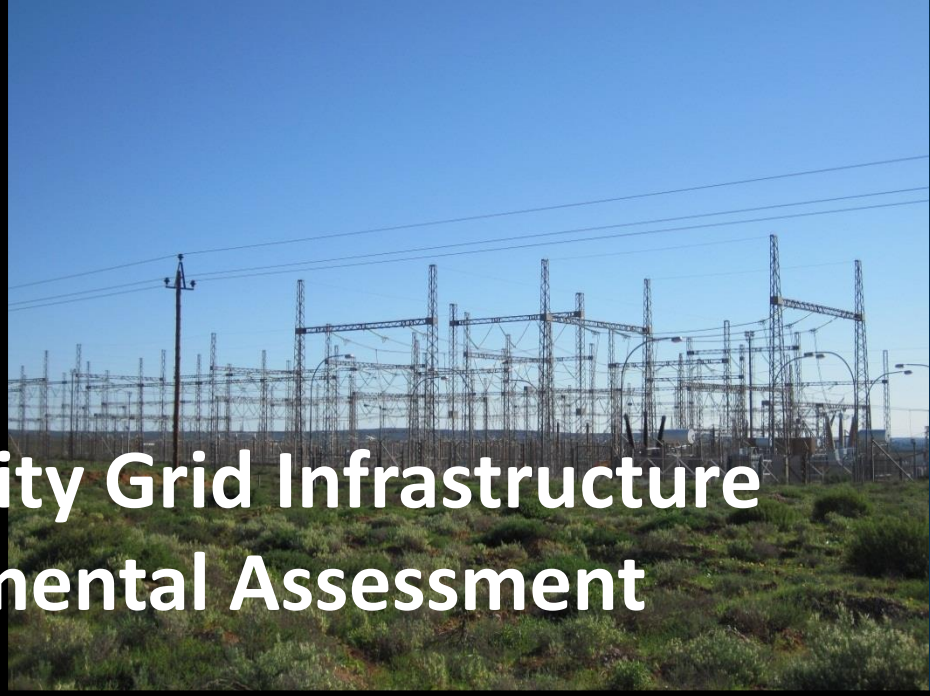

DEA National Electricity Grid Infrastructure Strategic Environmental Assessment

3rd Expert Reference Group Meeting
Phase Ib: Positive Mapping

11 February 2015

Presenter: Marshall Mabin

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Department:
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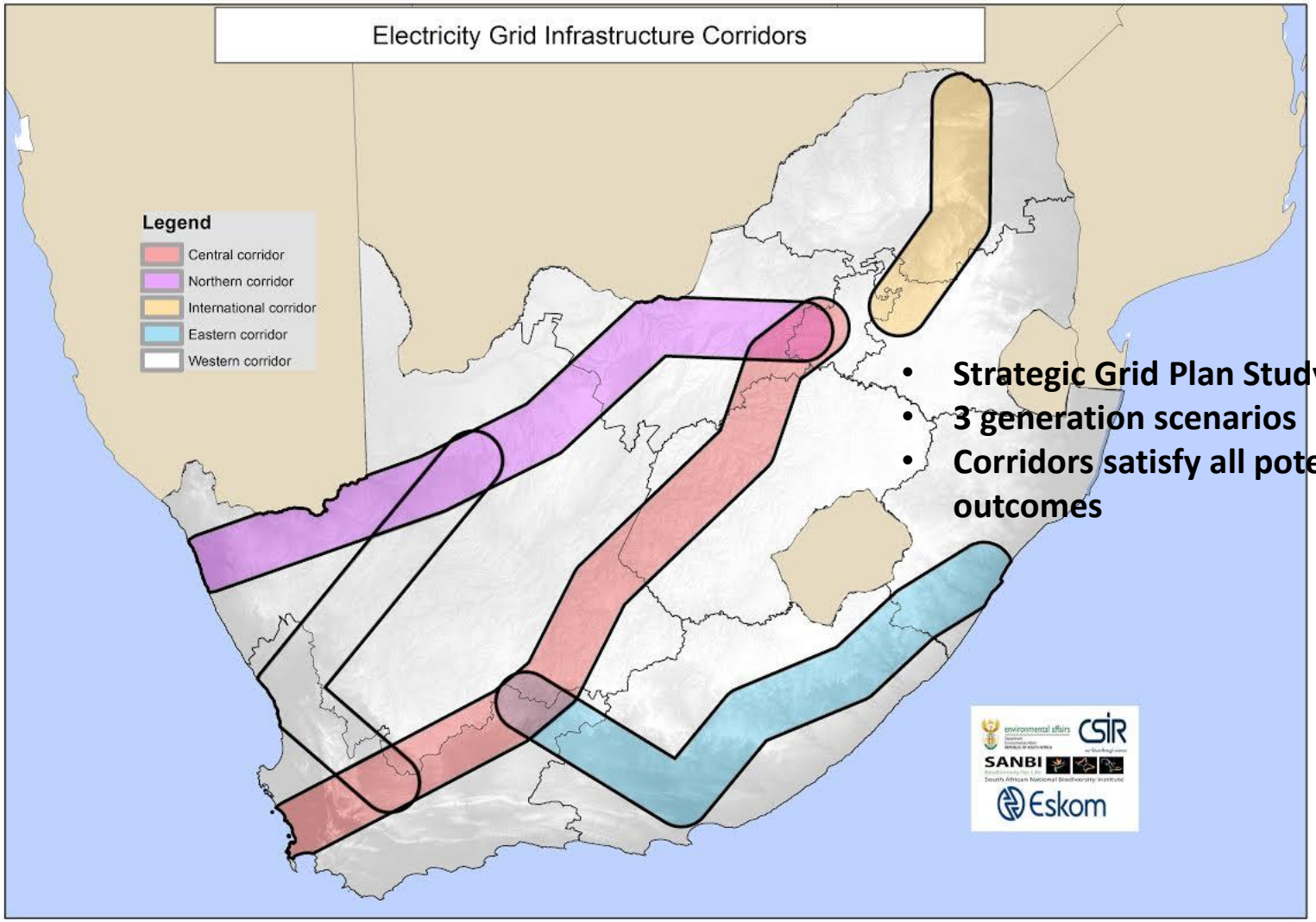
Background to EGI SEA

- National Development Plan
  - National Infrastructure Plan
    - SIP 10: Electricity transmission and distribution for all
- Government acting to fast track approval process for SIPs: PICC and Infrastructure Development Act.

- "*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 constraints to grid expansion
  - EIA: 2-3 years
  - Additional permitting requirements (WUL, FCP etc): up to 7 years
  - EIA locks Eskom into predefined route
  - 1000kms of line all requiring individual authorisations.
- **Result: transmission infrastructure not available when and where it is required**
- DEA undertaking SEAs to improve the efficiency of EA process for energy related SIPs (8 and 10)
- Appointment of CSIR and SANBI to conduct the EGI SEA

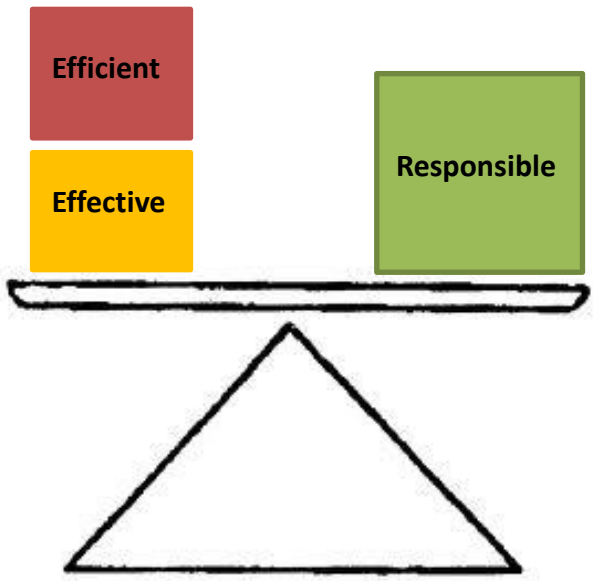
Eskom Preliminary Corridors



- **Strategic Grid Plan Study 2040**
- **3 generation scenarios**
- **Corridors satisfy all potential outcomes**

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.*



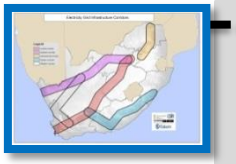
Objectives of the SEA:

- 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.
- Facilitate streamlined environmental authorisation for transmission infrastructure development within the corridors
- Develop a site specific development protocol.
- Promote collaborative governance between authorising authorities
- Gazette the corridors under the SIP programme (Infrastructure Development Act)
- Enable Eskom greater flexibility when undertaking land negotiation
- Support upfront strategic investment

EGI SEA PROCESS

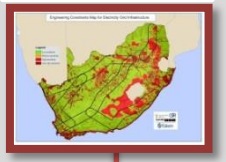
The Corridors
(Starting Point)
Jan 2014

Eskom Preliminary Corridors

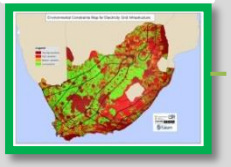


Phase I (a)
(Negative Mapping)
Feb-Aug 2014

W2W Engineering Constraints Map

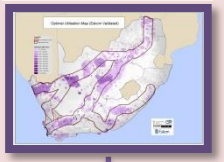


W2W Environmental Constraints Map



Phase I (b)
(Positive Mapping)
Sep- Dec 2014

Corridor Utilisation Map



Phase II
(Corridor Refinement)
Jan- Feb 2015

Final Corridors

Draft Corridor Environmental Constraints Map

Phase III
(Environmental Assessment)
Mar- Dec 2015

Specialist Studies

Consolidate and Review

Gazetting Process
2016

SEA Outputs

- Final Corridors
- Final Corridor Environmental Constraints Map
- Development Protocol

PARTICIPATION:	PARTICIPATION:	PARTICIPATION:	PARTICIPATION:	PARTICIPATION:
PSC & ERG Meeting; Provincial Government Consultation Roadshow	Provincial & Local Government Consultation; Bulk User & Generators Workshop	ERG Meeting; Eskom	Competent Authority Input; Specialist Review; ERG Meeting	Public Comment

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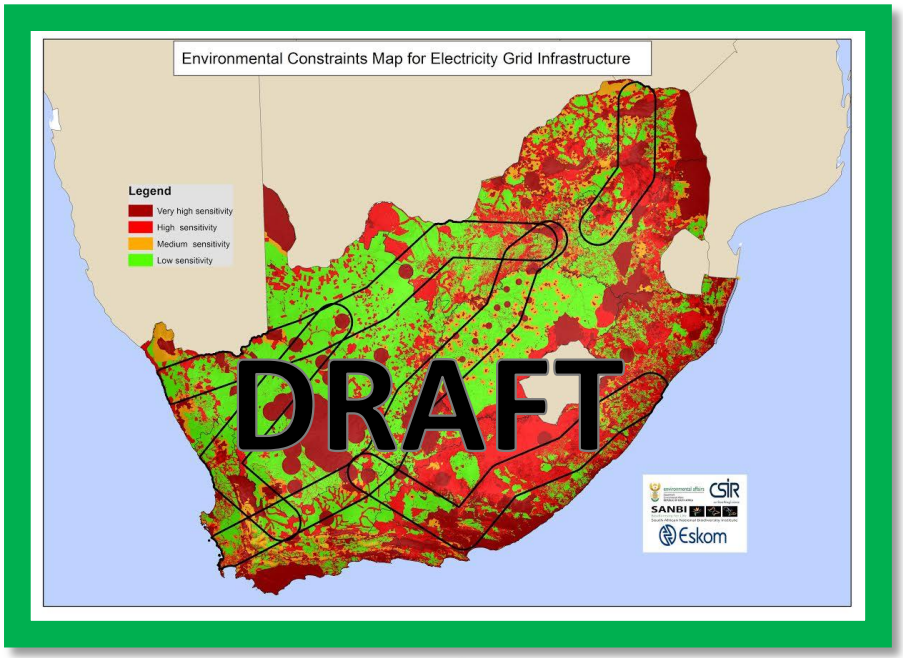
Bird and Bat Database Tool

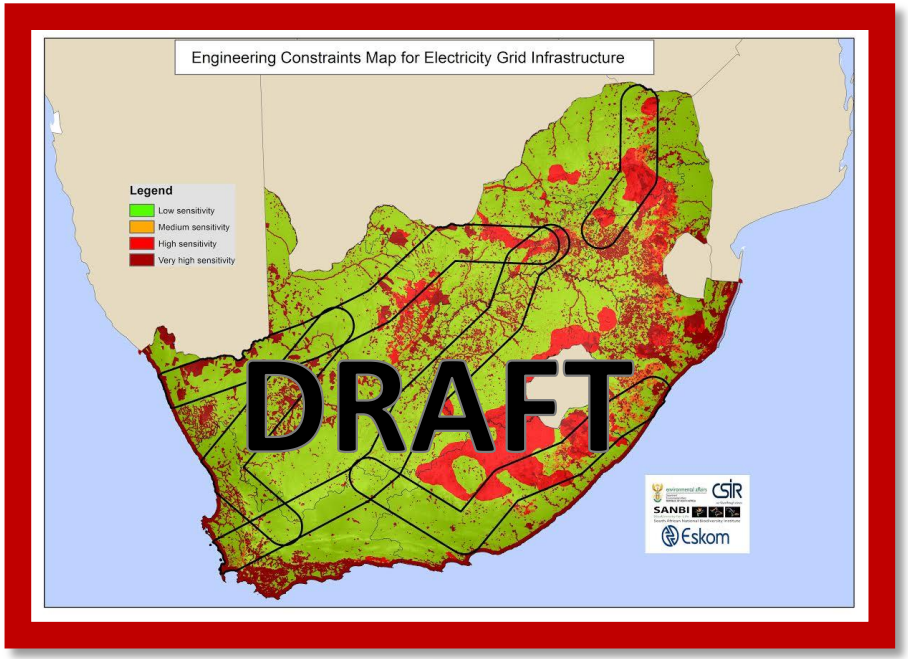
Phase Ia: Constraints Mapping Outputs

Environmental Constraints Map



Phase II
(Corridor Refinement)

Engineering Constraints Map



Phase II
(Corridor Refinement)

Phase Ib: Utilisation Mapping

- **Aim**
  - Ensure the final corridors are positioned to support areas where future transmission infrastructure will be best utilised?

- **Question**
  - Where will transmission infrastructure be best utilised?

- **Answer**
  - Areas where there is planned (or high potential for) future generation activity, and or
  - Areas where there is planned (or high potential for) future bulk load activities.

- **Approach**
  - Source spatial information on future developments plans through review and consultation with government, state enterprises and the private sector.
  - Focus areas: 150km corridors (preliminary corridors + 25 km buffer)
  - Opportunity to provide inputs outside of buffered corridor extent too
  - Information spatially digitised (10km x 10km grid cell resolution)

Phase Ib: Utilisation Mapping- Information Gathering

- **Review of national economic policies and strategies**
  - National Development Plan
  - National Infrastructure Plan- SIPs
  - Strategic Economic Zones Act
  - The IDZ Programme

- **Review of regional and local development plans**
  - Provincial Spatial Development Frameworks
  - Metro, District and Local Spatial Development Frameworks

- **Input from private sector and state enterprise on development plans**
  - Bulk Generation Exercise
  - Bulk Load Exercise

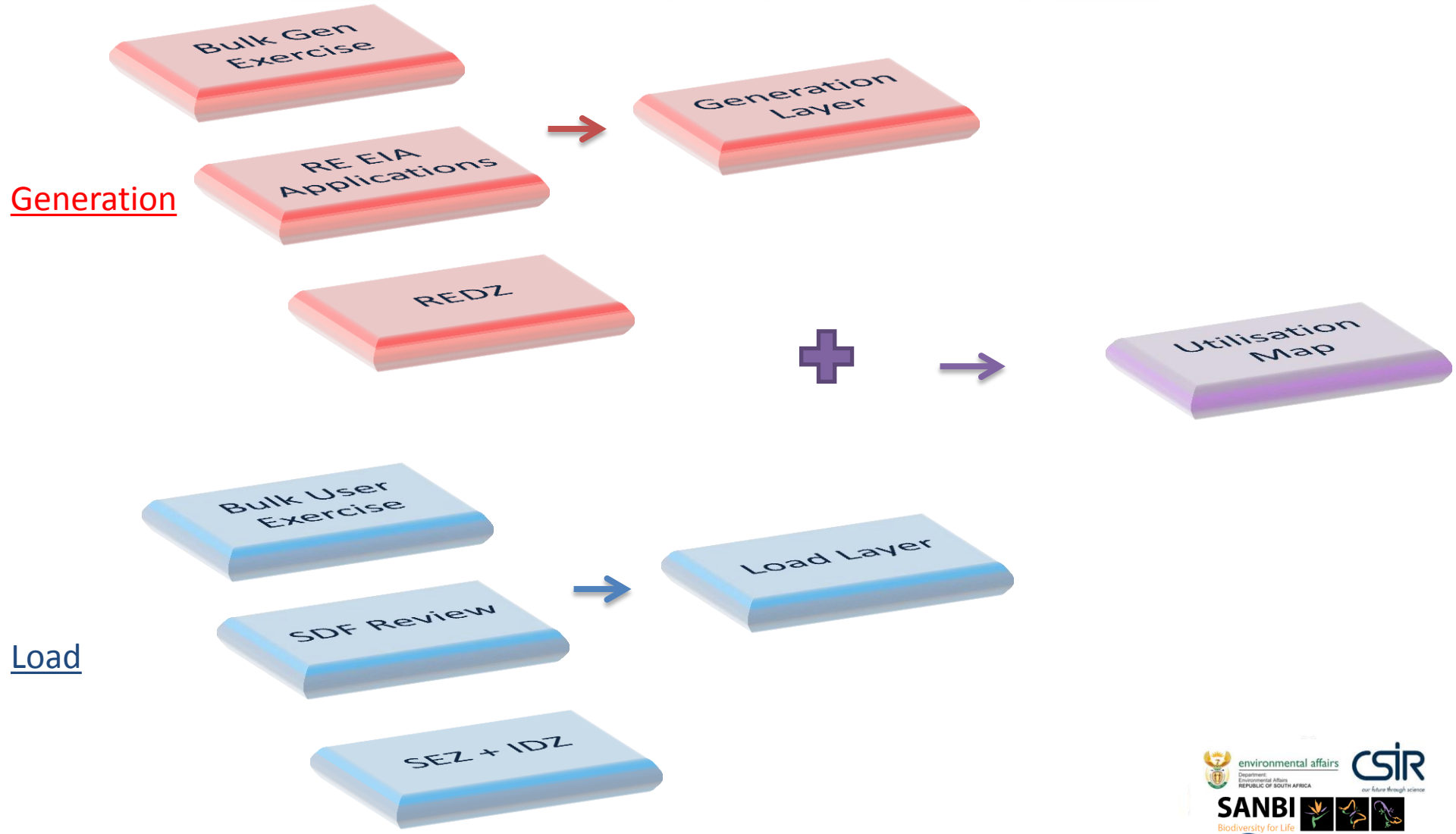
- **Review of renewable energy EIA applications**

- **Consultation with provincial and local government**

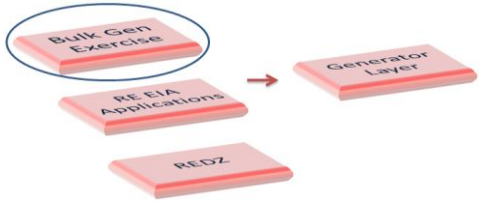
November 2014 Phase Ib Consultation Schedule

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

Phase 1b: Utilisation Mapping- Data Layers and Analysis

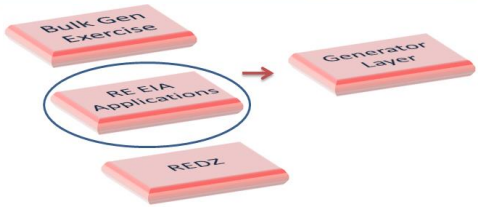


Bulk Generator Exercise Layer

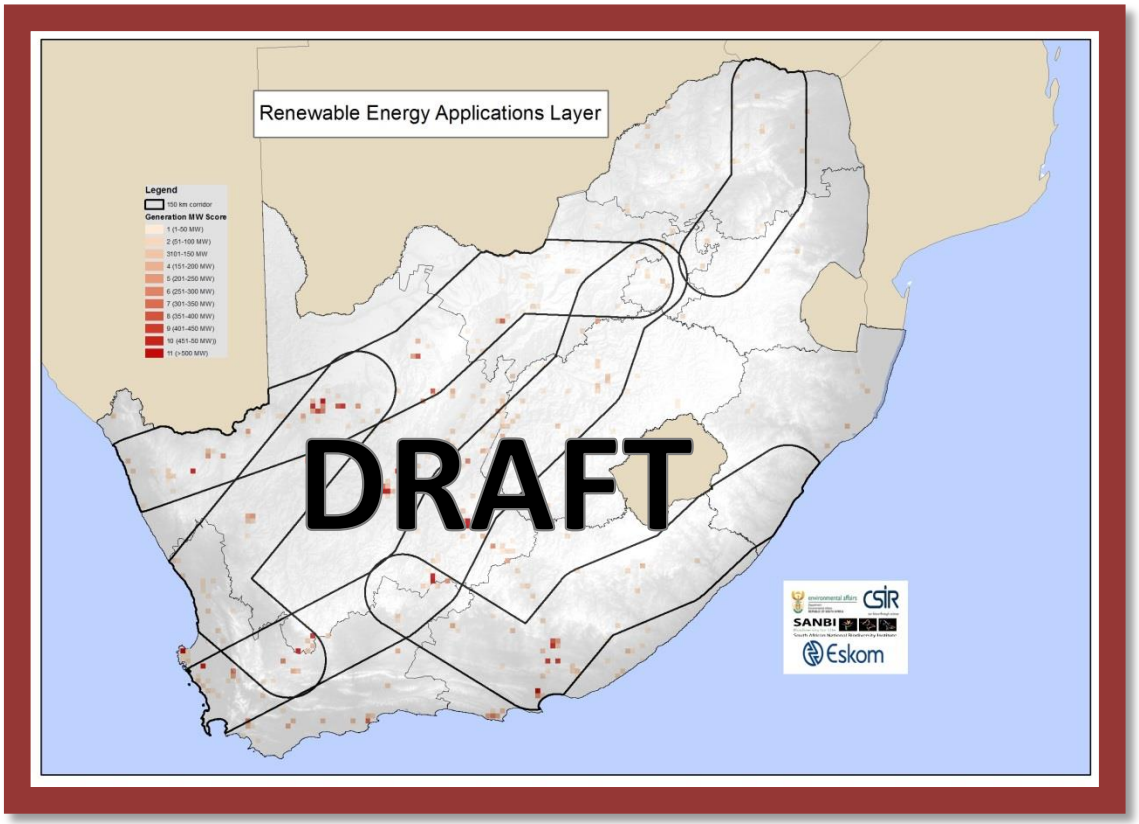


- 16 questionnaire responses (155 unique cell selection)
- Multiple technology types (wind, solar pv, CSP and gas)
- 50MW increments

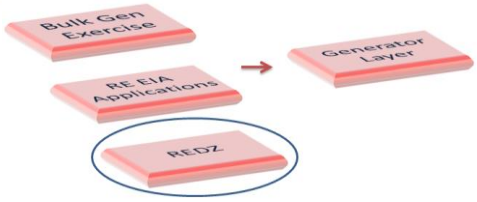
Renewable Energy EIA Applications



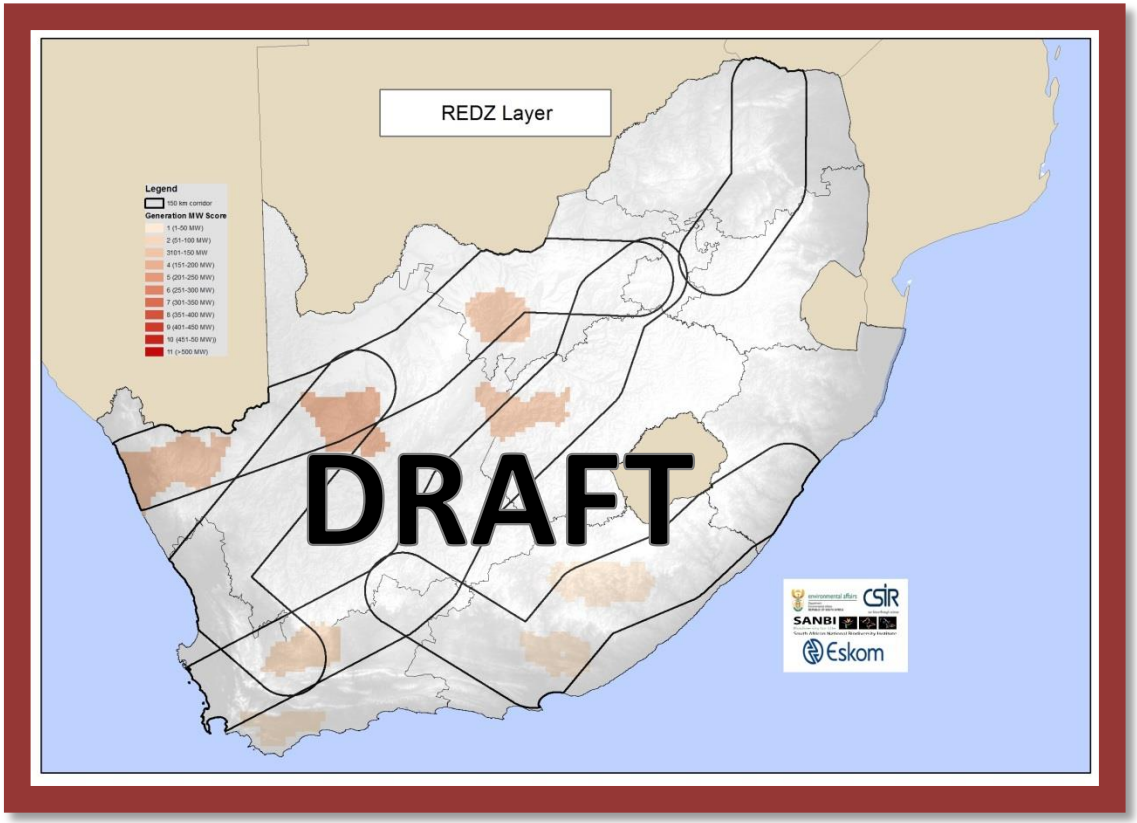
- c. 600 renewable energy active applications
- Multiple technology types (categorised into wind, solar pv, CSP, biogass)
- 50 MW increments



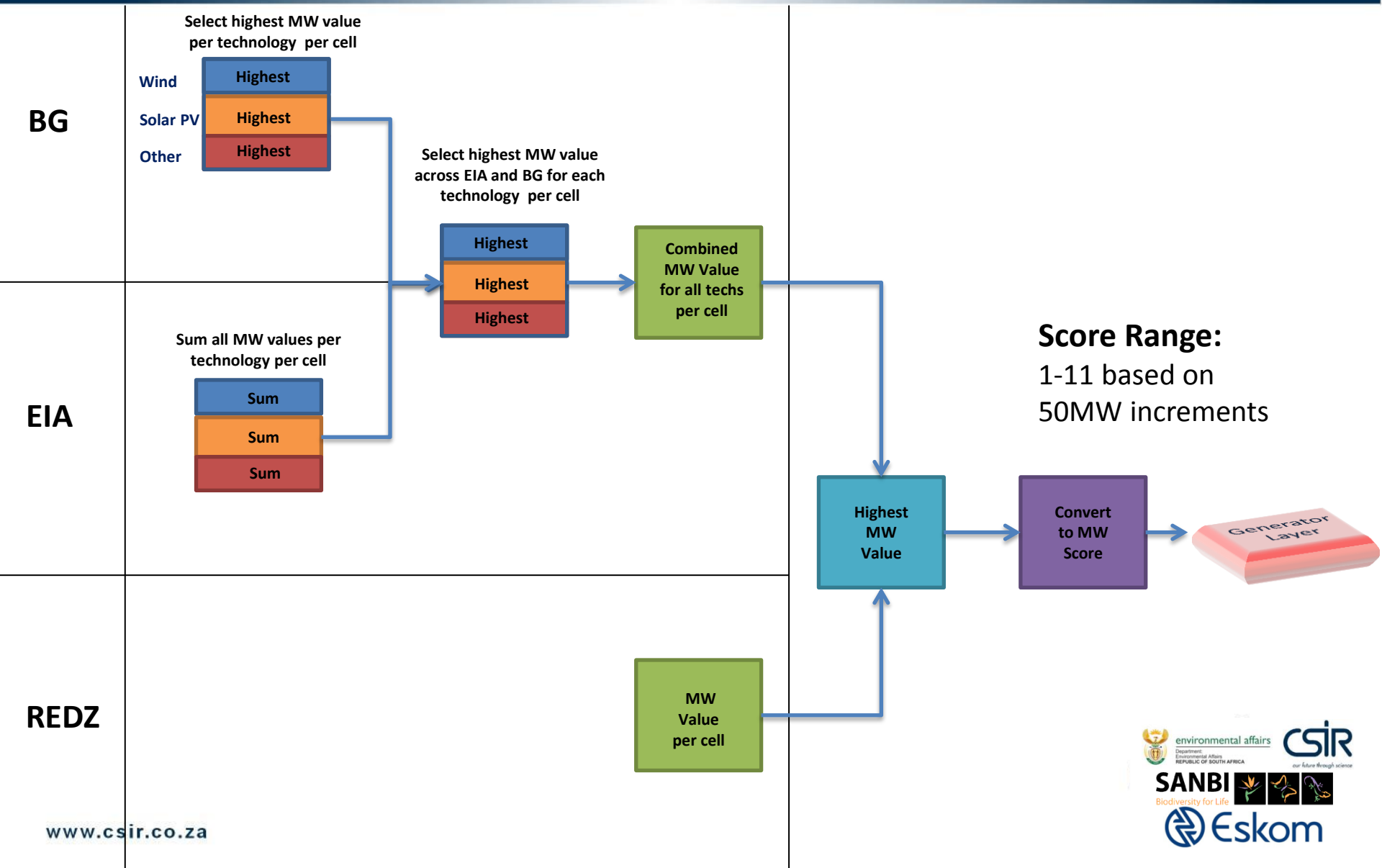
Renewable Energy Development Zones



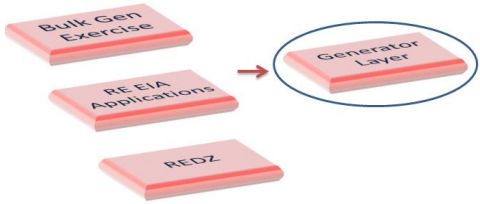
- **MW potential/density thresholds determined from wind and solar SEA**
- **50 MW interval scale**



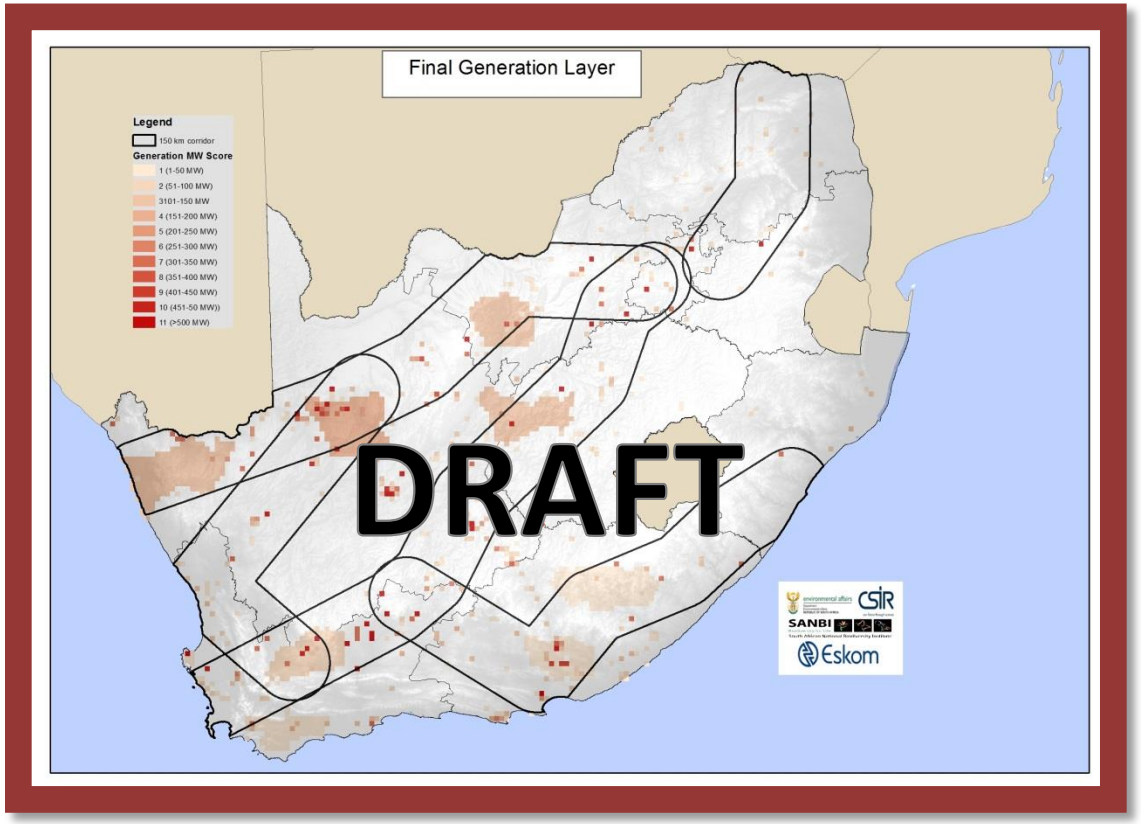
Generation Layer Development Assumptions



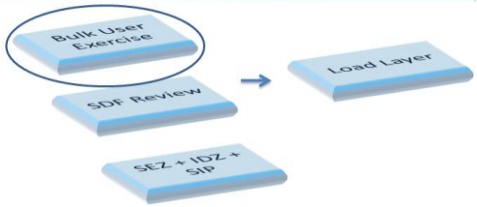
Generation Layer



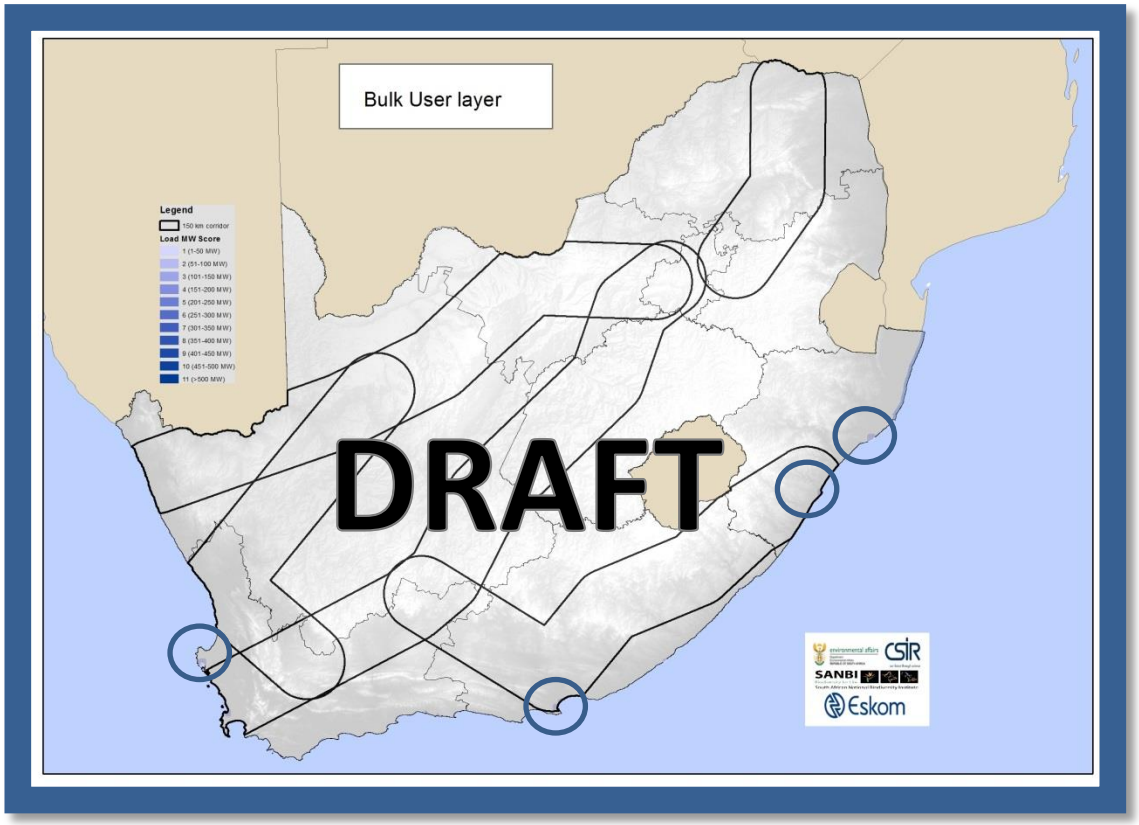
- Aggregation of MW values from three layers
- 50MW increments



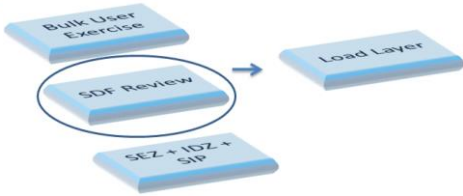
Bulk User Exercise



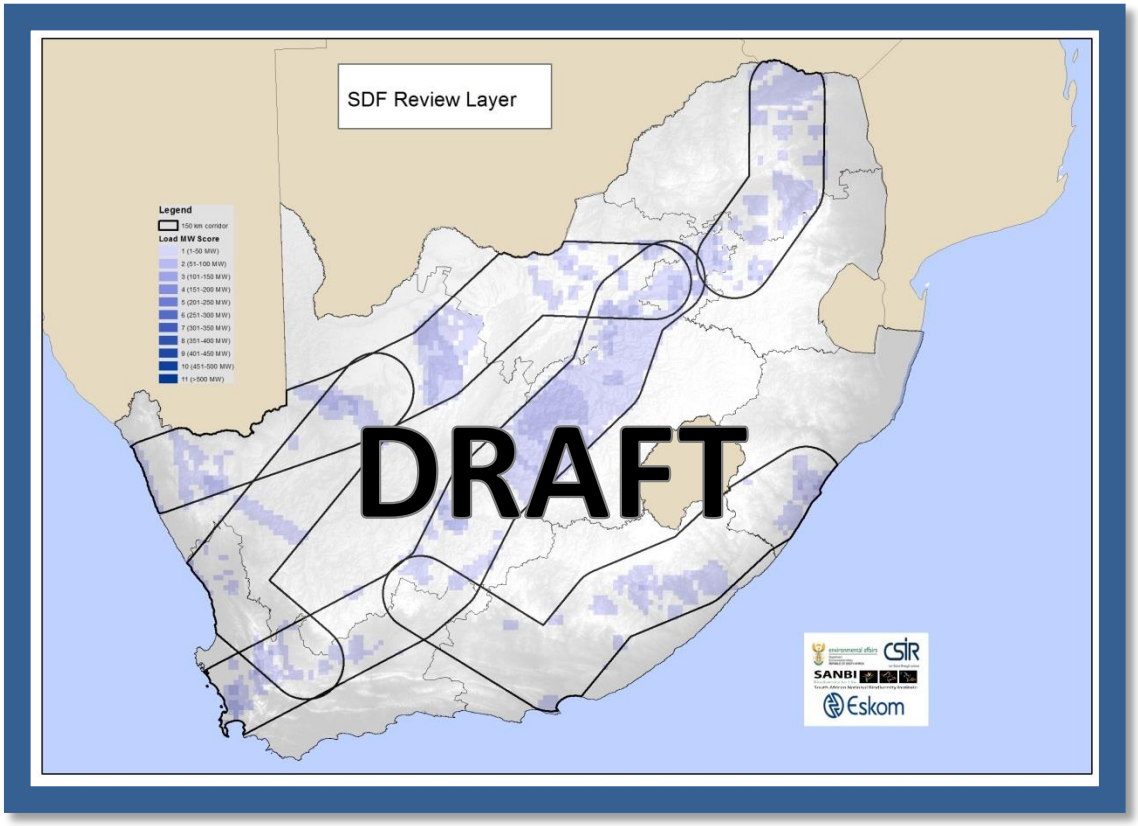
- No input from private sector
- Limited input from public sector enterprises (Transnet and Eskom only)
- 50 MW interval scale



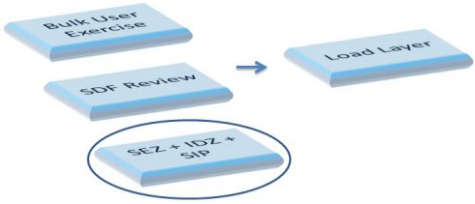
Spatial Development Framework Review Exercise



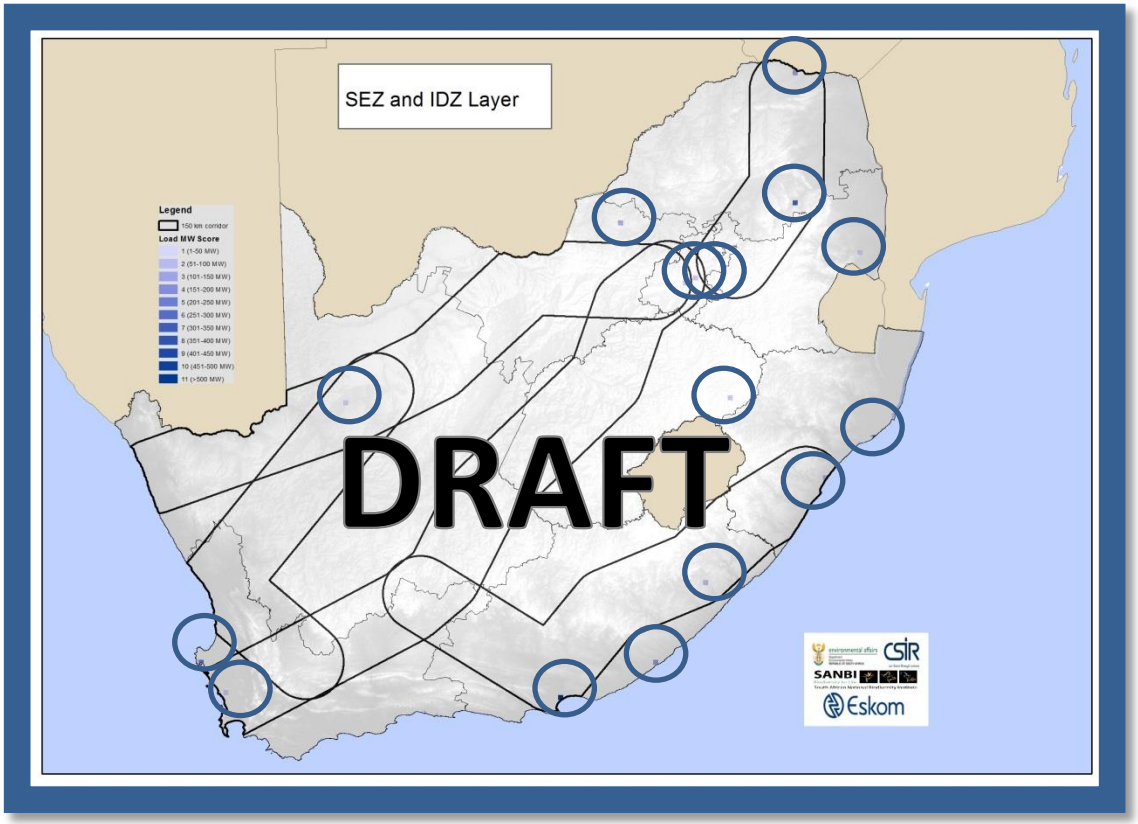
- Information on two broad industry categories captured
  - Industrial expansion
  - Priority mining
- 42 feedback forms submitted by provinces and local government
- 50 MW interval scale



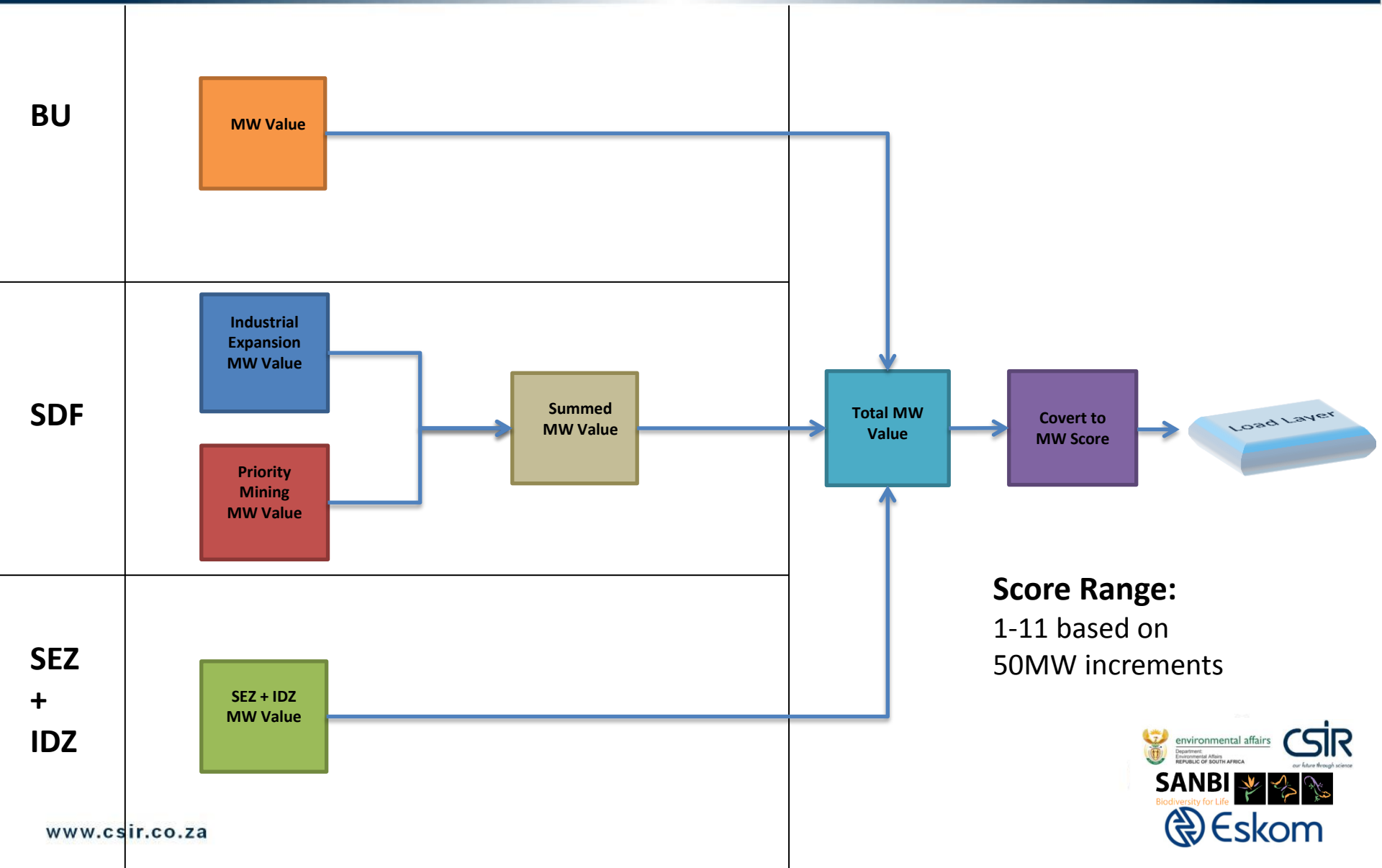
SEZ and IDZ



- Inputs received from Department of Trade and Industry
- 50MW interval scale

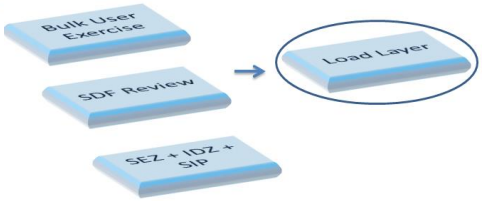


Load Layer Development Assumptions

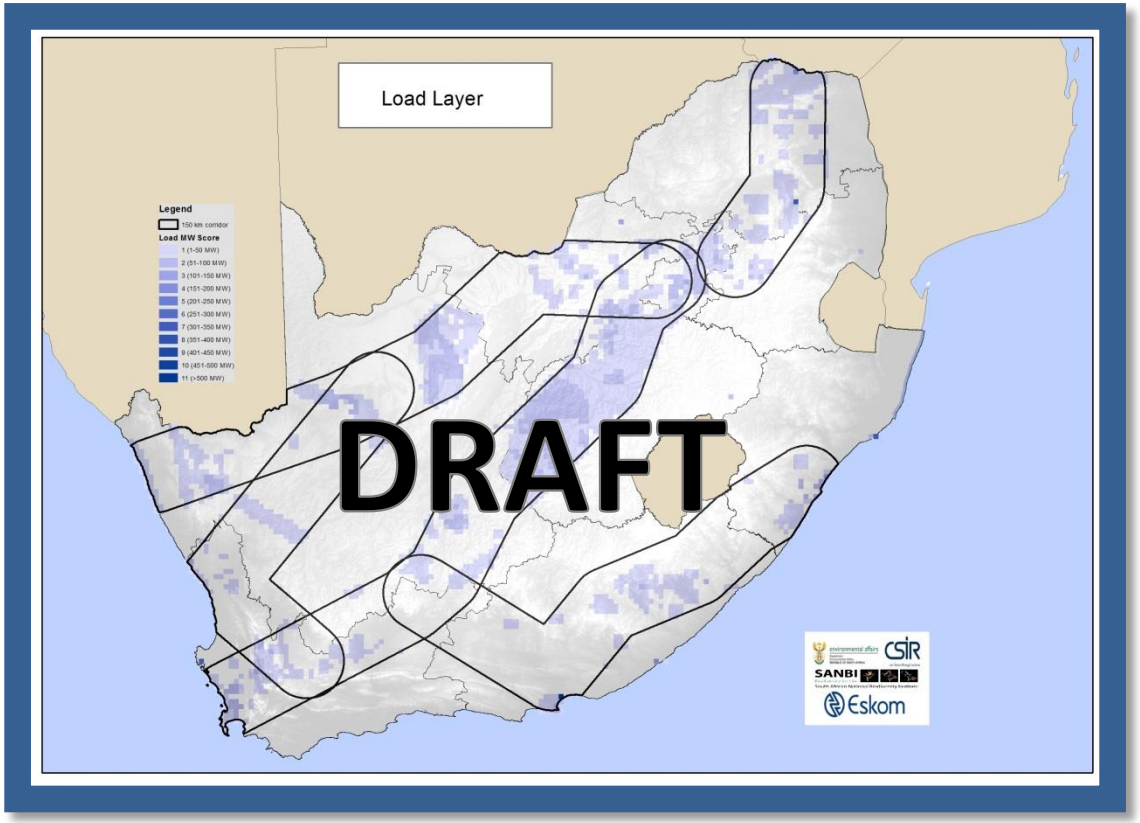


Score Range:
1-11 based on
50MW increments

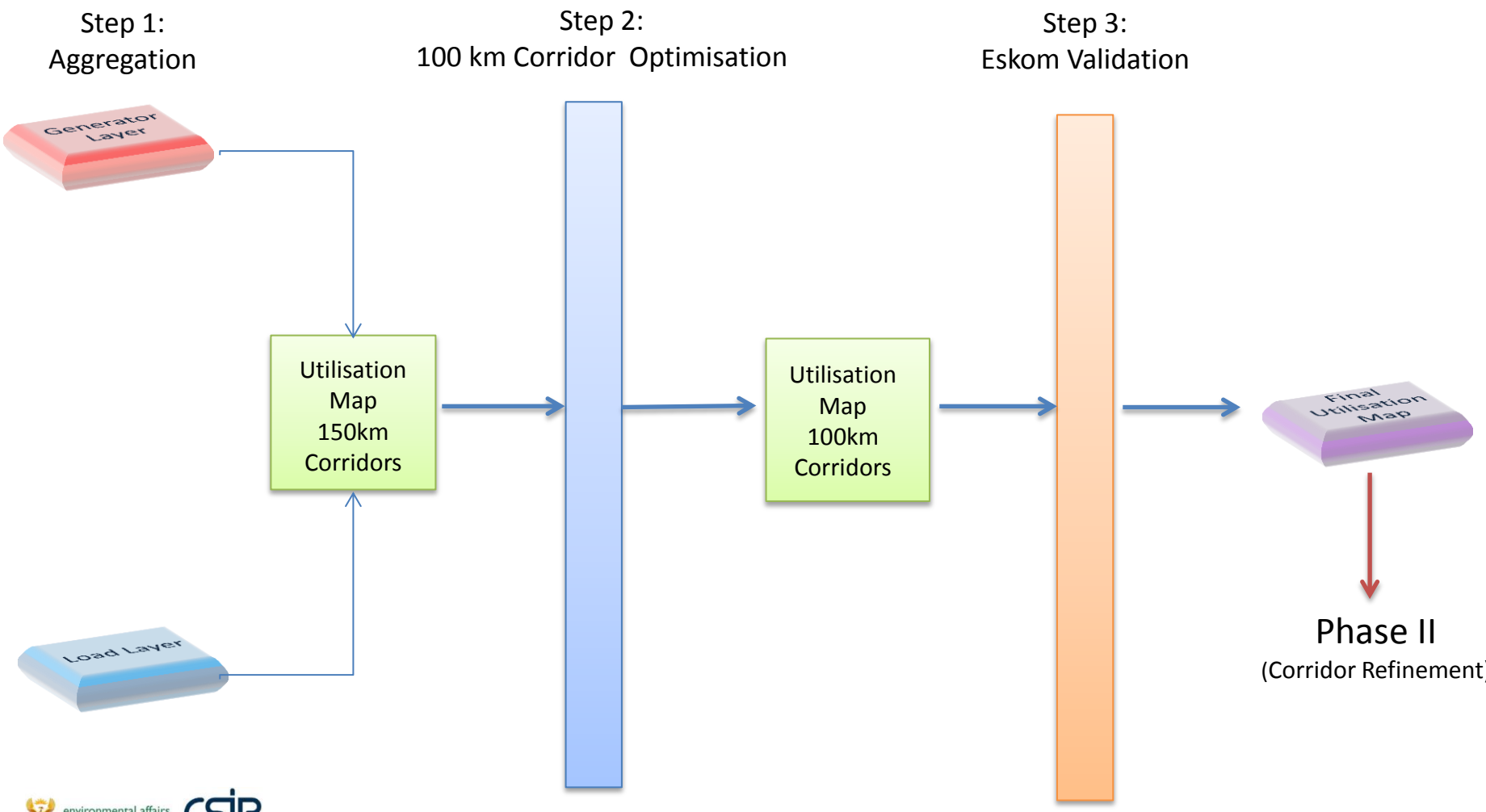
Load Layer



- Aggregation of MW scores from three load layers
- 50MW increments



Utilisation Map Development



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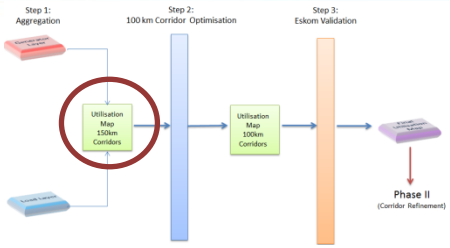
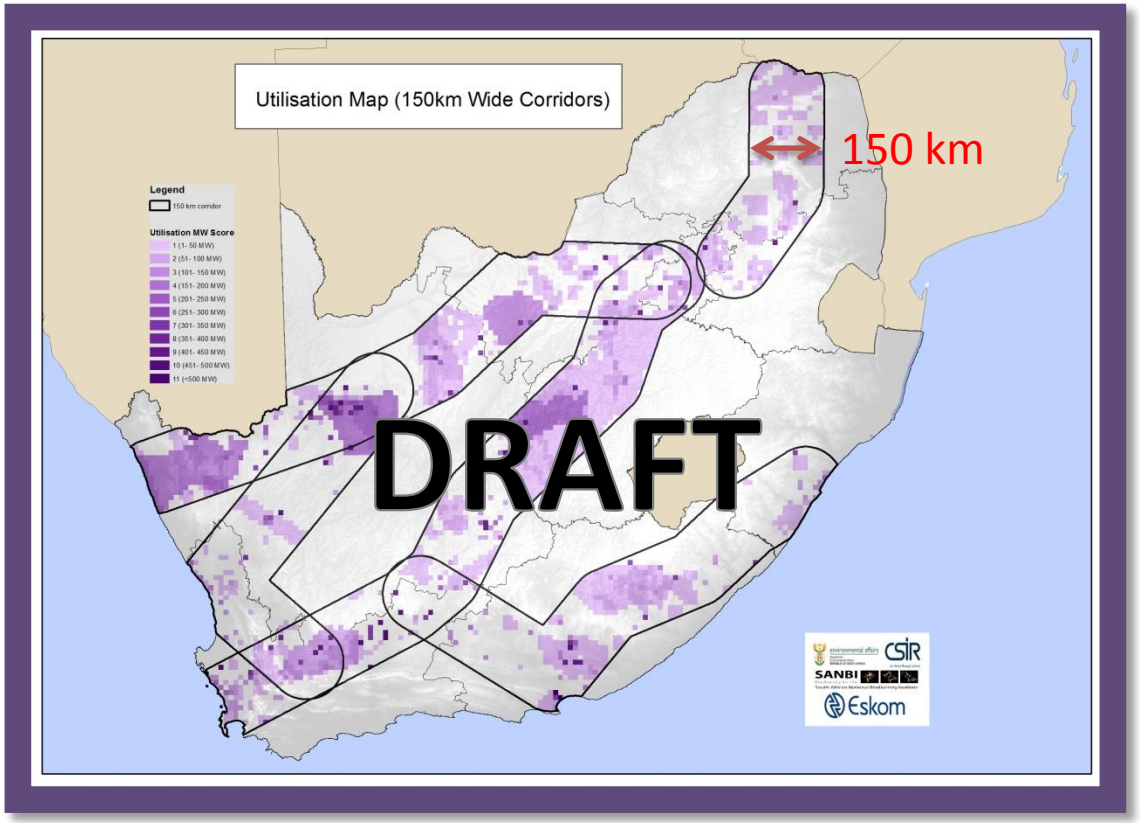
Utilisation Map (150km Wide Corridors)

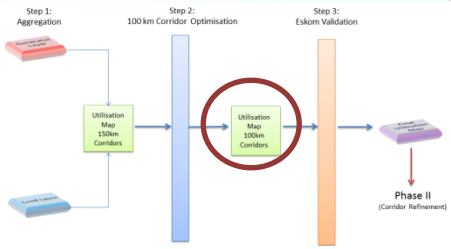
- Aggregation of MW scores from generation and load layers
- 150km corridors (Eskom preliminary + 50km buffer)
- Pre-optimisation

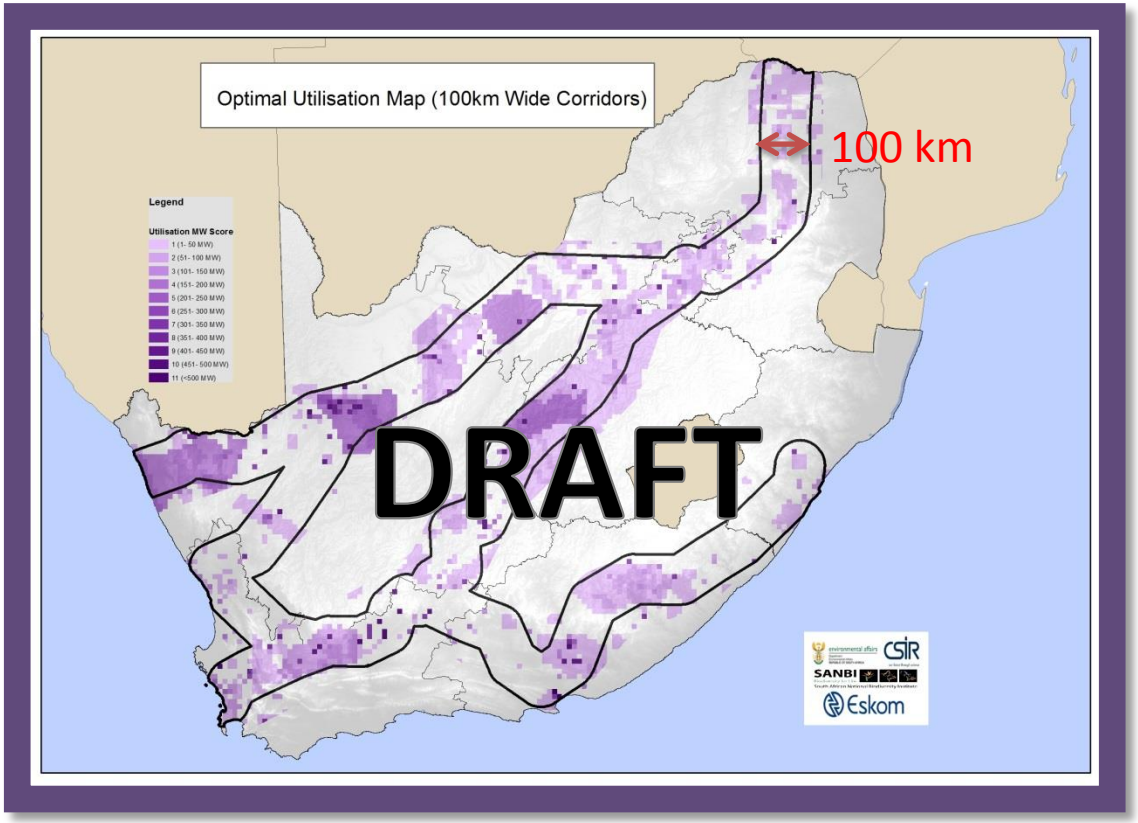




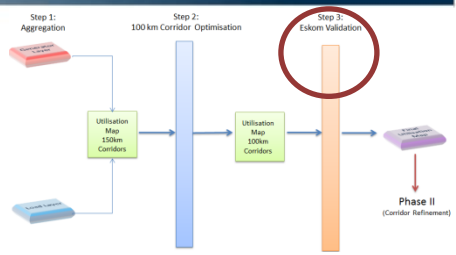
Optimised Utilisation Map (100km Wide Corridors)

- **Aggregation of MW scores from generation and load layers**
- **Optimised 100km wide corridors**

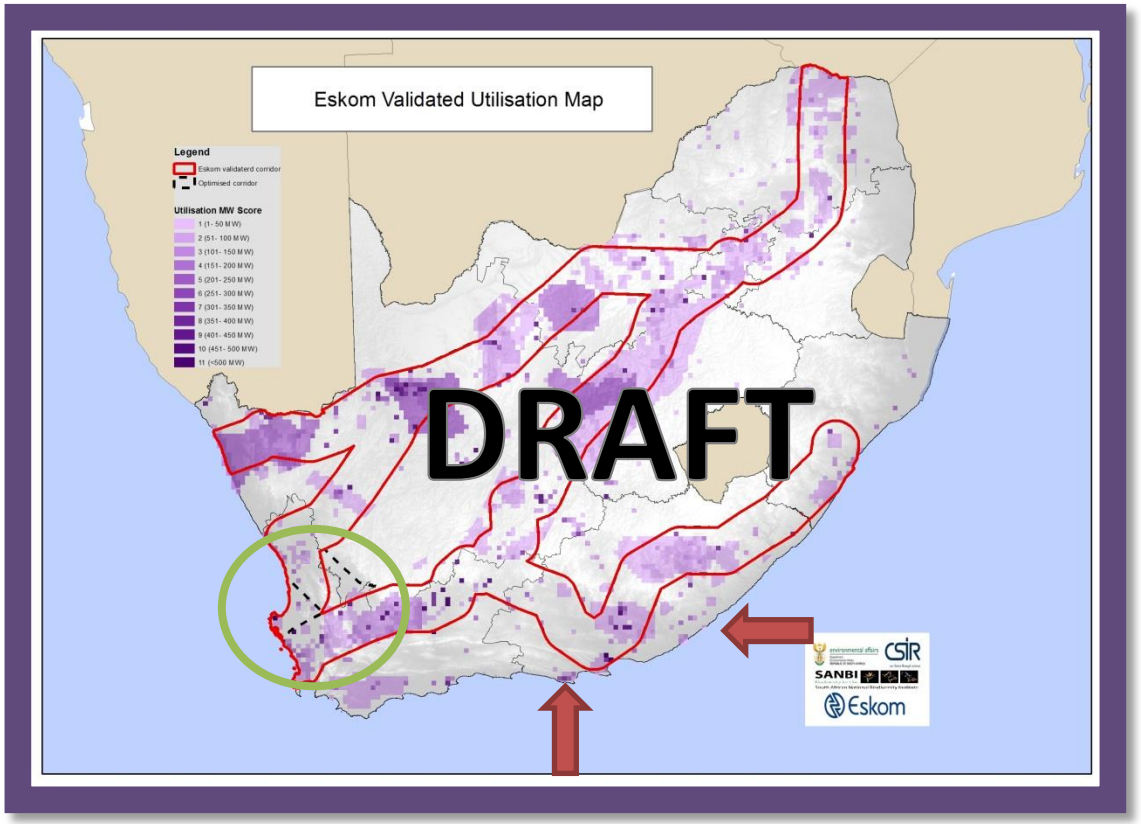




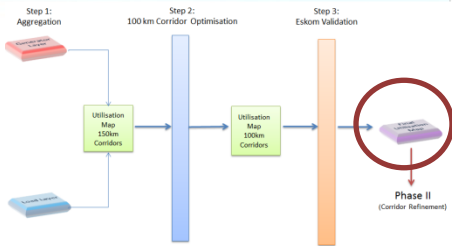
Eskom Validated Utilisation Map



- **Eskom review**
  - **Considering knowledge of exiting and planned networks;**
  - **Data sourced through SEA**



Final Utilisation Map



Phase II
(Corridor Refinement)

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Thank you

Any Questions?

DEA National Electricity Grid Infrastructure Strategic Environmental Assessment

3rd Expert Reference Group Meeting
Phase II: Corridor Refinement

11 February 2015

Presenter: Marshall Mabin

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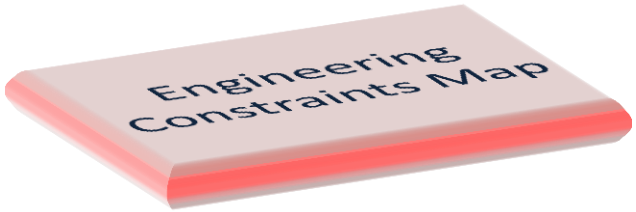
Phase II: Corridor Refinement Process (Pinch Point Analysis)

Phase 1a: Overlays

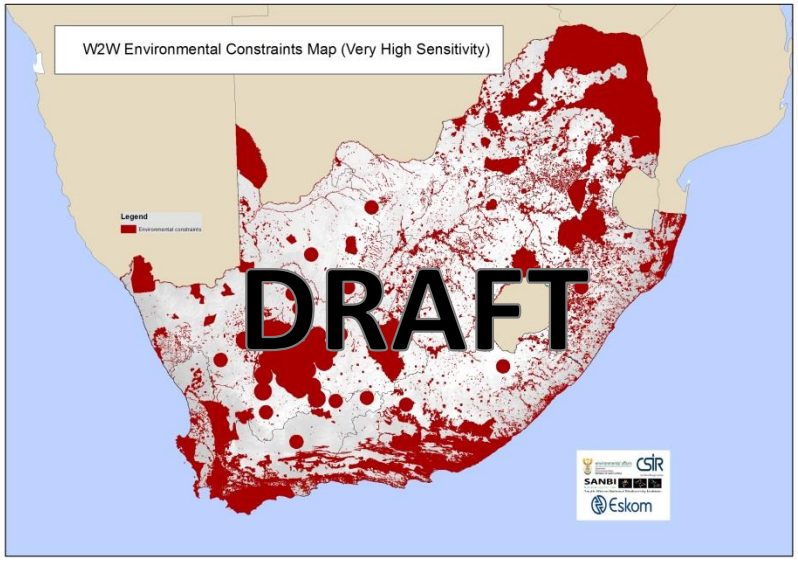


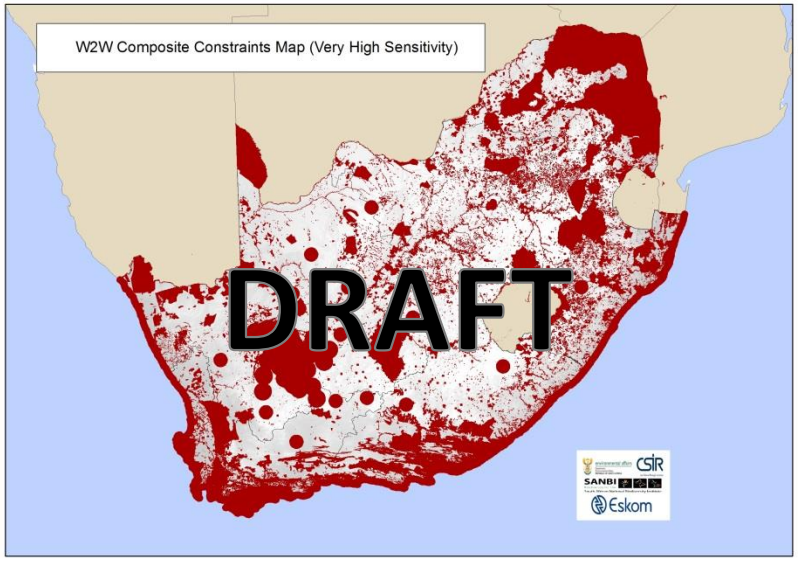
Pinch Point Analysis

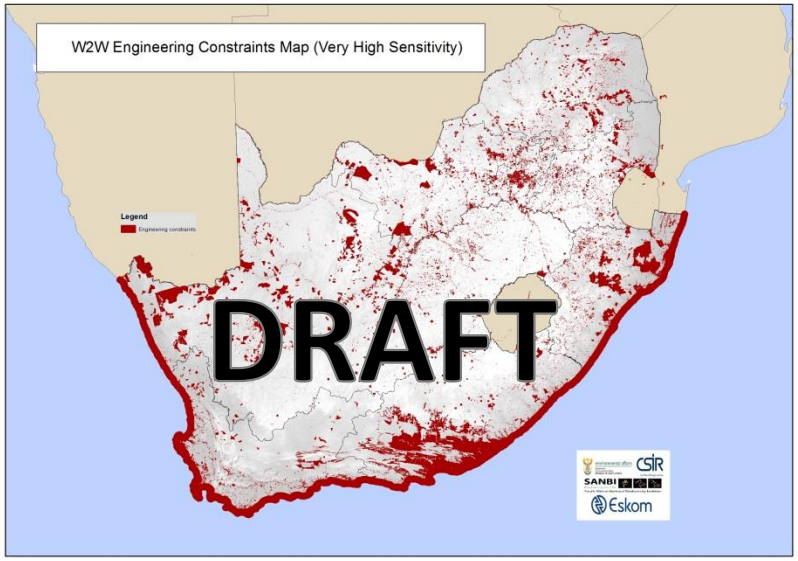
- Remove VH sensitivity areas
- Remaining routing area (compositions of H, M and L sensitivities);
- Overlay with land parcels dataset;
- Routing analysis
- Identify partial (<5 routing options) and complete (no routing options) pinch points for each corridor;
- Adjust corridor in direction of relief,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

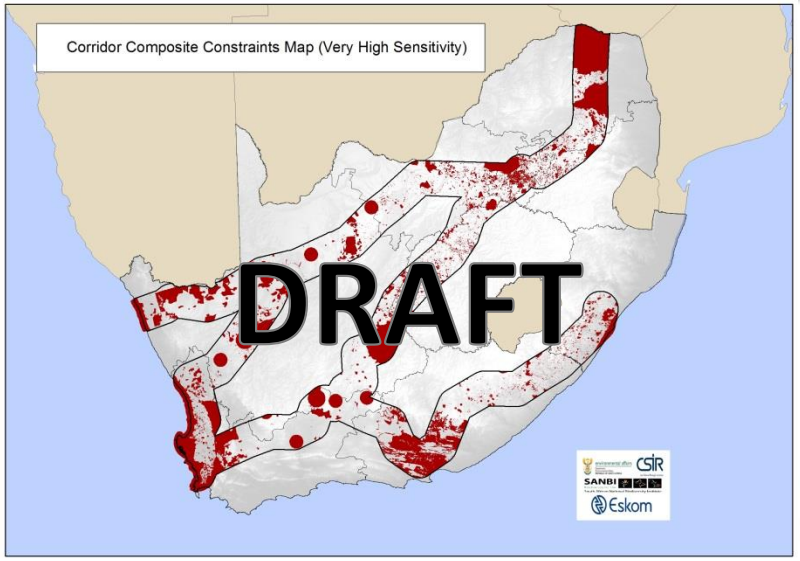
Phase 1b: Foundation

Constraints Map Overlay (Very High Sensitivity)









Available Routing Areas (Remaining Sensitivities)

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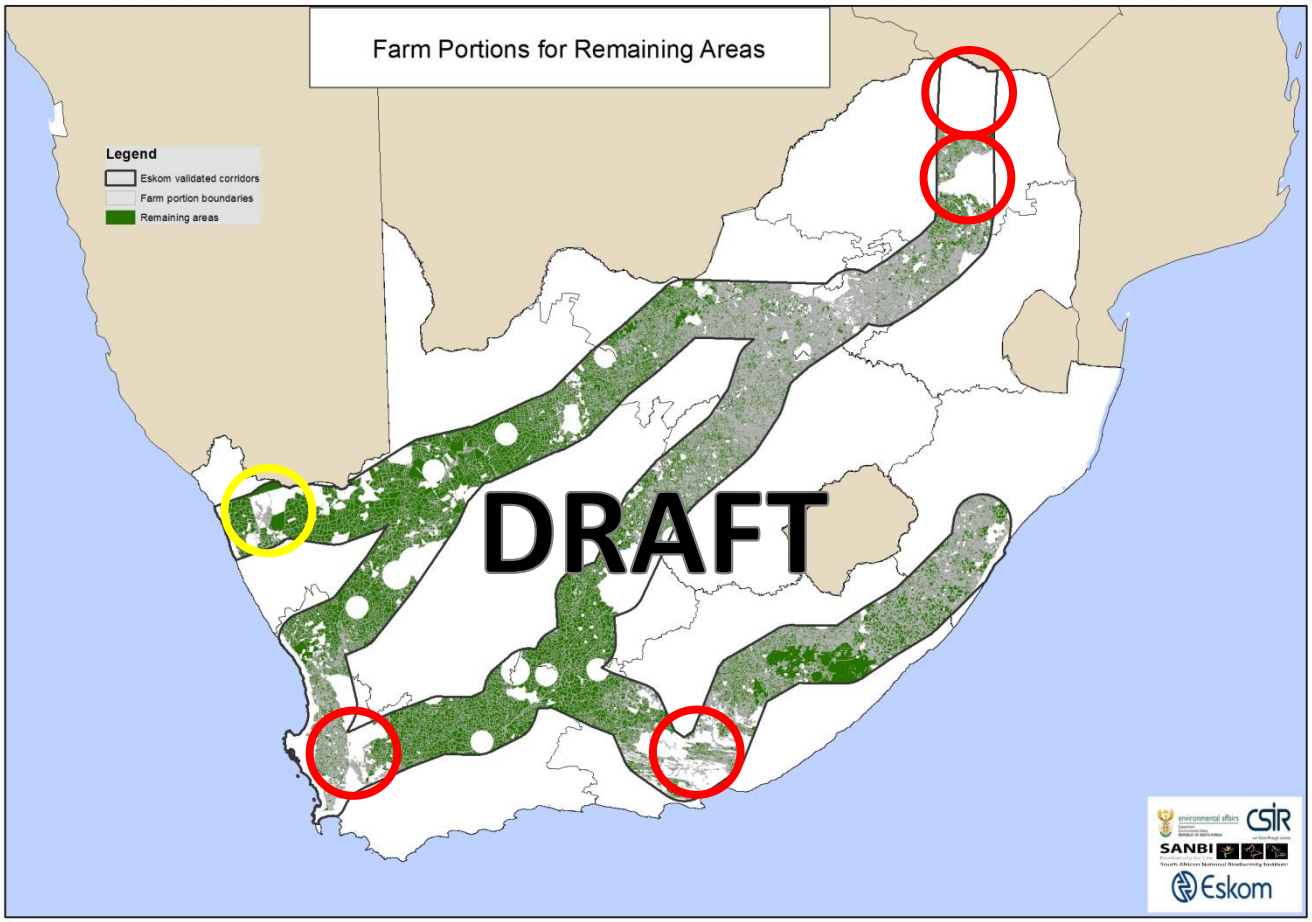
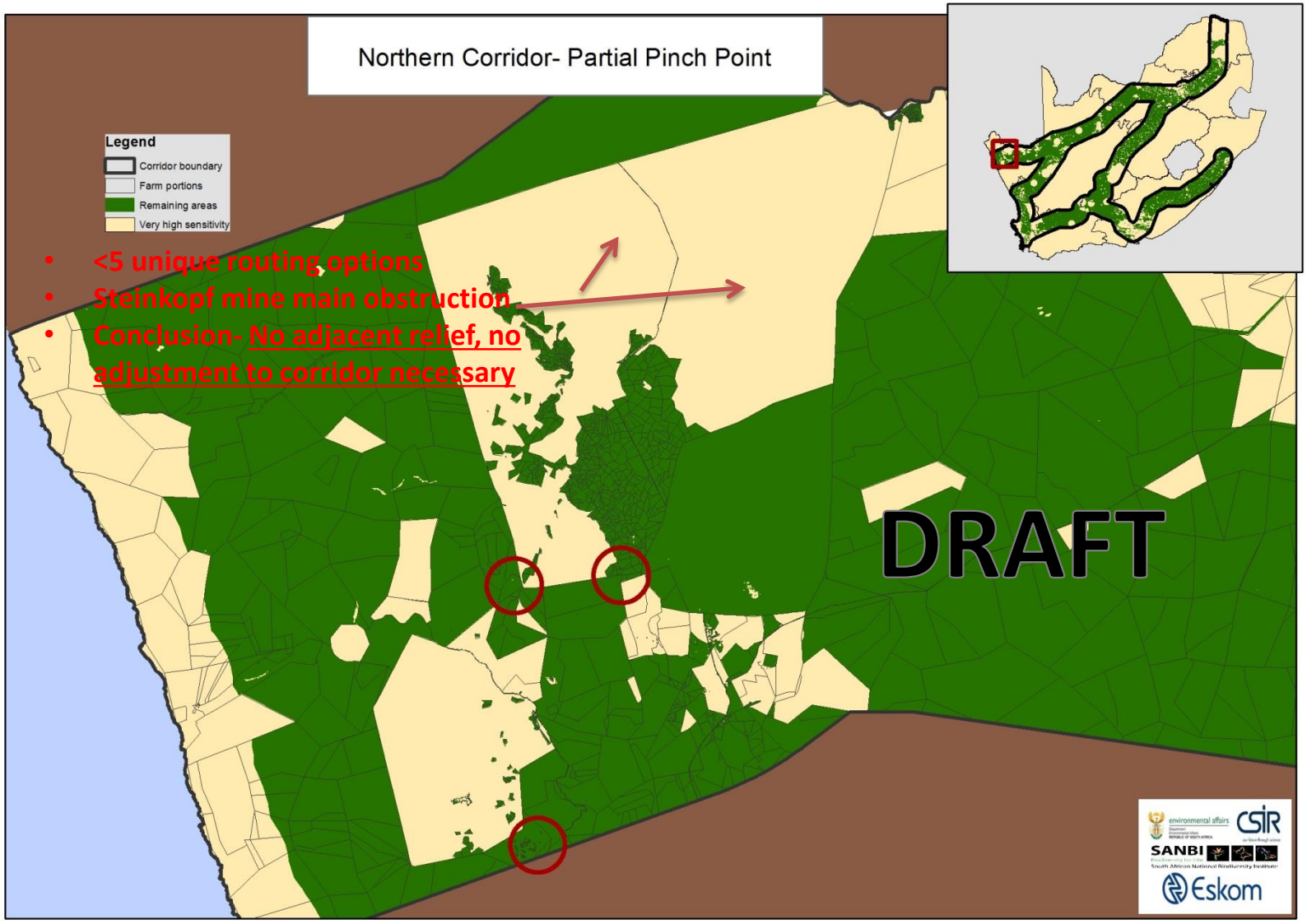
Pinch Point Analysis

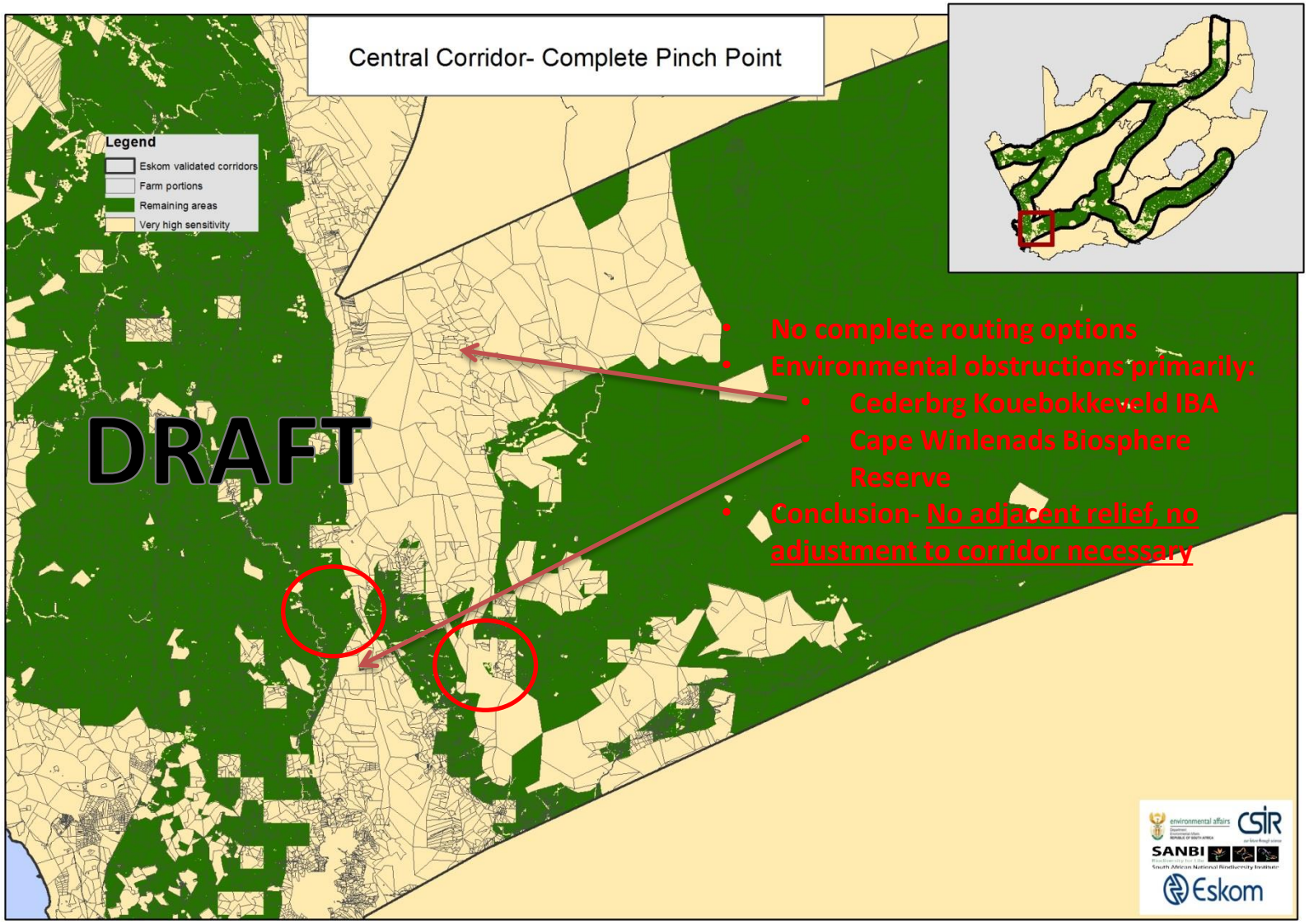
- Least cost path analysis
- Two factors considered: remaining areas and land portions
- Partial Pinch Point definition: 5 or less available routing options through unique farm portions-
- Complete Pinch Point: zero routing options available-



Northern Corridor- Partial Pinch point



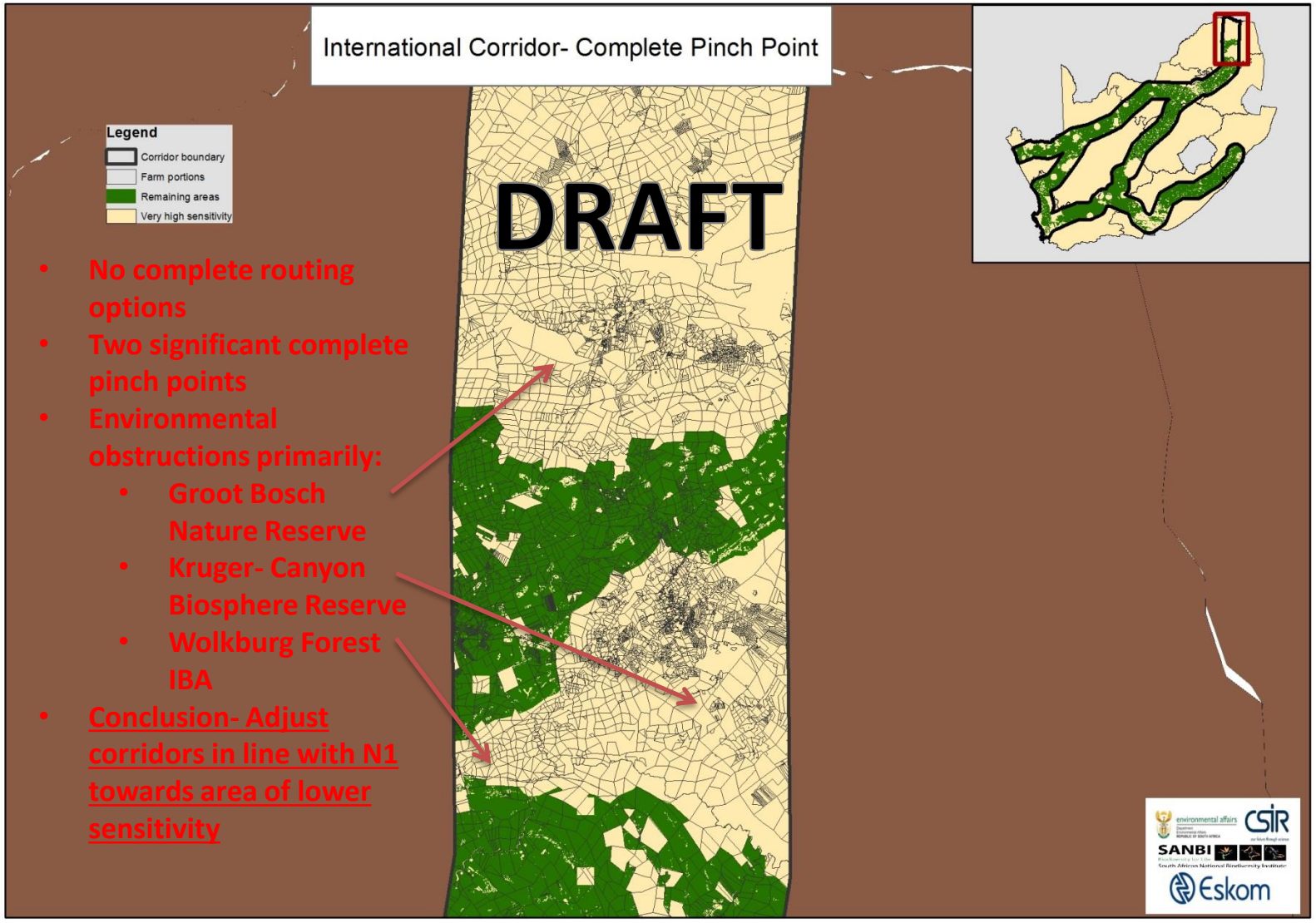
Central Corridor- Complete Pinch Point



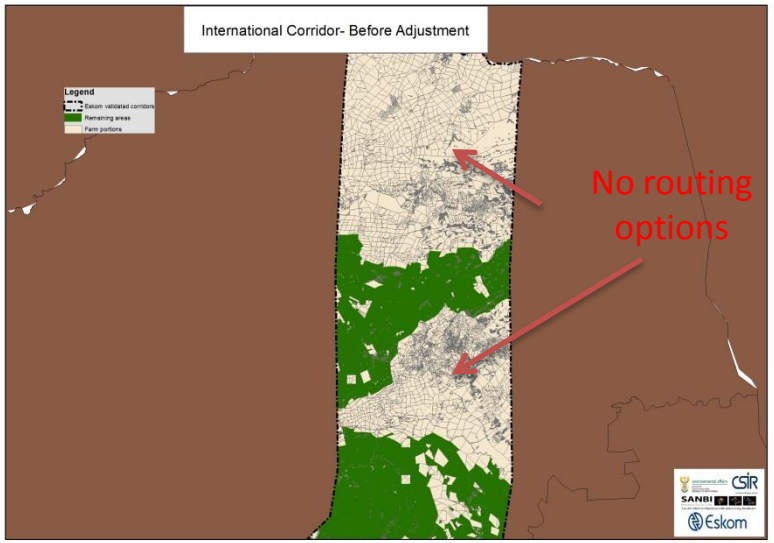
Eastern Corridor- Complete Pinch Point

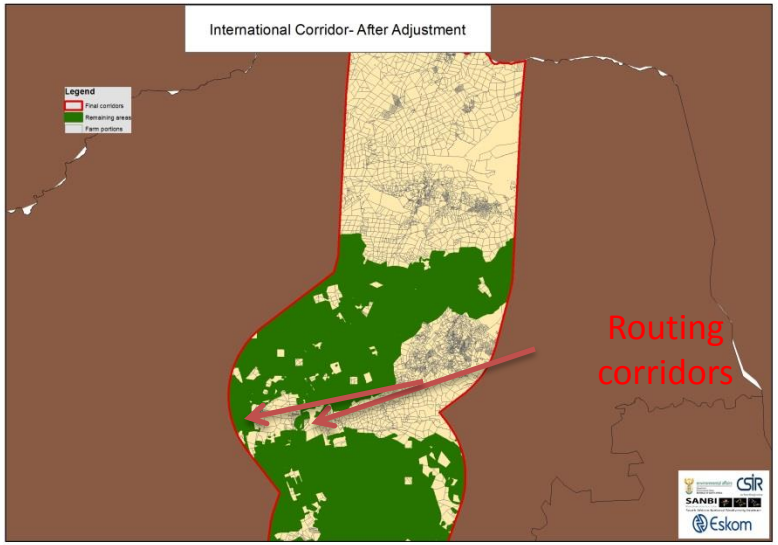
- No complete routing options
- Environmental obstructions primarily:
  - Thicket Biome
- Conclusion- No adjacent relief, no adjustment to corridor necessary

International Corridor- Complete Pinch Point



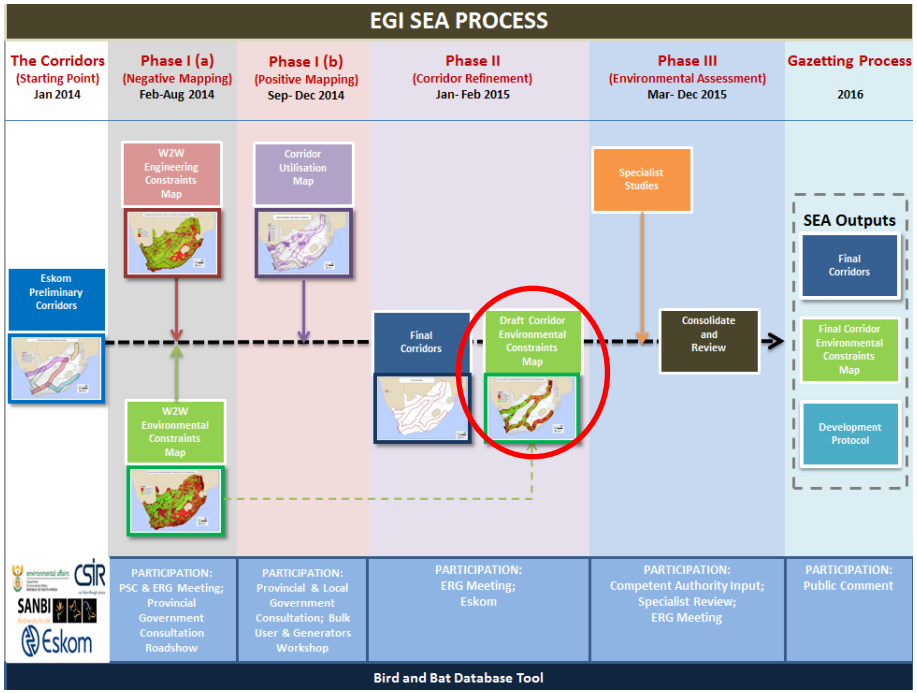
Pinch point Adjustments

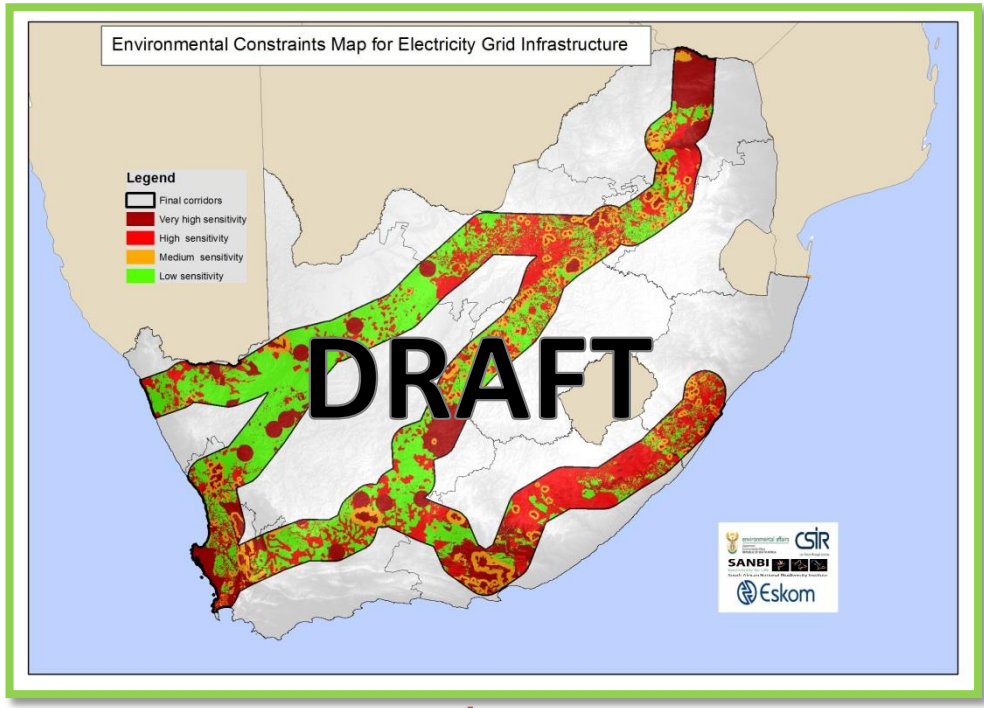




Final Corridors

Draft Corridor Environmental Constraints Map

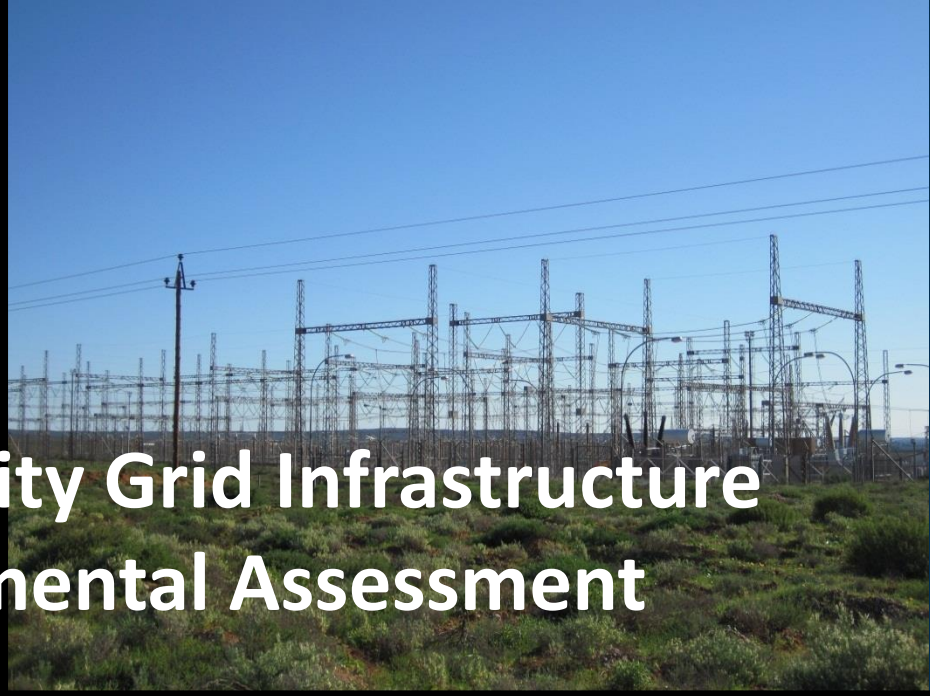




Phase III
(Environmental Assessment)

Thank you

Any Questions?



DEA National Electricity Grid Infrastructure Strategic Environmental Assessment

Specialists Requests for Proposal

5 February 2015

Presenter: Marshall Mabin

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

CSIR
our future through science

SANBI
Biodiversity for Life

Eskom

Specialist Studies

1. Terrestrial and Aquatic Biodiversity Assessment
2. Agricultural Assessment
3. Avifaunal Assessment
4. Heritage Assessment
5. Visual Impact Assessment
6. Socio-Economic

Specialist Procurement Process

- CSIR specialist pre-qualification process
- RFP to suitable specialists
- Budget capped
- RFP reviewed by competent authorities
- Timeframes

Deliverable	Deadline
Issue of tender documents	Tuesday 27 January 2015
Closing/ submission date	Friday 20 February 2015
Tender evaluation	Monday 23 February 2015
Appointment/ appointment	Monday 16 March 2015
Project kick-off workshop	Tuesday 31 March 2015
Deadline of draft assessment	Friday 05 June 2015
Deadline of final assessment	Friday 03 July 2015

General ToRs

- General ToRs
  - Validate/enhance Corridor Environmental Constraints Map (CECM) WRT particular specialist area
    - Use of existing information only
    - No ‘ground truthing’ required
  - Develop a four tier sensitivity map for each corridor with reference to specialist area (VH, H, M and L)
  - Inputs to development protocol
    - Propose what additional information/ level of assessment required before EA should be considered
    - Propose management actions to avoid/reduce/offset negative impacts
  - Non-prescribed methodology/approach

Special ToRs

- Socio Economic:
  - Demographics
  - Macro and Micro (positive impacts and negative)
    - National- Energy security
    - IPPs/ Private Industry
    - Communities- Increased electricity access, health
    - Localised industries (agriculture + tourism)
    - Land value
  - Public participation recommendations

Thank you

Any Questions?