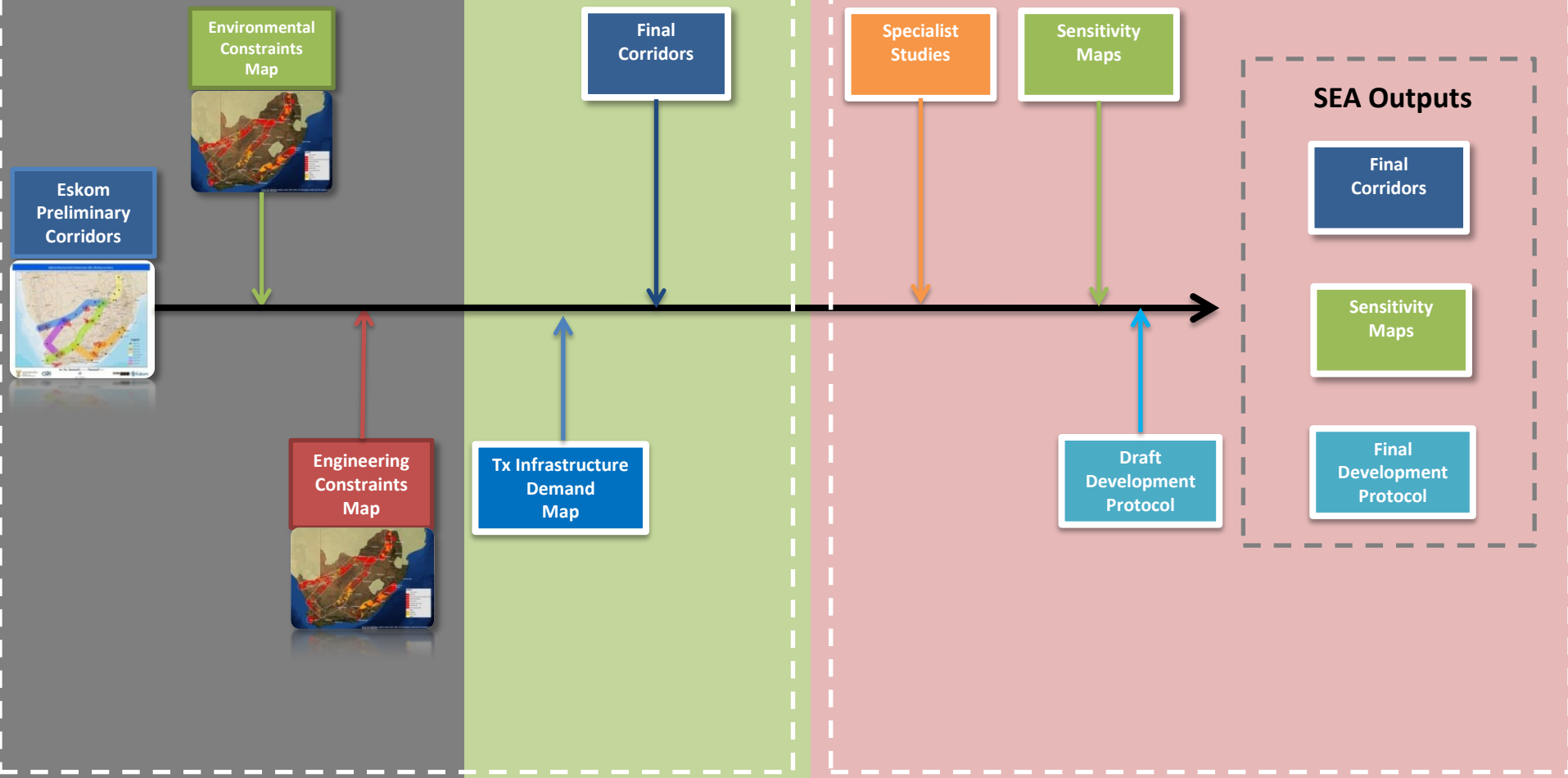
**Phase I**  
**(Constraints Mapping)**  
Jan-Aug 2014

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

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

## Corridor Refinement

## Environmental Assessment



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

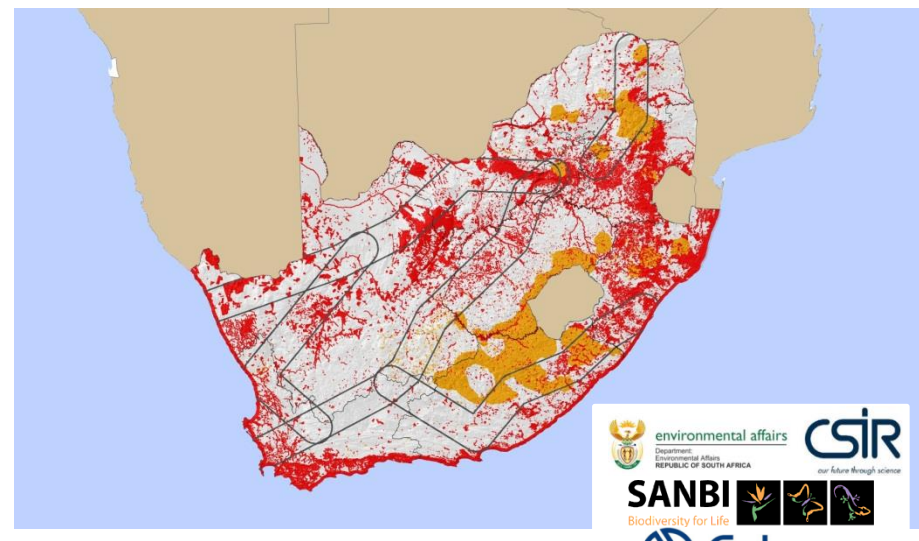
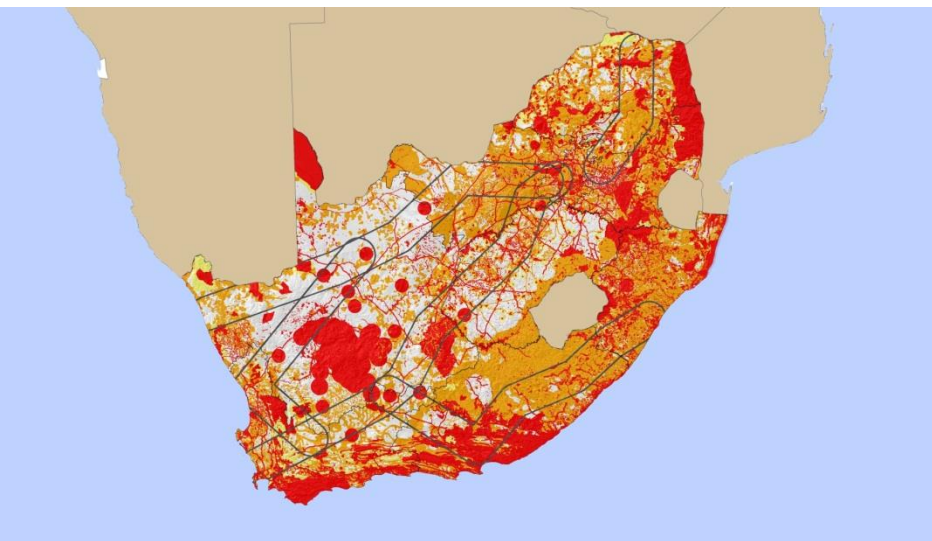
- Impact of 'Environment on Transmission Infrastructure'
- ***'A feature (natural or unnatural) which represents a significant cost to Eskom when developing or operating transmission line infrastructure on or in proximity to that feature'***
- Baseline Cost Index (BCI) or 'X': represents optimal development/operating 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**

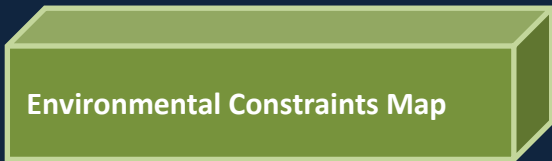
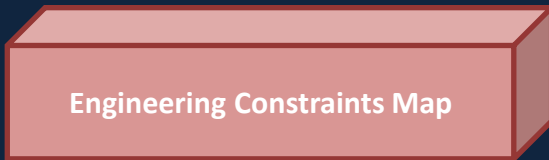
- Review of national economic policies and strategies (SEZs, IDZs, SIPs)
- Review of provincial and local government spatial development frameworks
- Consultation with provincial/local government
  - Validate outputs from spatial plans review
- Consultation with industry (bulk consumers and generators)
  - 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	Polokwane	Limpopo	November 6
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



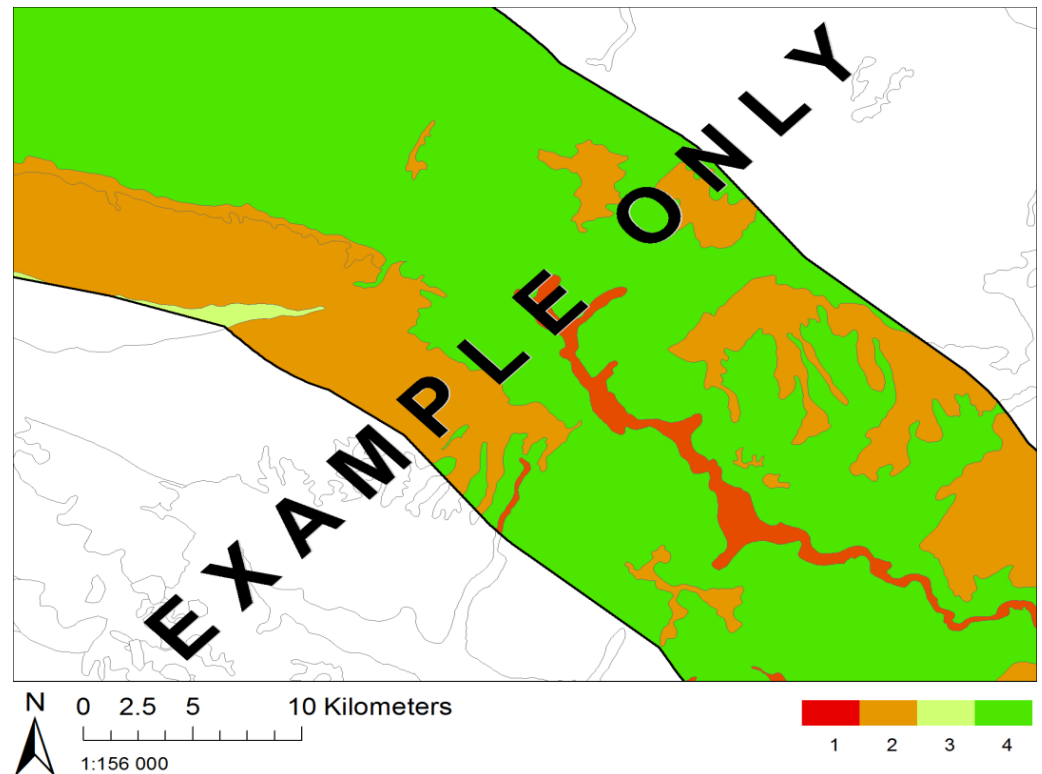
Optimal Corridor  
Positioning



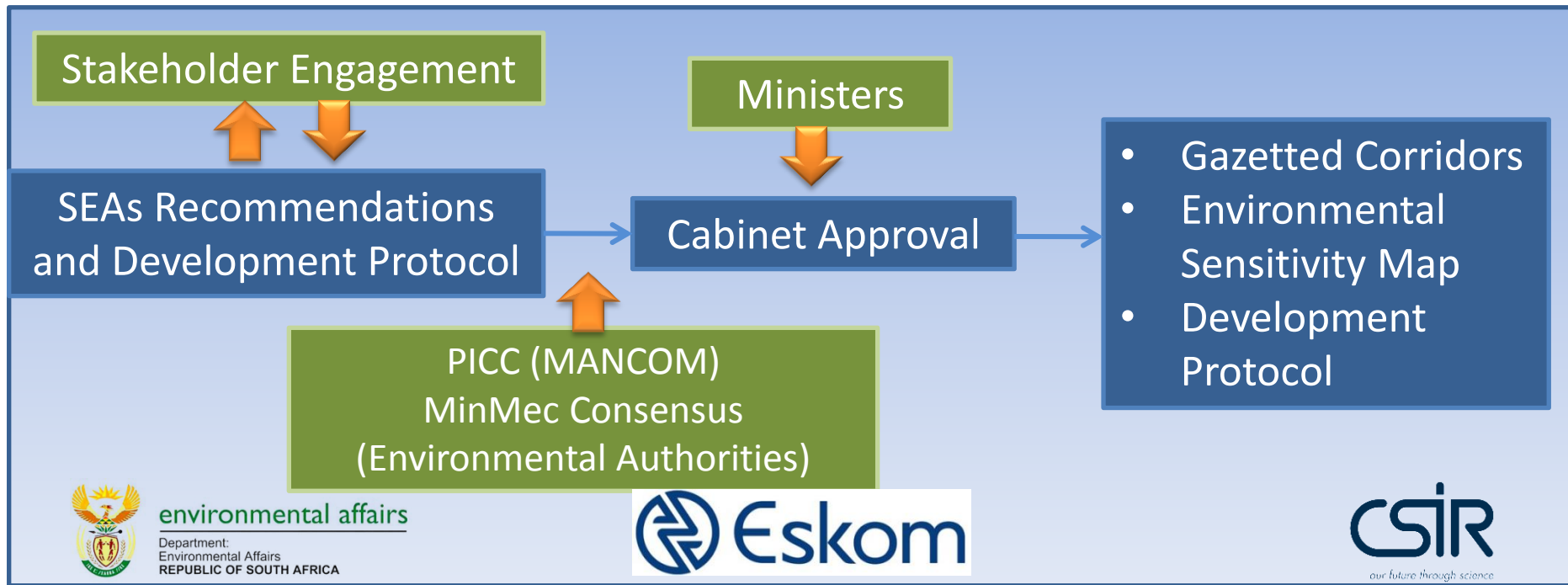
# Phase III: Environmental Assessment

- **Specialist Studies**

- Undertake scoping level assessment of area within the corridors;
  - Ecological Assessment
  - Bird Assessment
  - Heritage Assessment
  - Visual Impact Assessment
- Create four tiered sensitivity map
- Create development protocol
  - Specifies minimum assessment requirements
  - Proposed mitigation measures



# Cabinet Approval Process



# Thank you for your attention

EGI SEA Webpage: <https://egi.csir.co.za/>

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