DEA National Electricity Grid Infrastructure Strategic Environmental Assessment (SEA)

PSC & ERG Meeting

3 February 2016

Website: https://egi.csir.co.za/

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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Biodiversity for Life

Eskom








STRATEGIC ENVIRONMENTAL ASSESSMENT FOR ELECTRICITY GRID INFRASTRUCTURE IN SOUTH AFRICA

2016








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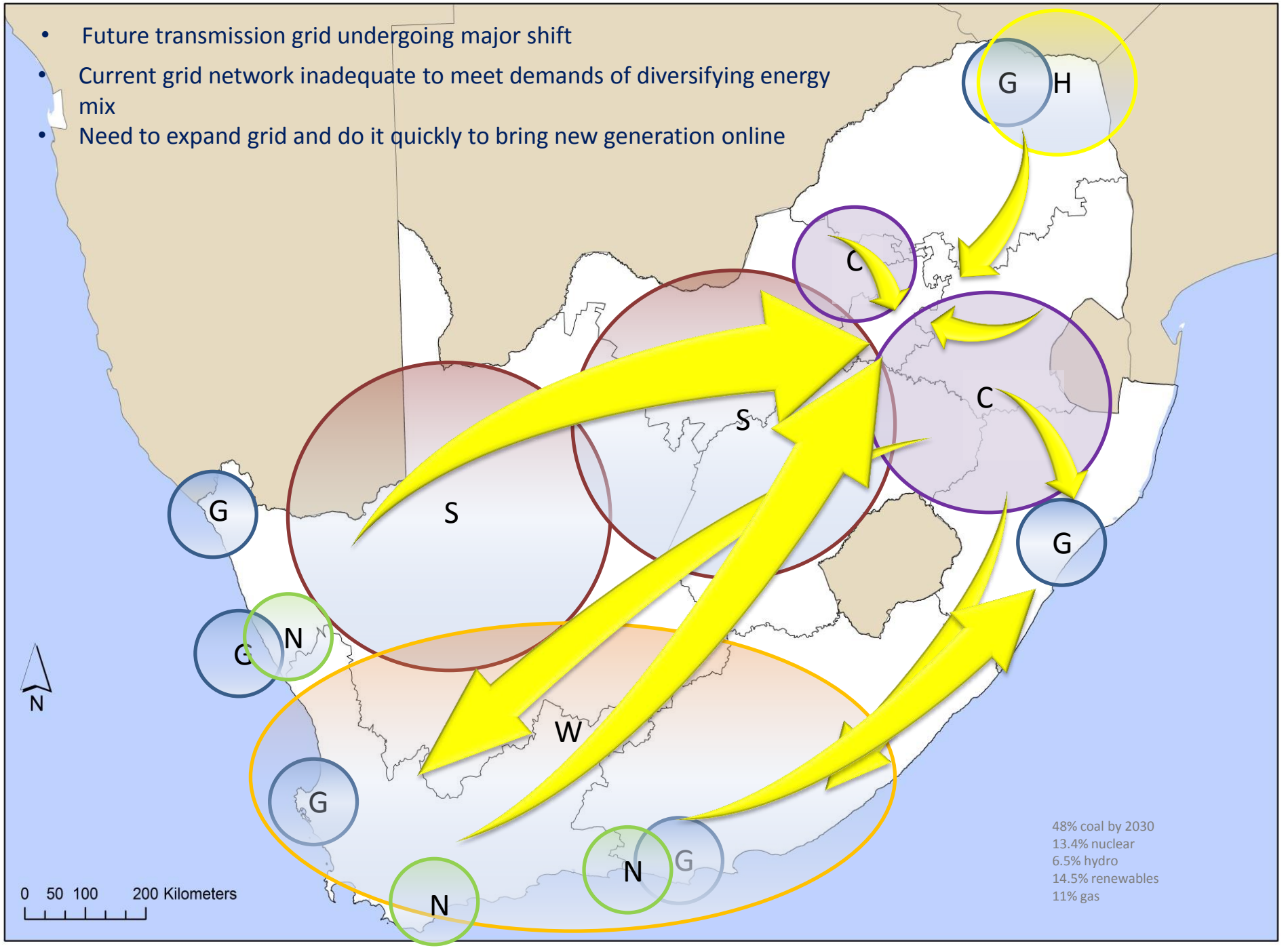
CONTENTS






PART 1

Background to the Electricity Grid Infrastructure Strategic Environmental Assessment


Future transmission grid undergoing major shift
Current grid network inadequate to meet demands of diversifying energy mix
Need to expand grid and do it quickly to bring new generation online
G
H
C
C
S
S
G
G
G
N
W
G
N
G
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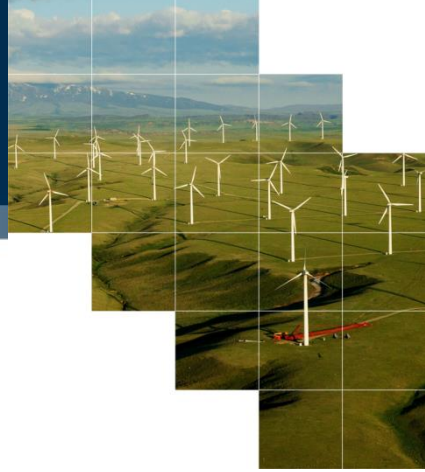
N
0 50 100 200 Kilometers
48% coal by 2030
13.4% nuclear
6.5% hydro
14.5% renewables
11% gas

Background to SEA



- Problem
  - Protracted and inflexible EA process
    - Long time frames/ lack of integration
  - Servitude negotiation
    - Locks route/high incidence of appeals
- Solution
  - Strategic planning- Eskom Strategic Grid Plan
  - Strategic assessment- scoping level environmental pre-assessment
  - Enable streamlined environmental authorisation
  - Enable pre-negotiation of servitudes
- DEA appointed CSIR and SANBI (in collaboration with Eskom Holdings Ltd) to undertake a Electricity Grid Infrastructure Strategic Environmental Assessment to facilitate strategic grid development in South Africa in support of SIP 10.
- SEA commissioned in January 2014

Study Objectives

- Facilitate **Sustainable Development** through a holistic consideration of:
  - Environmental Impacts;
  - Social Needs; and
  - Economics.

- Undertake **Wide Stakeholder Consultation** with:
  - Government Departments & Parastatals;
  - 3 Spheres of Government;
  - Private Sector; NGOs and
  - Public.

- Enable **Streamlining** the assessment process:
  - Undertake BA process instead of EIA;
  - Standardised assessment approach- benchmarking
  - Focus assessment on key issues
  - Integration

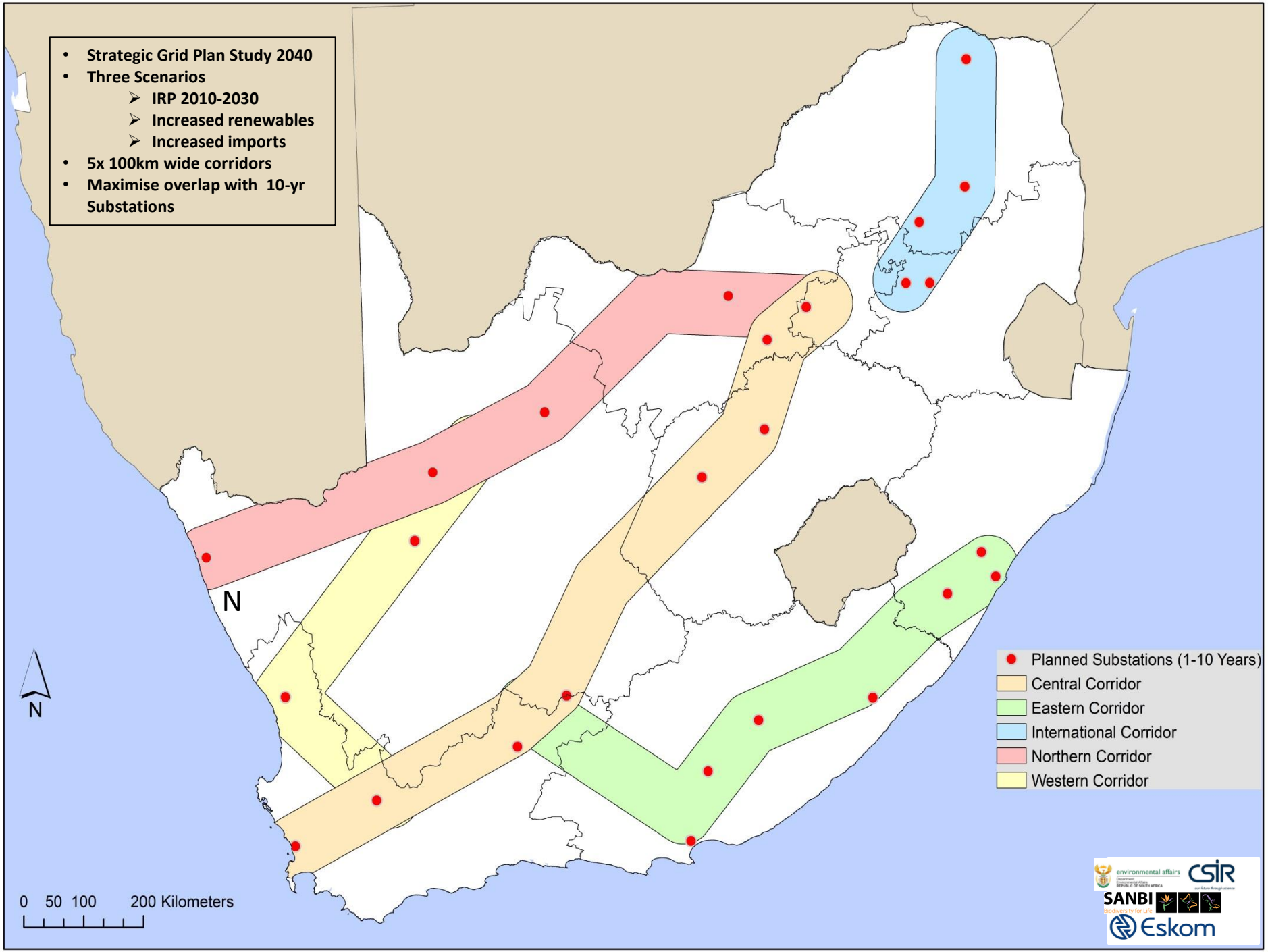
- **Strategic Investment**
  - Consider environmental constraints upfront
  - Enable pre-negotiation of servitudes
  - Coordination between 3 spheres- enabling environment
  - Greater certainty



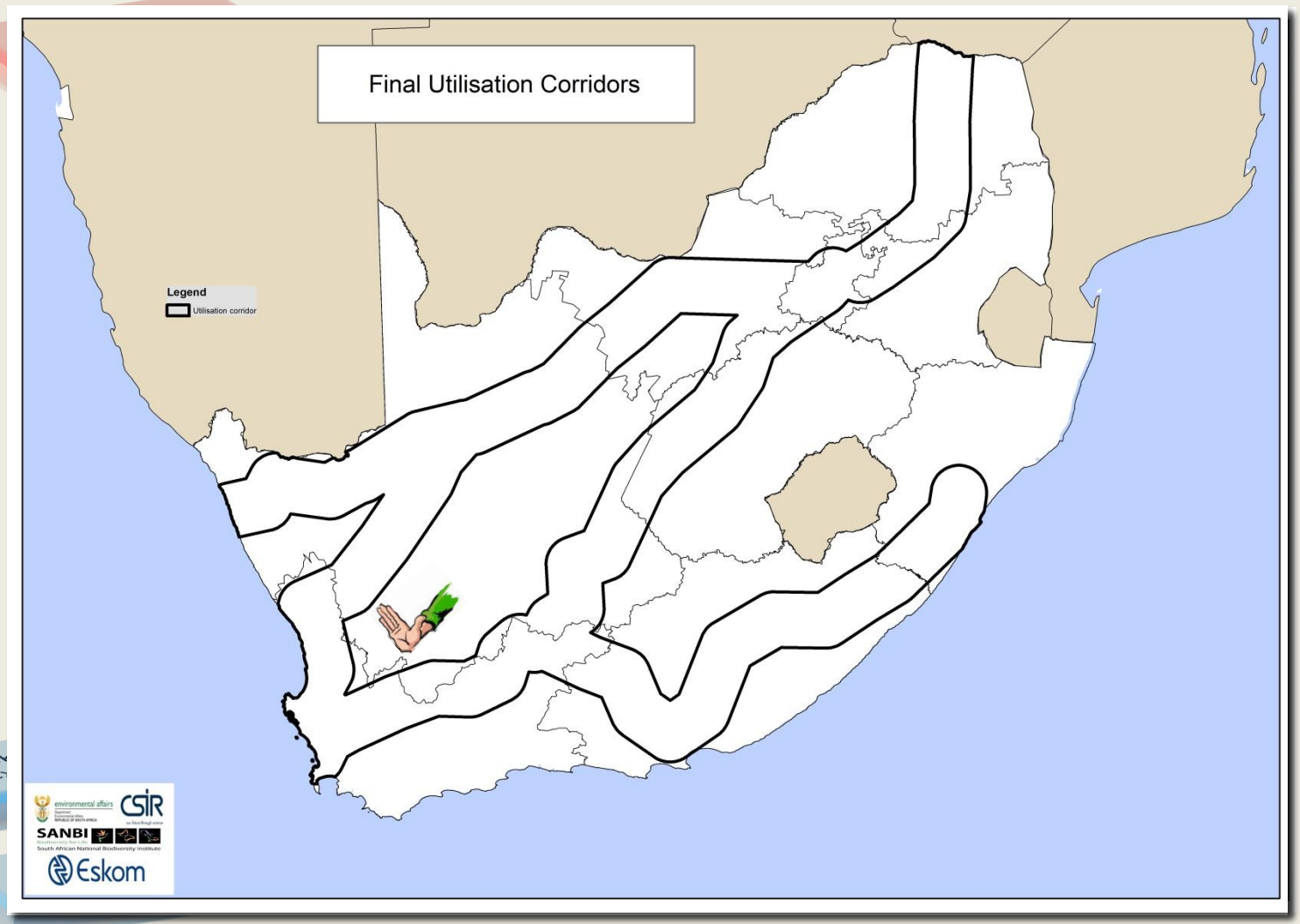



PART 2

Identification of Power Corridors


Strategic Grid Plan Study 2040
Three Scenarios
IRP 2010-2030
Increased renewables
Increased imports
5x 100km wide corridors
Maximise overlap with 10-yr Substations
N
N
0 50 100 200 Kilometers
Planned Substations (1-10 Years)
Central Corridor
Eastern Corridor
International Corridor
Northern Corridor
Western Corridor
environmental affairs
CSIR
SANBI
Biodiversity for Life
Eskom

Bulk Gen Exercise

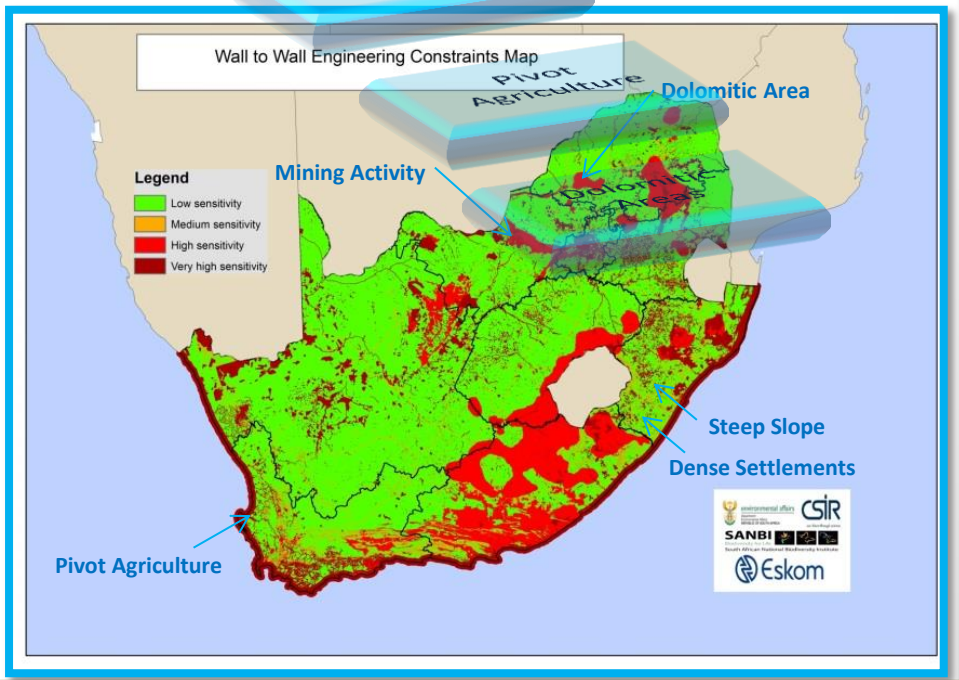


SEZ + IDZ + SIPs

Negative Mapping Outputs

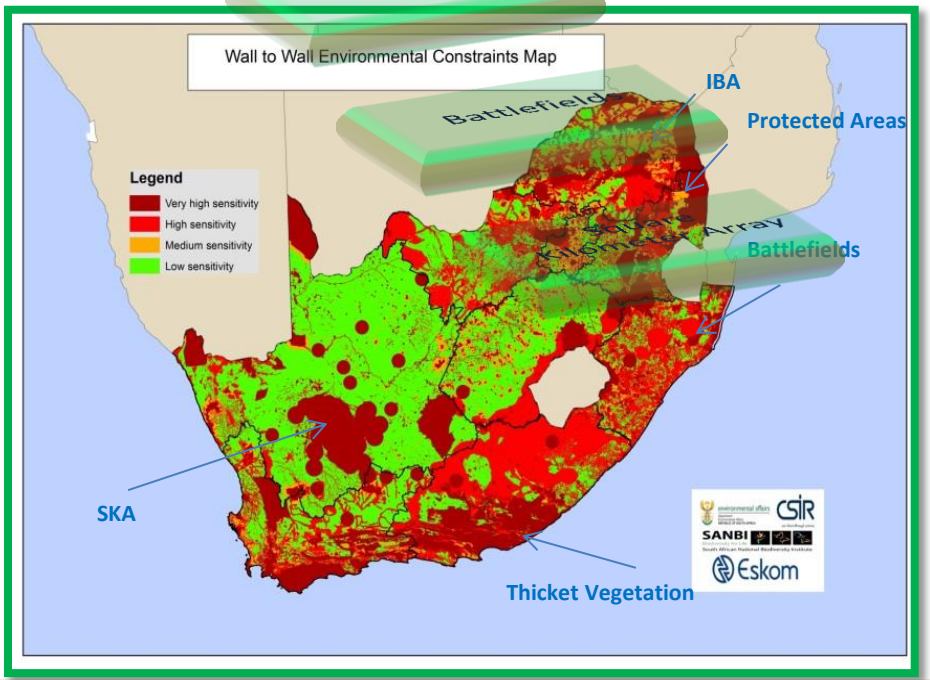
W2W Engineering Constraints Map

Engineering Constraints Categorisatio		
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.



Pinch Point Analysis

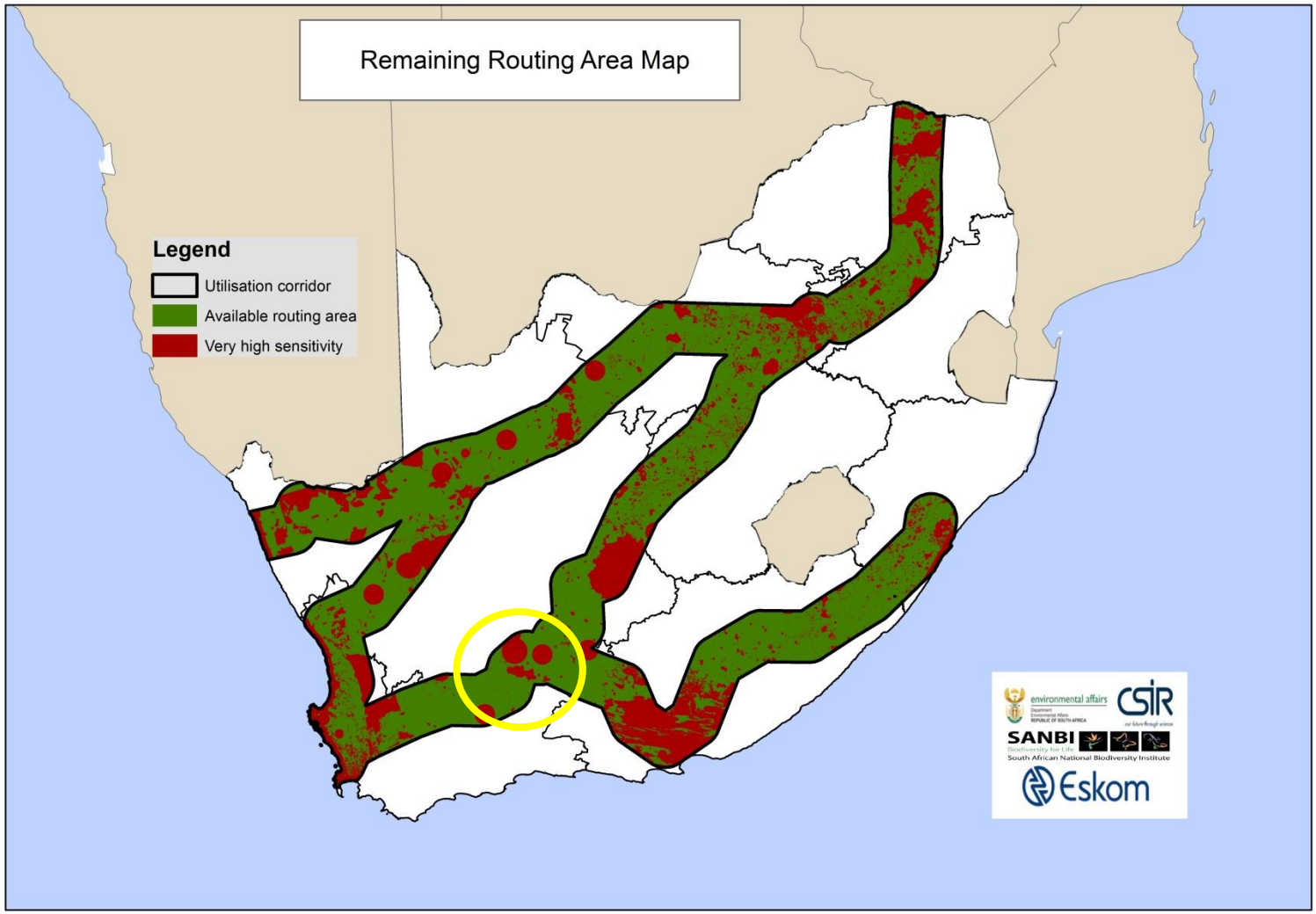
Overlays

Pinch Point Analysis

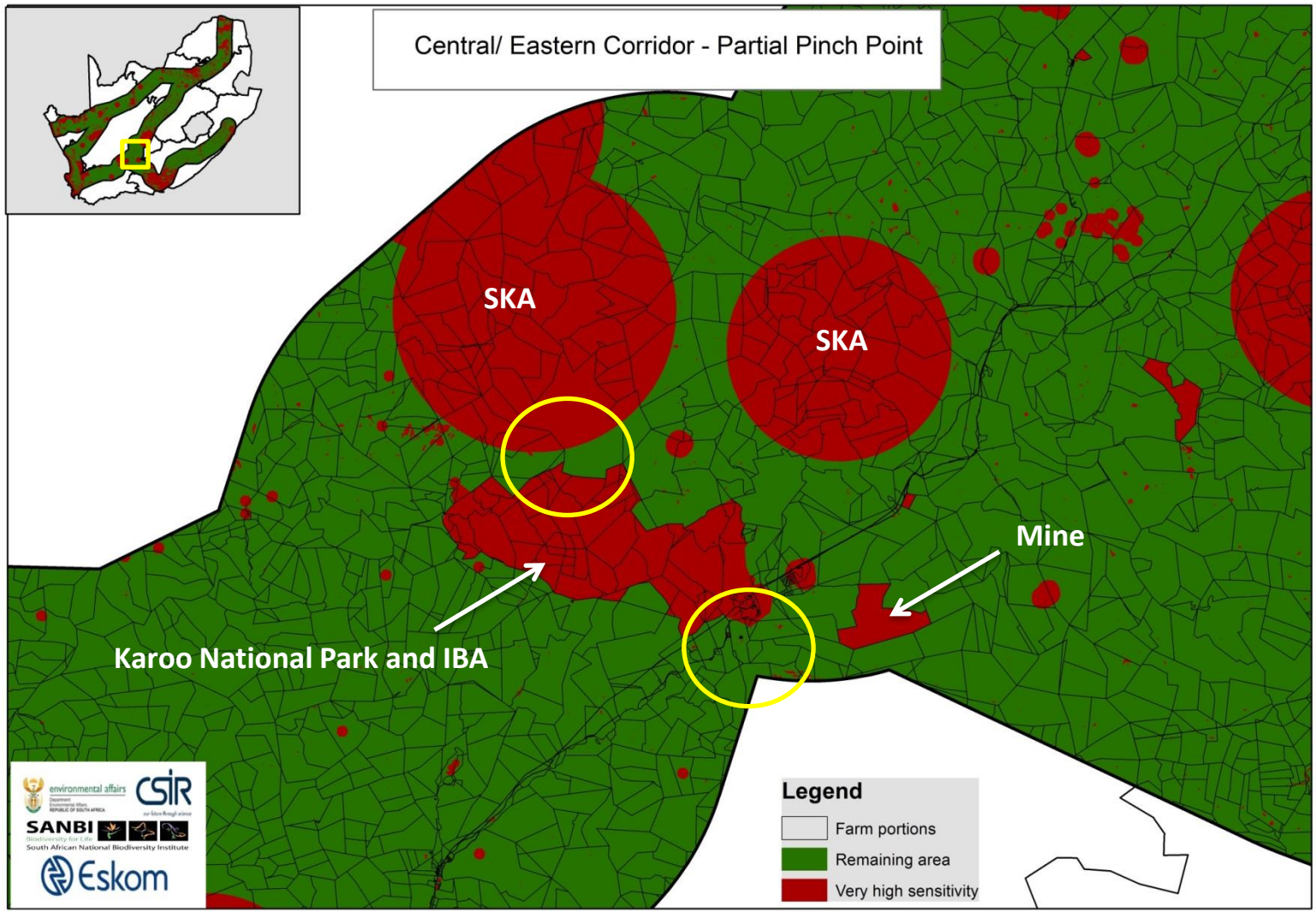
- Combine VH sensitivity areas
- Merge remaining routing area (compositions of H, M and L sensitivities);
- Overlay with land parcels dataset;
- Routing analysis
- Identify partial (<5 unique routing options) and complete (no routing options) pinch points for each corridor;
- Adjust corridor in direction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

Foundation

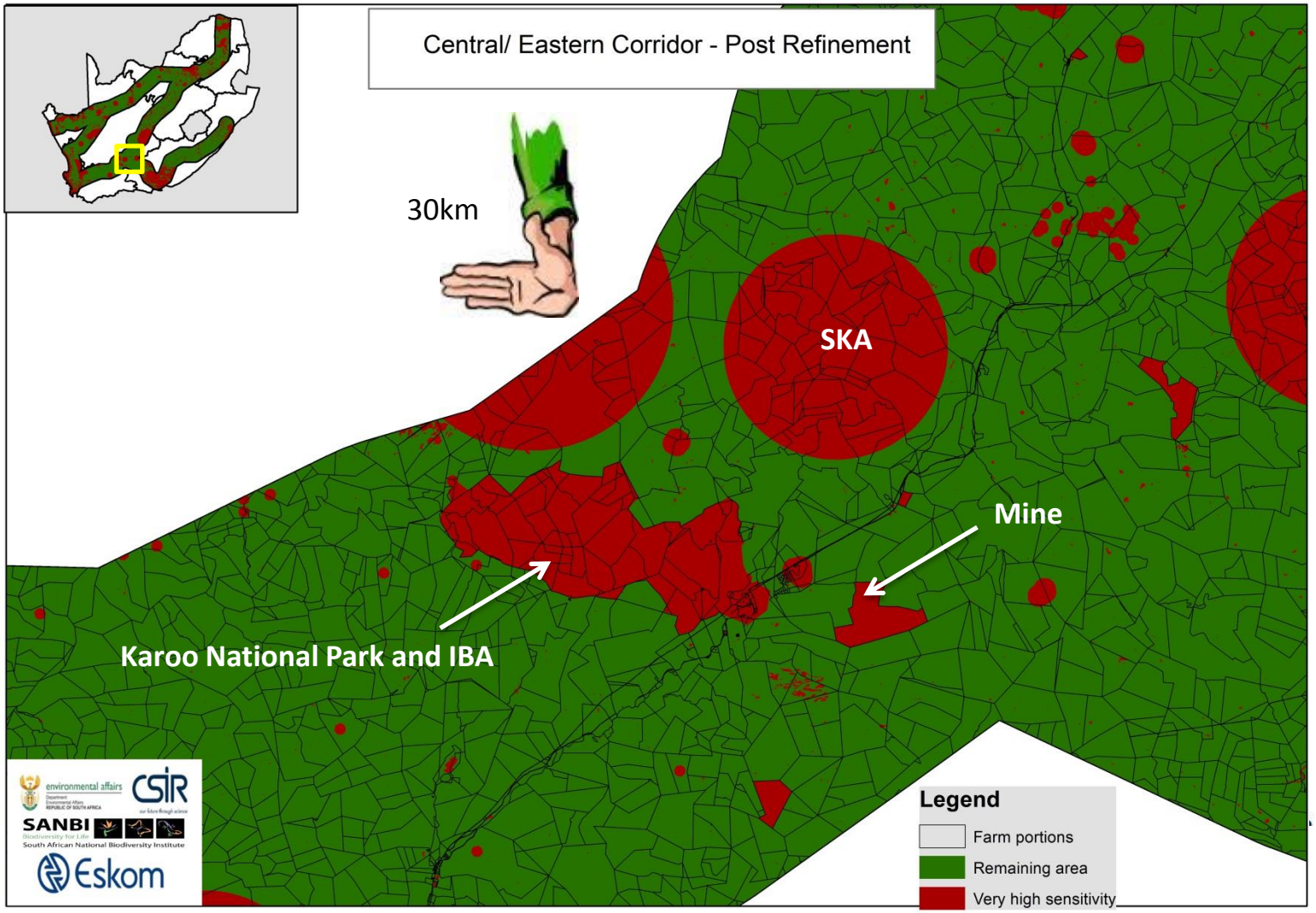
Remaining Routing Area



Central/ Eastern Corridor- Partial Pinch Point



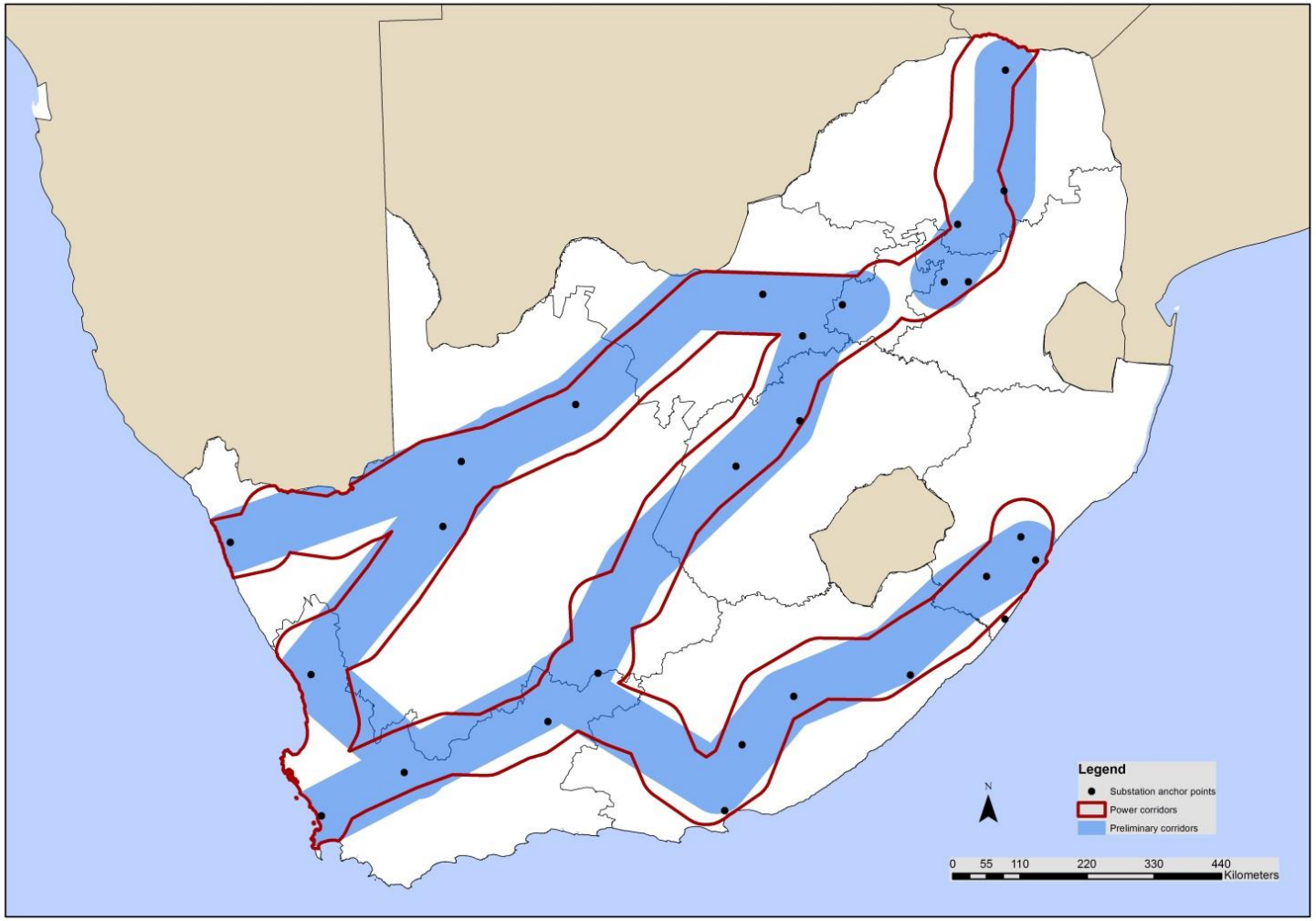
Central/ Eastern Corridor- Post Refinement

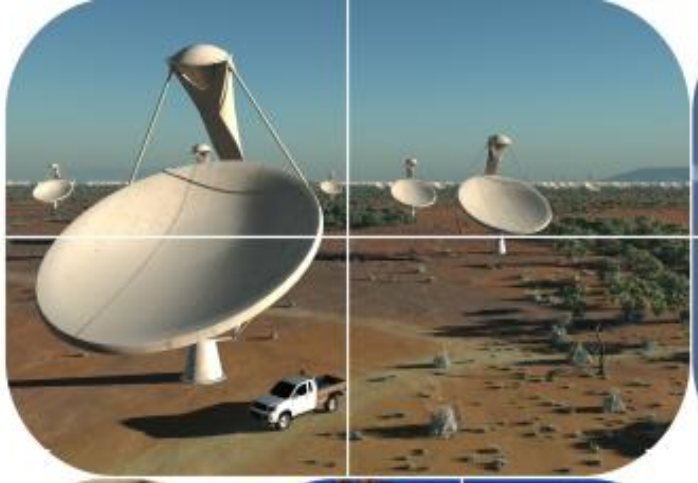


Final Corridors (Power Corridors)

Final Corridors

Final Corridors vs Eskom Preliminary Corridors













PART 3

Scoping Assessments & Development Protocols

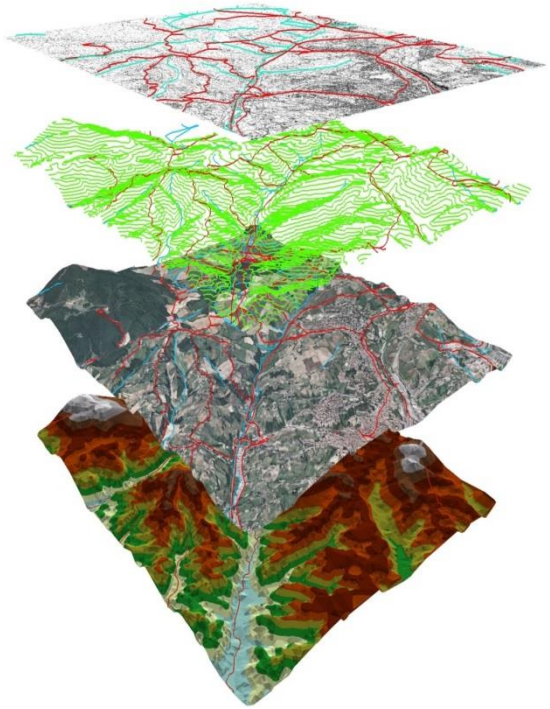
Introduction

- EGI projects inside of the Power Corridors will follow a **Basic Assessment Process**.
- Sensitivity data made available to developers through **DEA Screening Tool**
- **Competent Authority** and **Commenting Authority**
- **Iterative** SEA process
- **Requirements for Competent Specialist**: SACNASP registration, accreditation or other registration or at least 5 years experience in undertaking impact assessments or similar studies
- **Requirements for EAP**: EAPASA or SACNASP registration, or 5 years+ experience in managing EIAs
- Benefits of **Development Envelope:** enables post-authorisation micro-siting
- Criteria to be applied both **inside and outside** of Power Corridors

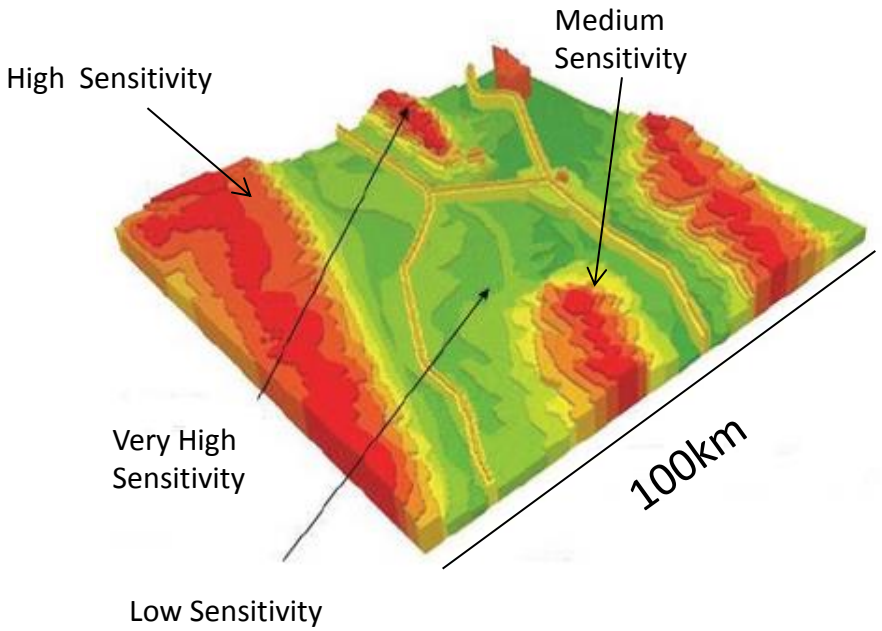
Scoping Level Pre-assessments

GIS Sensitivity Layers

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



Four Tiered Sensitivity Map



Site Specific Development Protocol

Colour	Sensitivity	Further assessment requirements
Dark red	Very High	Level 4 Assessment
Red	High	Level 3 Assessment
Orange	Medium	Level 2 Assessment
Green	Low	Level 1 Assessment

Protocol Structure

1. Data sources
   - What data was used
2. Data preparation
   - What was done to the data
3. Sensitivity delineation
   - How was the data interpreted
4. Sensitivity maps
   - Display of the interpreted data
5. Minimum assessment standards
   - Assessment requirements in context of sensitivity maps

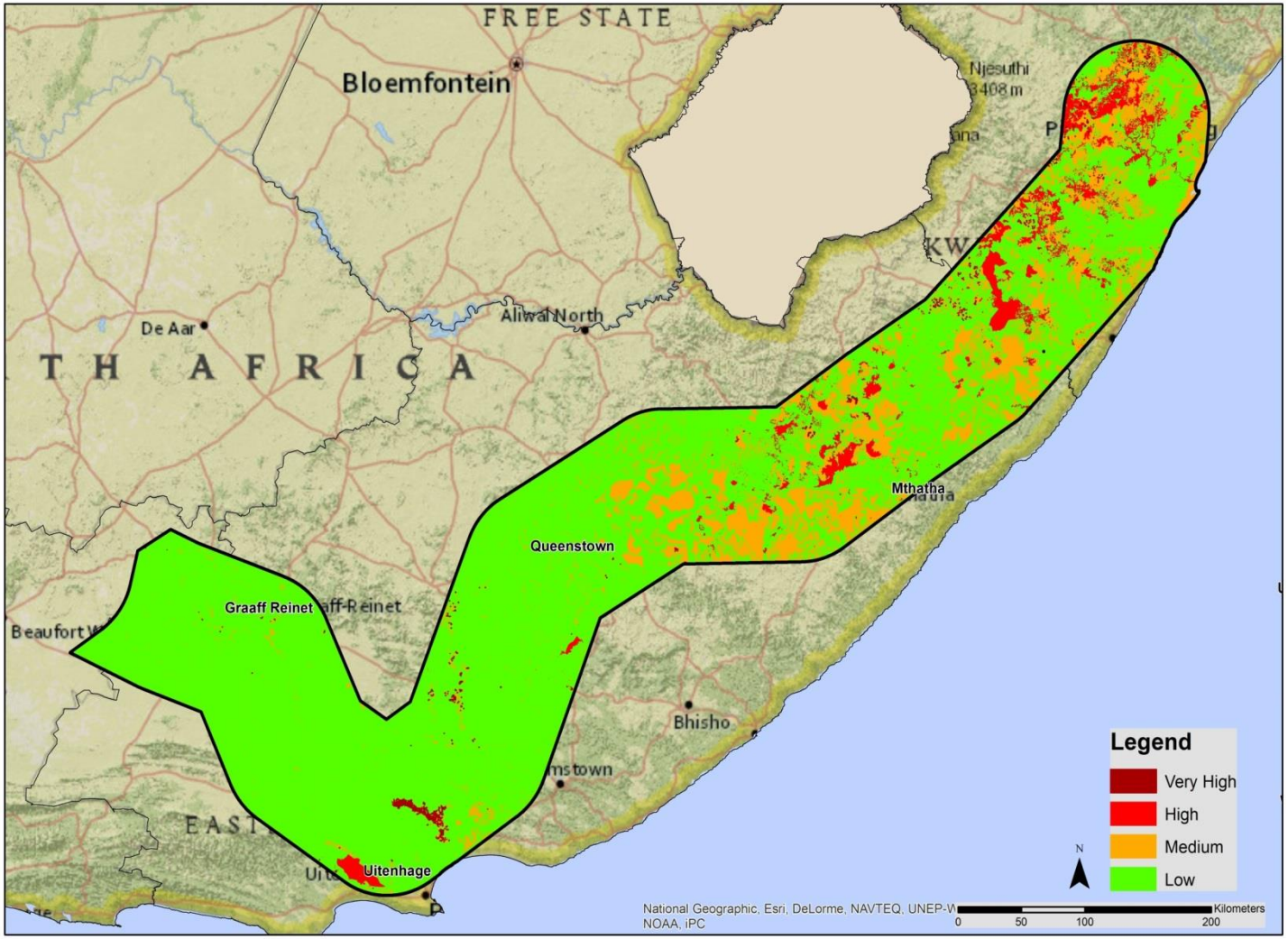
PART 3

Chapter 1. AGRICULTURE

Agriculture: Sensitivity delineation

Sensitivity Feature Class	Sensitivity
Pivots	**Very high**
Horticulture >400m	**Very high**
Vines >400m	**Very high**
Land capability Class I	**Very high**
Horticulture <400m	**High**
Vines >400m	**High**
Land capability Class II	**High**
Timber plantations	**High**
Sugar cane	**Medium**
All other cultivated fields	**Medium**
Land capability Class III	**Medium**

Agriculture: Sensitivity maps



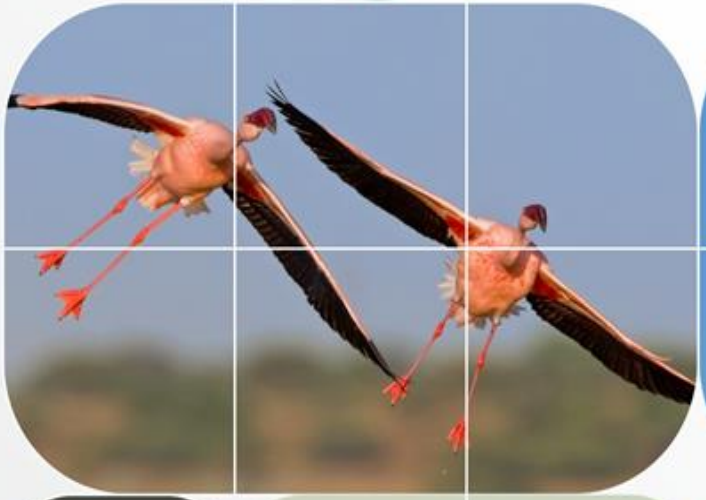
Avifauna: Minimum assessment requirements

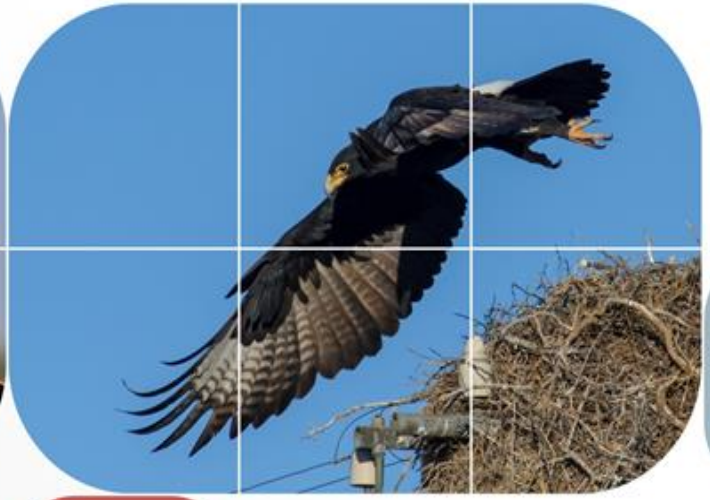
- Eskom is currently exempt from agricultural consent for powerline servitudes
- New Draft Preservation and Development of Agricultural Land Framework Bill, proposes authorisation per farm portion, regardless of sensitivity of the land;
- Lengthily and unnecessarily time consuming;
- Low impact of powerlines on agriculture;
- Proposed exemption from requirements of Bill
- Proposed alternative assessment requirements based on agricultural sensitivity

Sensitivity Class	Interpretation of Sensitivity	Further assessment requirements for electricity grid infrastructure developments
Very High	Potentially unsuited to development because it will lead to loss of some land with existing high agricultural productivity.	Comprehensive Agricultural Impact Assessment undertaken by a competent agricultural specialist. Such a report must contain: • The development envelope (including supporting infrastructure) overlaid on a sensitivity map prepared in accordance with the sensitivity criteria set out in Part 3 Chapter 1 Section 2.3 and based on a field assessment of the cultivation status of the land rather than existing data sets. The distinction between pylon placement being required within horticulture and /or vines and routing which does not must be made in terms of the actual site specifics (powerline direction; maximum possible span; viability of pylon placement outside the borders of the agricultural block). • Identify all possible alternatives that avoid very high and high sensitivity features. Assess and confirm with the developer the viability or non-viability, or relative desirability of all these alternatives, stating clear and explicit reasons for the viability and desirability ratings that they have been assigned. In the case of centre pivots, the alternatives can include the off-set for moving the pivot. • Assess whether the powerline routes or associated infrastructure have any significant fragmenting effects on agricultural land parcels, and if they do, identify alternative placements. Assess and confirm with the developer the viability or non-viability, or relative desirability of all these alternatives, stating clear and explicit reasons for the viability and desirability ratings that they have been assigned. • A clear and justified opinion statement by the specialist recommending whether the project should from an agricultural perspective receive approval • Where required, proposed mitigation measures for inclusion in the Environmental Management Programme (EMPR). The assessment of agricultural impacts and application for agricultural authorisation should be by way of a report compiled and signed off by a SACNASP-registered agricultural scientist.
High	Avoid where possible because it will lead to some disturbance and loss of existing or potential agricultural (or forestry) production.	
Medium	Re-route onto lower sensitivity agricultural land (where possible and where all other factors are equal) because it will lead to very minor disturbance and loss of existing or potential agricultural production.	Comprehensive Agricultural Impact Assessment undertaken by a competent agricultural specialist. Such a report must contain: • The development envelope (including supporting infrastructure) overlaid on a sensitivity map prepared in accordance with the sensitivity criteria set out in the study and which can be based on existing data sets that indicate the cultivation status of the land rather than a field assessment of this[1]. • Identify location of all possible powerline route alternatives that allow re-routing from medium agricultural sensitivity to low sensitivity. Assess and confirm with the developer the viability or non-viability, or relative desirability of these alternatives, stating clear and explicit reasons for the viability and desirability ratings that they have been assigned; • An assessment of whether the powerline routes or associated infrastructure have any significant fragmenting effects on agricultural land parcels, and if they do, identify alternative placements. Assess and confirm with the developer the viability or non-viability, or relative desirability of all these alternatives, stating clear and explicit reasons for the viability and desirability ratings that they have been assigned; • A clear and justified opinion statement by the specialist recommending whether the project should from an agricultural perspective receive approval; • Where required, proposed mitigation measures for inclusion in the Environmental Management Programme (EMPR). The assessment of agricultural impacts and application for agricultural authorisation should be in the form of a report compiled and signed off by a SACNASP registered agricultural scientist.
Low	Insignificant impact on agriculture.	A proponent intending to develop electricity grid infrastructure in a low sensitivity area that triggers a Basic Assessment or Environmental Impact Assessment process will only require a Compliance Statement prepared by the Environmental Assessment Practitioner (EAP) or a competent agricultural specialist. Such a statement must also be submitted to the relevant agricultural commenting authority (DAFF) for comment. Comment shall be provided to the relevant competent authority in terms of NEMA within the stipulated timeframes of the Basic Assessment process. The minimum requirements for the compliance statement are: • The details and relevant expertise of the EAP/specialist preparing the statement; • The development envelope (including supporting infrastructure) overlaid on a sensitivity map prepared in accordance with the sensitivity criteria set out in the study and which can be based on existing data sets that indicate the cultivation status of the land rather than a field assessment of this[1]. • Confirmation that all reasonable measures have been taken through micro-siting to minimise fragmentation and disturbance of agricultural activities; • A clear and justified opinion statement by the by the EAP/specialist recommending whether the project should from an agricultural perspective receive approval; • If this statement is subject to any conditions these must also be clearly stated; and where required, proposed mitigation measures for inclusion in the Environmental Management Programme (EMPR).

PART 3

Chapter 2. AVIFAUNA

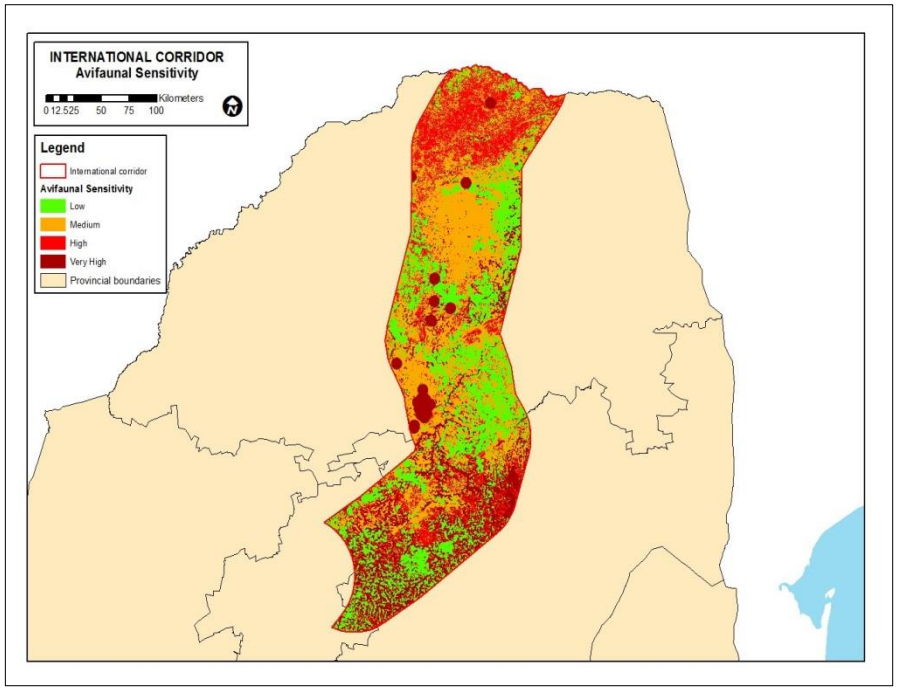


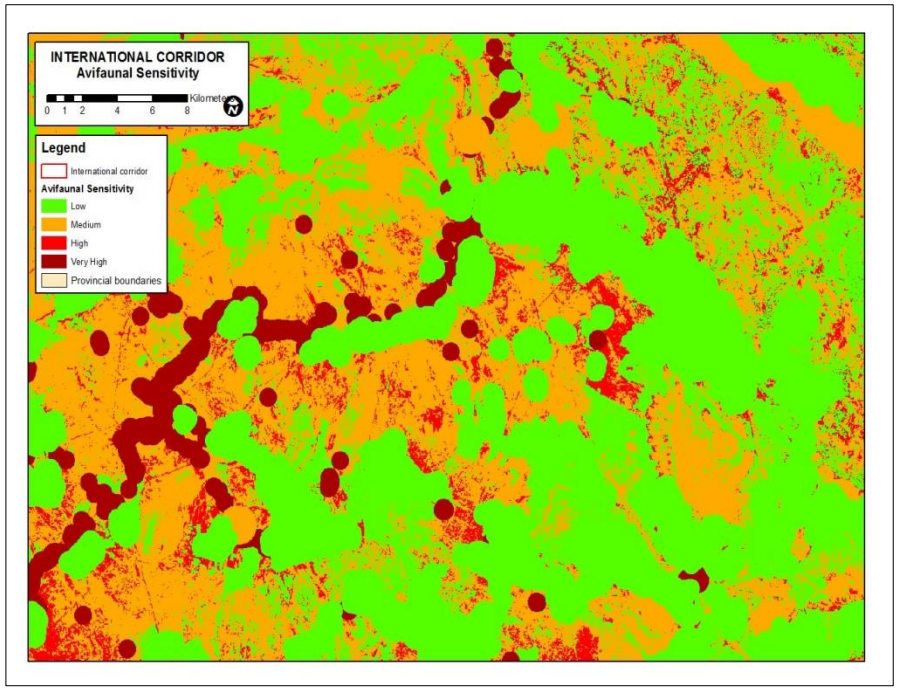


Avifauna: Sensitivity delineation

Corridor	Biome	Habitat Class/ Sensitive Feature	Sensitivity	Buffer
International	Forests	Bare	Low	
		Cultivated commercial fields rainfed	Low	
		Cultivated orchards	Low	
		Grassland	Low	
		Indigenous Forest	Medium	
		Steep slopes incl cliffs	Low	1 km
		Thicket /Dense bush	Low	
		Urban (500 m buffer)	Low	500 m
		Wetlands and waterbodies (500 m buffer)	Low	500 m
		Woodland/Open bush	Low	
	Grassland	Bare	Low	
		Cultivated commercial fields rainfed	Low	
		Cultivated commercial pivots	Low	
		Cultivated orchards	Low	
		Cultivated subsistence	Low	
		Grassland	High	
		Indigenous Forest	Medium	
		Industrial	Low	
		Low shrubland	Low	
		Plantations	Low	
		Spp Nest sites	Very High	Southern Bald Ibis = 1 km Other = 2.5 km
		Steep slopes incl cliffs	High	1 km
		Thicket /Dense bush	Low	
		Urban (500 m buffer)	Low	500 m
		Wetlands and waterbodies (500 m buffer)	Very High	500 m
		Woodland/Open bush	Low	
	Savanna	Bare	Low	
		Cultivated commercial fields rainfed	Low	
		Cultivated commercial pivots	Low	
		Cultivated orchards	Low	
		Cultivated subsistence	Low	
		Grassland	High	
		Indigenous Forest	Medium	
		Industrial	Low	
		Low shrubland	High	
		Plantations	Low	
		Spp Nest sites	Very High	2.5 km
		Steep slopes incl cliffs	Medium	
		Thicket /Dense bush	Low	
		Urban (500 m buffer)	Low	500 m
		Vultures	Very High	5 km
		Wetlands and waterbodies (500 m buffer)	Very High	500 m
		Woodland/Open bush	Low	

Avifauna: Sensitivity maps





Avifauna: Minimum assessment standards

Colour	Sensitivity	Interpretation of the sensitivity	Assessment requirements by sensitivity
Dark red	Very High	Very High sensitivity areas known to support important populations of threatened, impact susceptible species. Potentially unsuited to development owing to their high avifaunal importance.	Qualitative and quantitative field surveys, taking account of seasonality, should be conducted, and should include sample counts representative of high risk environmental conditions likely to occur on each site. If necessary, additional research by a competent avifaunal specialist is required to obtain a sufficient understanding of the avifaunal impacts and potential effectiveness of the proposed mitigation measures.
Red	High	High sensitivity (red) areas are likely to support important populations of threatened or impact susceptible species. These areas are potentially unsuited for development unless sensitivities are fully investigated and impacts can be sufficiently mitigated.	Qualitative field surveys by a competent avifaunal specialist are required to obtain a sufficient understanding of the avifaunal impacts and potential effectiveness of the proposed mitigation measures.
Orange	Medium	Medium sensitivity areas that could support important populations of threatened, impact susceptible species. Possibly suitable for development, but potential sensitivities must be fully investigated and effective mitigation options clearly identified.	Limited, qualitative field surveys by a suitably experienced avifaunal specialist may be required to obtain a sufficient understanding of the avifaunal impacts and potential effectiveness of the proposed mitigation measures. In the case of a substation development, field surveys will not be required unless the desk top assessment indicate the need for an fieldwork survey.
Green	Low[3]	Low sensitivity (green) areas possibly do not support important populations of threatened, impact susceptible species. These areas are probably suitable for development, but present levels of knowledge preclude confident predictions on the acceptability of impacts.	A desk-top level assessment by a suitably experienced avifaunal specialist is required. Additional, qualitative field surveys will only be required if specific avifaunal sensitivities are identified by the desk-top study.

Avifauna: Minimum standards

- On completion of the assessment, the competent bird specialist must produce an impact statement. The minimum requirements for the impact statement are:
  - details and relevant expertise of the specialist preparing the statement;
  - Development Envelope overlaid on a sensitivity map prepared in accordance with the sensitivity criteria set out in this study;
  - a clear and justified opinion statement by the specialist recommending whether the project should from a bird perspective receive approval. If this statement is subject to any conditions these must also be clearly stated; and
  - where required, proposed mitigation measures for inclusion in the Environmental Management Programme (EMPR).

PART 3

Chapter 3. HERITAGE

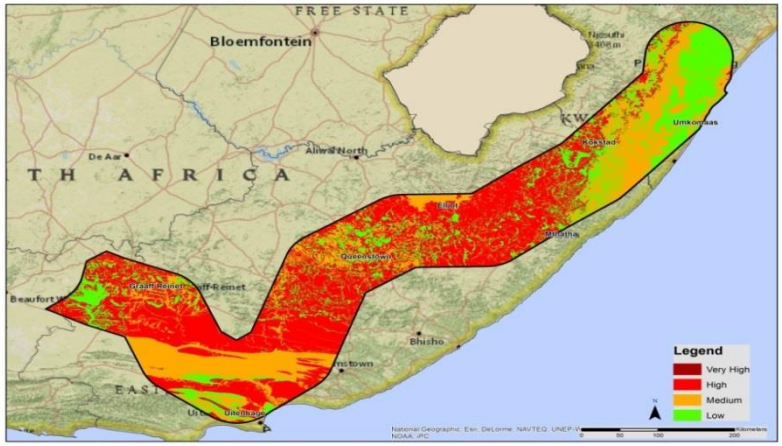
Heritage: Palaeontological sensitivity delineation

Palaeontological Sensitive Feature	Layer Type	Sensitivity Criteria	Corridor
Sites graded I and II-Palaeontological	Site	Very High Sensitivity -within a 1 km buffer	Central, Northern, International, Western
World Heritage Sites with their defined buffer zones- Palaeontological	Site	Very High Sensitivity -within defined buffer zone	Central
Sites graded IIIa- Palaeontological	Site	High Sensitivity -within a 150 m buffer	Central, Eastern
SAHRIS PalaeoSensitivity map- Formations of very high sensitivity	Geology	High Sensitivity	All
Sites graded IIIb- Palaeontological	Site	Medium Sensitivity -within a 50 m buffer	All
SAHRIS PalaeoSensitivity map - Formations of high, moderate and unknown sensitivity	Geology	Medium Sensitivity	All
Areas previously undergone extensive assessment and no further palaeontological studies are required	Assessment	Low Sensitivity	All
SAHRIS PalaeoSensitivity map- Formations of low and insignificant sensitivity	Geology	Low Sensitivity	All

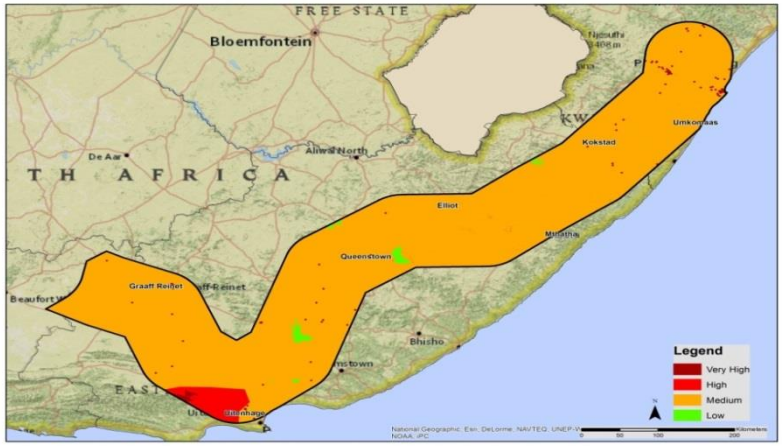
Heritage: Non- palaeontological sensitivity delineation

Non-palaeontological Resources	Layer Type	Sensitivity Criteria	Corridors
Sites graded I and II- Non-palaeontological	Site	Very High Sensitivity -within a 1 km buffer	All
World Heritage Sites (excluding palaeontological sites) with their defined buffer zone	Site	Very High Sensitivity -within defined buffer zone	Western, International, Eastern, Central
Sites graded IIIa- Non-palaeontological	Site	High Sensitivity -within a 150 m buffer	All
Coastline	Natural	High Sensitivity -within a 1 km buffer	Western, Northern, Eastern, Central
Areas identified by the specialist as having a high likelihood of containing material of high significance.	Knowledge	High Sensitivity	All
Sites graded IIIb- Non-palaeontological	Site	Medium Sensitivity -within a 50 m buffer	All
Natural Features • All mountainous areas, hills and koppies • All rivers • All wetlands	Natural	Medium Sensitivity -within 1 km buffer zone Medium Sensitivity -within 100 m buffer zone Medium Sensitivity -within 100 m buffer zone	All
Areas previously undergone extensive assessment and no further heritage studies are required	Assessment	Low Sensitivity	All
All remaining areas	Base	Medium Sensitivity	All

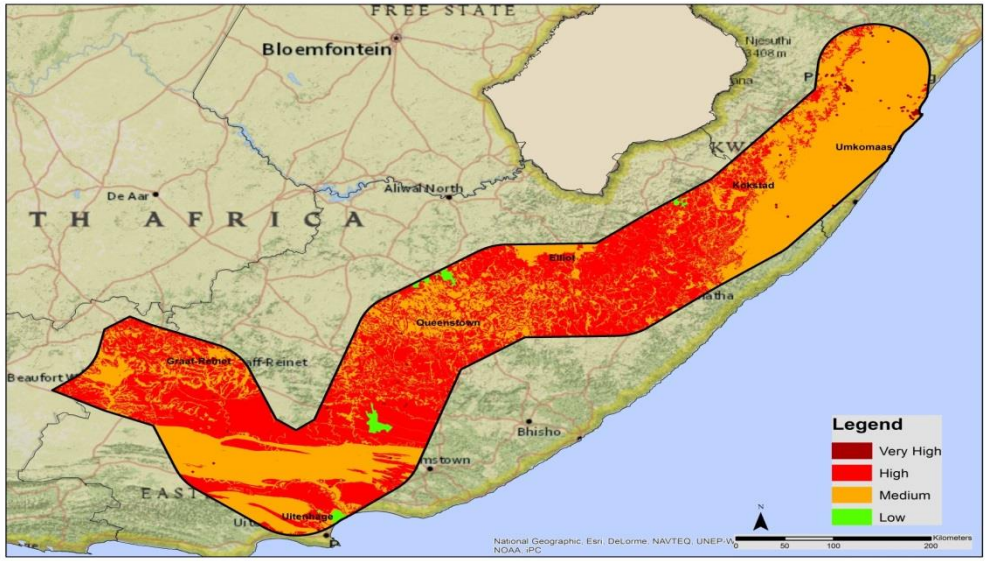
Heritage: Sensitivity maps



Palaeontological sensitivity map



Non-palaeontological sensitivity map



Combined heritage sensitivity map

Heritage: Palaeontological assessment minimum standards

Sensitivity Class	Assessments at project level	Permit requirements
Very High (dark red)	Proposed electrical infrastructure should avoid these areas. If avoidance cannot be achieved, a Palaeontological Impact Assessment, including a field assessment, is required. Known heritage resources will require avoidance. If this is not possible, a permit will be required (see permit requirements).	A permit under Section 27 of the NHRA will be required
High (red)	These areas include, or have the potential to include, palaeontological heritage resources of conservation status. A Palaeontological Impact Assessment is required to determine the presence of potential resources and, where applicable, the potential impact to such resources in the context of the proposed development. Known heritage resources will require avoidance. If this is not possible, a permit will be required (see permit requirements).	A permit under Section 35 of the NHRA would normally be required before impact and/or mitigation may occur to known heritage resources.
Medium (orange)	These areas include resources which may require mitigation (IIIb). A desktop Palaeontological Impact Assessment may be required to investigate the potential presence of these resources and, where applicable, the potential impact to such resources in the context of the proposed development. Known heritage resources will require mitigation under an Section 35 Permit (see next column Permit Requirements).	A permit under Section 35 of the NHRA would normally* be required before impact and/or mitigation may occur to known heritage resources.
Low (green)	No further assessment is necessary for the proposed development in these areas. However, a palaeontological chance find procedure should be requested to be included in the Environmental Management Plan (EMPR).	No permit is required for development to proceed in these areas.

Heritage: Non-palaeontological minimum assessment standards

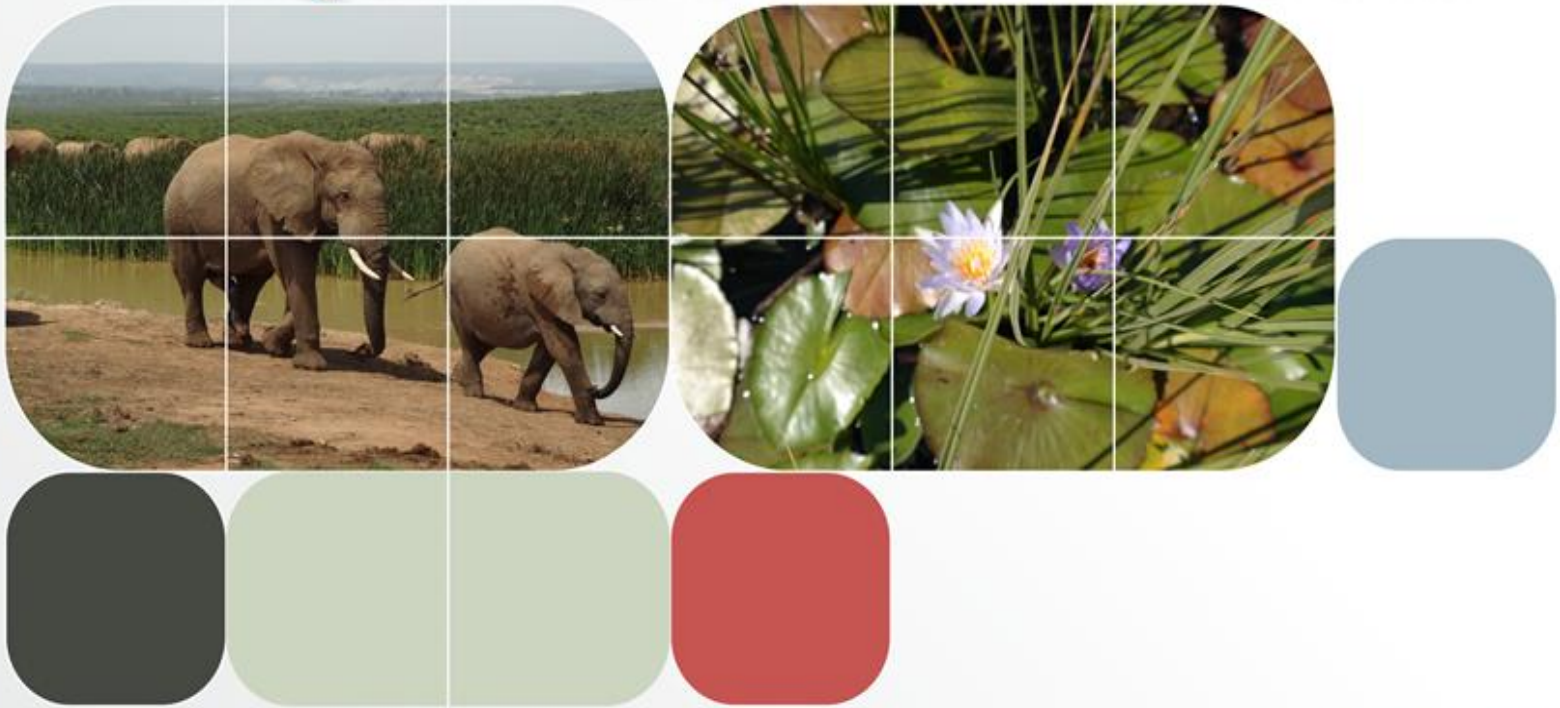
Sensitivity Class	Assessments at project level	Permit requirements
Very High (dark red)	Proposed electrical infrastructure should avoid these areas. If avoidance cannot be achieved, a Heritage Impact Assessment, involving a site visit, will be required.	A permit under Section 27 of the NHRA will be required for known heritage resources
High (red)	These areas include or have the potential to include Non-palaeontological resources of conservation status (IIIa) or have the potential to include cultural heritage resources which will require conservation or lengthy mitigation. A Heritage Impact Assessment, involving a site visit, will be required. Known heritage resources will require avoidance. If this is not possible, a permit will be required (see permit requirements).	A permit under Section 35 of the NHRA would normally be required before impact and/or mitigation may occur for known heritage resources.
Medium (orange)	These areas include resources which may require mitigation (IIIb) or have the potential to include cultural heritage resources which will require mitigation. A Heritage Impact Assessment, including a site visit, will be required. Known heritage resources will require mitigation under a Section 35 permit (see permit requirements).	
Low (green)	No further assessment is necessary for proposed development in these areas.	No permit is required for development to proceed in these areas.

Heritage: Minimum assessment standards

- Specialist to validate sensitivity map;
- Specialist to determine assessment approach in accordance with development protocol;
- Submit validated map and proposed assessment approach to SAHRA;
- SAHRA to provide comments and confirm/ revise assessment requirements
- SAHRA to comment on assessment outcomes as part of BA 30 day commenting period.

PART 3

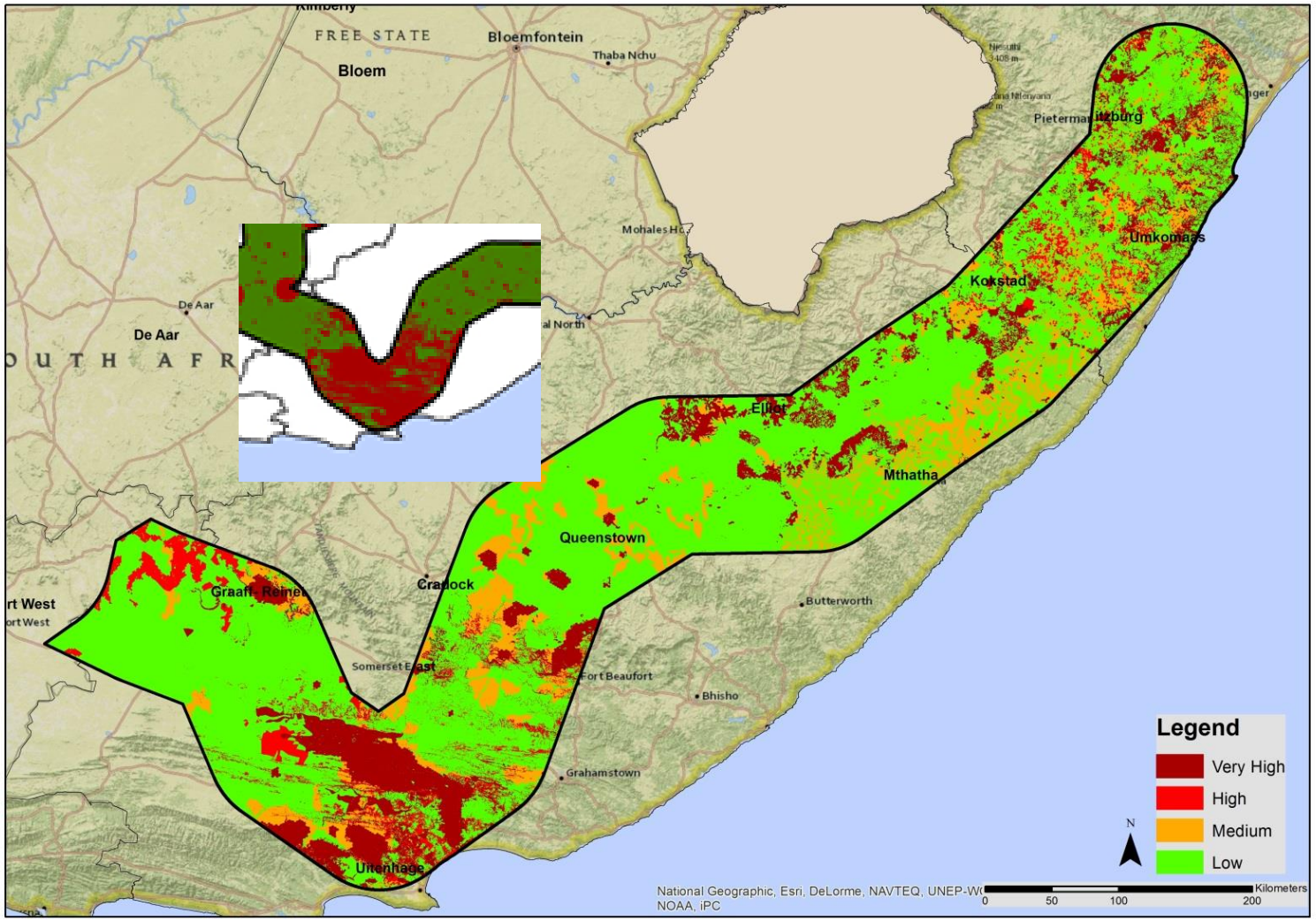
Chapter 4. TERRESTRIAL and AQUATIC BIODIVERSITY



Terrestrial: Sensitivity delineation

Category	Data class	Feature	Sensitivity
Terrestrial Habitat	Protected Areas	Forest Act Protected Area	Very High (No Buffer)
		Local Nature Reserve	Very High (No Buffer)
		Marine Protected Area	Very High (No Buffer)
		Mountain Catchment	High (No Buffer)
		National Botanical Gardens	Very High (No Buffer)
		Protected Environment	High (No Buffer)
		Provincial Nature Reserve	Very High (No Buffer)
		Special Nature Reserve	Very High (No Buffer)
		National Parks	Very High (No Buffer)
		Private Nature Reserves (dcl post 2008)	High (No Buffer)
		Private Nature Reserves (dcl re 2008)	Medium (No Buffer)
		NPAES 2010 focal areas	Medium (No Buffer)
	Habitat Veg Unit Conservation Status	Natural habitat: Critically Endangered	Very High (No Buffer)
		Natural habitat: Endangered	Very High (No Buffer)
		Natural habitat: Vulnerable	Medium (No Buffer)
		Natural habitat: Least Threatened	Low (No Buffer)
		Degraded and Not Natural: All	Low (No Buffer)
	Critical Biodiversity Areas	Critical Biodiversity Area Irreplaceable	Very High (No Buffer)
		Critical Biodiversity Area best design (excl. CBA best design E Cape) Critical Biodiversity Area unknown subtype	High (No Buffer)
		ESA / E.Cape Critical Biodiversity Area best design Critical Biodiversity Areas / other natural	Low (No Buffer)
	Natural Forest	All	Very High (No Buffer)
		All	Very High (No Buffer)
		Class - forest	Very High (No Buffer)
	Thicket	Pristine Thicket habitat condition class	Very High (No Buffer)
		Thicket / Dense Bush landcover class	High (No Buffer)
Species	Threatened Plants	All records Cr, EN & D2 with better than 250m accuracy	Very High (250m)
		High density areas, incl records worse than 250 m but > 1000 m accuracy	High (No Buffer)
	Bats	Major Bat Roosts (>500 bats)	Very High (2000m)
	Reptiles	Geometric Tortoise only: SA Veg 2009 polygons with >3 post 1995 records or known localities s	Very High (2500m)
Physical/Topography	Slope	Slopes of 0° - 10° (0 - 18%)	Low (No Buffer)
		Slopes of 10° - 20° (18 - 36%)	Medium (No Buffer)
		Slopes of 20° - 30° (36 - 58%)	High (No Buffer)
		Slopes of >30° (>58%)	Very High (2500m)

Terrestrial: Sensitivity maps



Terrestrial: Minimum assessment standards

Sensitivity Class	Assessment Type	Assessments at project level
Very High (dark red)	Level 1	The specialist should provide a **Specialist Assessment Report** with inputs equivalent to a Medium and High sensitivity area, with some additional requirements including: • The potential impact of the development on these populations including the probable level of population or habitat reduction where an impact is likely to occur and the extent to which this may affect the viability or long-term security of the local population. • **Provides a detailed explanation of why the Very High Sensitivity feature cannot be avoided and what measures were taken at the planning stage to try and avoid impact to such features.** • **A statement regarding why the development should be allowed to proceed in the face of an apparent potential fatal flaw**. • Any potential offset or local conservation actions that could be used to offset the likely impact of the development
High (red) Medium (orange)	Level 2	The specialist should provide a **Specialist Assessment Report**. This should be done as a **desktop assessment in the initial stages, followed up with a field verification of sensitive features** along the selected route. Specialist report should confirm the following: • The extent and condition of any listed ecosystems along the route in terms of NEMA; • The presence of any Critical Biodiversity Areas along the route; • The presence of any formal conservation areas along the route; • An assessment of the likely impacts associated with the development; • specific mitigation or avoidance measures to reduce potential impacts
Low (green)	Level 3	The **proposed routes are inspected using aerial or satellite imagery by a specialist** with local knowledge to confirm that they do not affect any features of significance. The specialist should provide a **Specialist Statement** confirming the following: • That there are no listed ecosystems (mapped or not) or CBAs along the route. • That there are no significant features along the route that have not been identified in this study. • That the development of the route would not impact adjacent sensitive areas through erosion or other impacts. • If there are any specific mitigation or avoidance measures that should be implemented along the route in order to ensure that it does not generate impacts beyond the development envelope area. Site walk through of intact areas required

Aquatic: Sensitivity delineation

- Two components:
  - Aquatic biodiversity in terms of NEMA
  - Water Use Registration in terms of NWA

1. Aquatic biodiversity

Infrastructure	River and Wetland Sensitivity	Buffer Description
Substations and Powerlines	**Very High**	Within 32m from the edge of a watercourse, measured from the edge of a watercourse.

2. Water Use Registration (non consumptive)

a) Wetlands

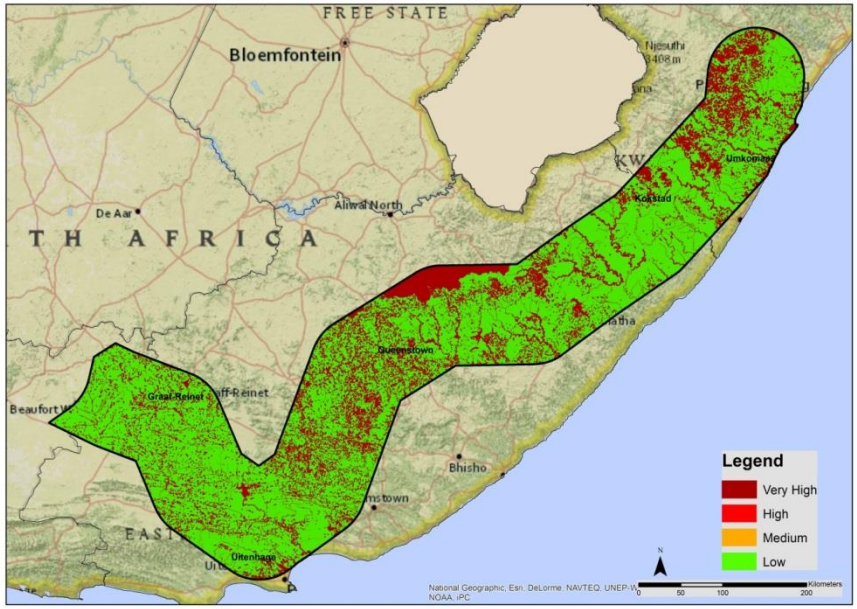
Infrastructure	Wetland Sensitivity	Buffer Description
Substations	**Very High**	500 m radius from the boundary (temporary zone) of the wetland and All catchments listed in Section 6 Table 1 of amended GN 1199.
Powerlines	**Medium**	500 m radius from the boundary (temporary zone) of the wetland

Aquatic: Sensitivity delineation

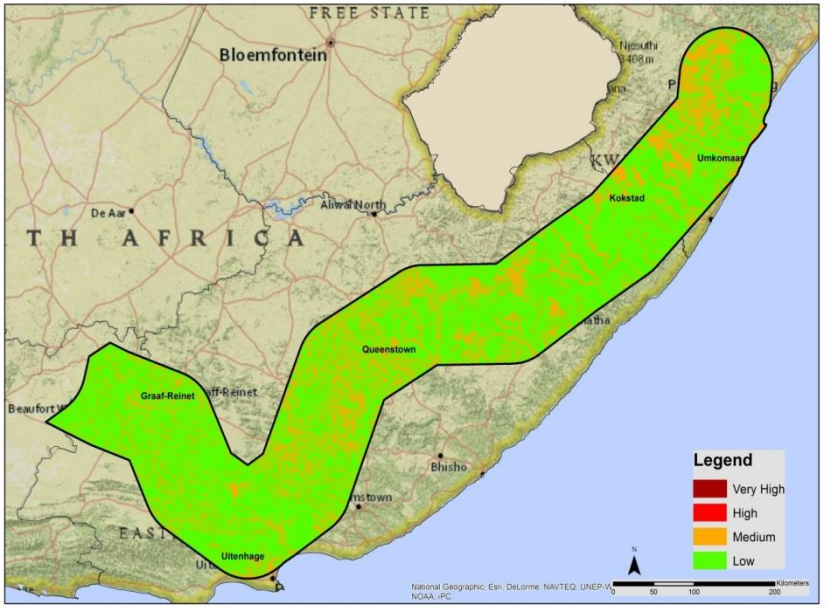
b) Rivers

Infrastructure	River/Stream and Buffer Sensitivity	Buffer Description
Substations	**Very High**	Within the outer edge of the 1:100 year flood line or riparian habitat measured from the middle of the watercourse; Or Within the outer edge of the buffer distance (as determined by the River/Stream Buffer Distance Classification System) measure from the bank of the river/stream; And All catchment areas listed in Section 6 Table 1 of GN 1199.
Powerlines	**Medium**	Within the outer edge of the 1:100 year flood line or riparian habitat measured from the middle of the watercourse; Or Within the outer edge of the buffer distance (as determined by the River/Stream Buffer Distance Classification System) measured from the bank of the river/stream.

Aquatic sensitivity maps



Substation sensitivity map



Powerline sensitivity map

Aquatic: Minimum assessment requirements

1. Aquatic biodiversity

River and Wetland Sensitivity	Infrastructure	Buffer Description
Very High	Substations and Powerlines	Aquatic specialist to complete **Risk Matrix** in terms of GA 1199. Where outcome of matrix indicates a Medium or High risk, the aquatic specialist will be required to provide a statement on whether the project can proceed and any mitigation measures that shall be applied in order to reduce the risk of impact.

2. Water Use Registration (non-consumptive)

Colour	Sensitivity	Infrastructure Type	Further Assessment
Dark red	Very High	Substations	Aquatic specialist to complete **Risk Matrix**. Developments seen to present a '**Low' risk to the water course on the basis of the Risk Matrix will qualify for a General Authorisation**. Developments presenting a 'Medium' or '**High' risk will be subject to a detailed Water Use Licensing Application process**.
Orange	Medium	Powerlines	Powerlines (including towers, pylons and stringing operations) are classified as Low risk activities and therefore where such an activity encroaches inside of a watercourse, the **activity will be generally authorised** on condition that the following supporting technical documentation is made available to the relevant CMA or regional office: • **EMPR, Method statement(s), engineering designs, best practices and delineation of watercourses**
Green	Low	Powerlines Substations	**Non consumptive water use registration not required.**

Aquatic: minimum assessment standards

- Validation of sensitivity maps required, especially for wetlands.
- Aquatic specialist to undertake assessment for both aquatic biodiversity and water use registration (where required) together.
- Where assessment for aquatic biodiversity and water use registration both required, results of Risk Matrix to be directed to DEA and DWS, respectively.
- Where assessment for water use registration required only, results of Risk Matrix to be directed to DWS only.

PART 3

Chapter 6. CIVIL AVIATION

PART 3

Chapter 7. DEFENCE

PART 3

Chapter 8. SQUARE KILOMETRE ARRAY

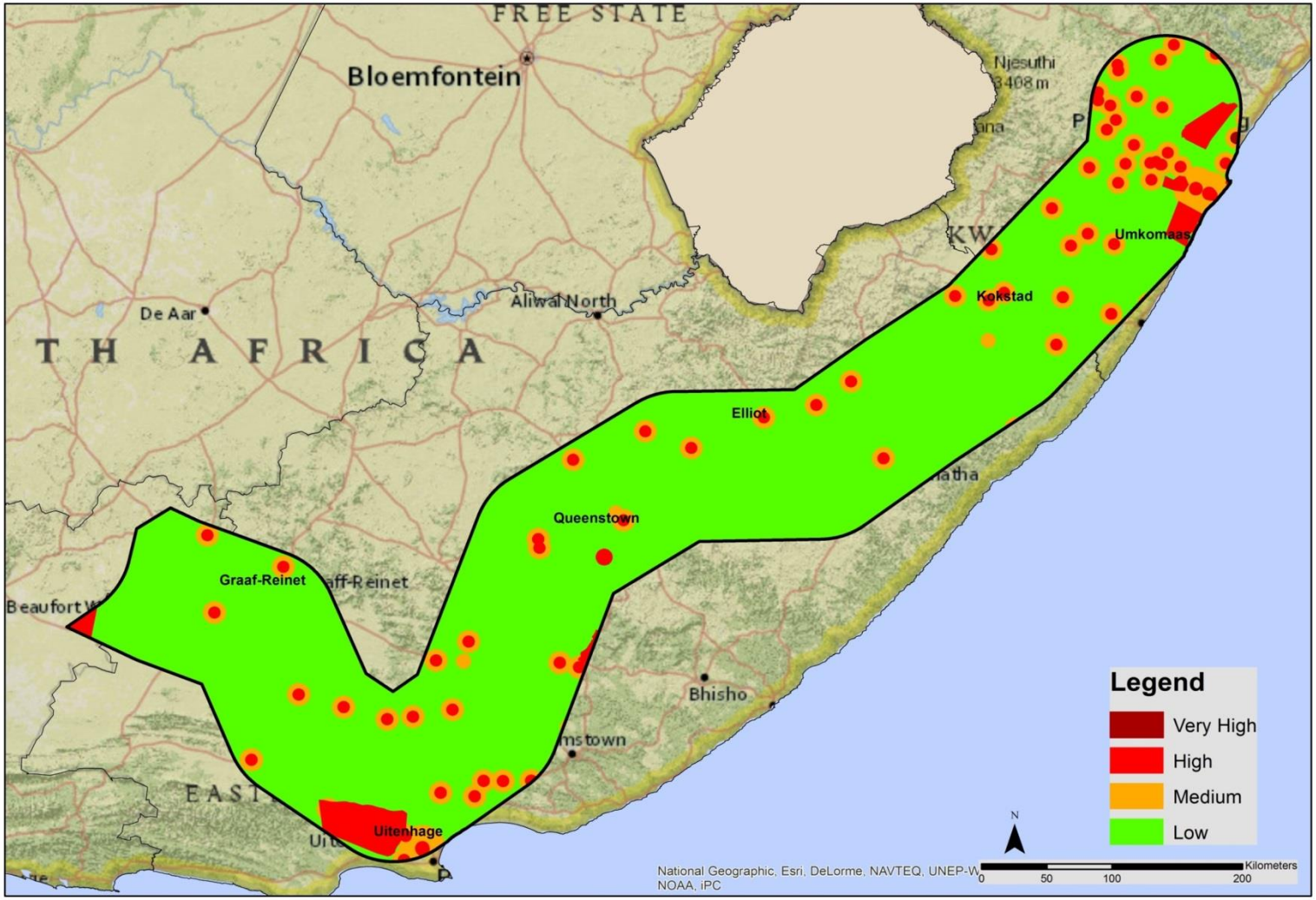
Other (SKA, Defence and Civil Aviation)

- Square Kilometre Array, Civil Aviation and Defence enforced by different legislation, outside of DEAs mandate.
- Approvals to enable EGI development always required by these authorities
- The risk of impact greater in certain areas
- Sensitivity maps serve as a planning tool for developers

Civil Aviation: Sensitivity delineation

Sensitivity Feature	Data Source	Sensitivity Mapping Application
Major Civil Aviation Aerodromes	SACAA	**Very high sensitivity** - within 8 km **Medium sensitivity** - between 8 and 15 km
Other Civil Aviation Aerodromes	SACAA	**High sensitivity** - within 8 km **Medium sensitivity** - between 8 and 15 km
Civil Aviation Radars	SACAA	**High sensitivity** - within 4 600 m **Medium sensitivity** - between 4 600 m and 15 km
Air Traffic Control and Navigation Sites	ATNS	**Medium sensitivity** - within 5 km
Danger and Restricted Airspace	SACAA	**High sensitivity** - as demarcated and show on the sensitivity maps

Civil Aviation: Sensitivity Maps



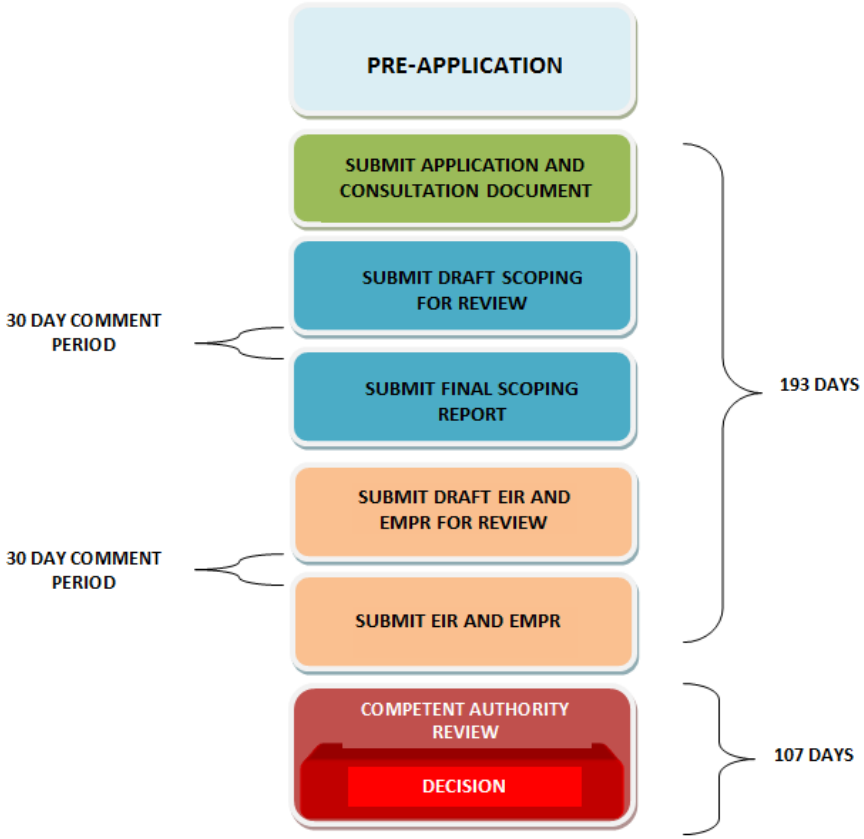
Civil Aviation: Minimum assessment standards

Sensitivity Class	Interpretation	Assessments at project level
Very High (dark red)	In Very High sensitivity areas there is a high likelihood of significant negative impacts that cannot be mitigated. In-depth assessment of the potential impacts and mitigation measures will be required before development can be considered in these areas.	Proponents intending to develop electricity grid infrastructure anywhere in South Africa that triggers the need for an Environmental Assessment process must prove to the relevant competent authority that the proposed development will not have an unacceptable negative impact on civil aviation activities. In order to do so, the proponent must request approval from the Civil Aviation Authority in terms of the Civil Aviation Regulations of 1997. The proposed route of the powerline, the co-ordinates (*latitude and longitude in degree, minute, seconds and tenth of seconds format*) of turning points in the line, the maximum height of the structures above ground level and the name of the powerline shall be submitted to the Commissioner of Civil Aviation for evaluation. The Commissioner shall evaluate the route and require those sections of the line (if any), which is considered a danger to aviation to be marked or rerouted. Proponents must receive authorisation for the proposed route from the South African Civil Aviation Authority (SACAA) before submitting application for environmental authorisation in terms of NEMA and evidence of SACAA approval shall be submitted when making an application for environmental authorisation.
High (red)	In High sensitivity areas there is potential for negative impacts that can potentially be mitigated. Further assessment may be required to investigate potential impacts and mitigation measures.	
Medium (orange)	In Medium sensitivity areas there is a low to medium potential for negative impacts, and if there are impacts there is a high likelihood of mitigation. Further assessment of the potential impacts may not be required.	
Low (green)	No significant impacts are expected in low sensitivity areas. It is unlikely for further assessment and mitigation measures to be required.	

PART 5

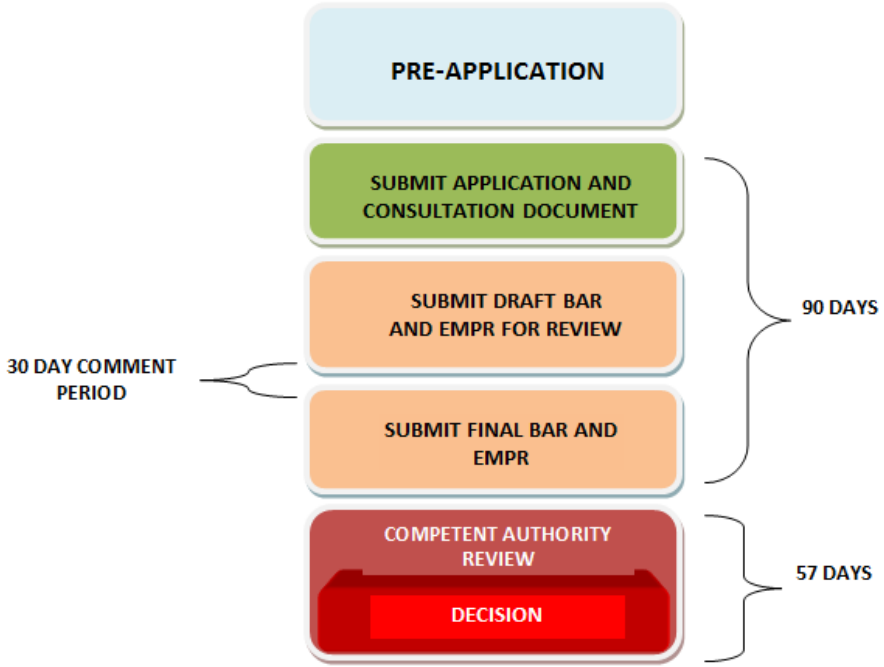
Procedure for Electricity Grid Infrastructure Environmental Assessment Applications Inside the Power Corridors

Proposed Streamlined Integrated Assessment Process for EGI



Total: 300 days

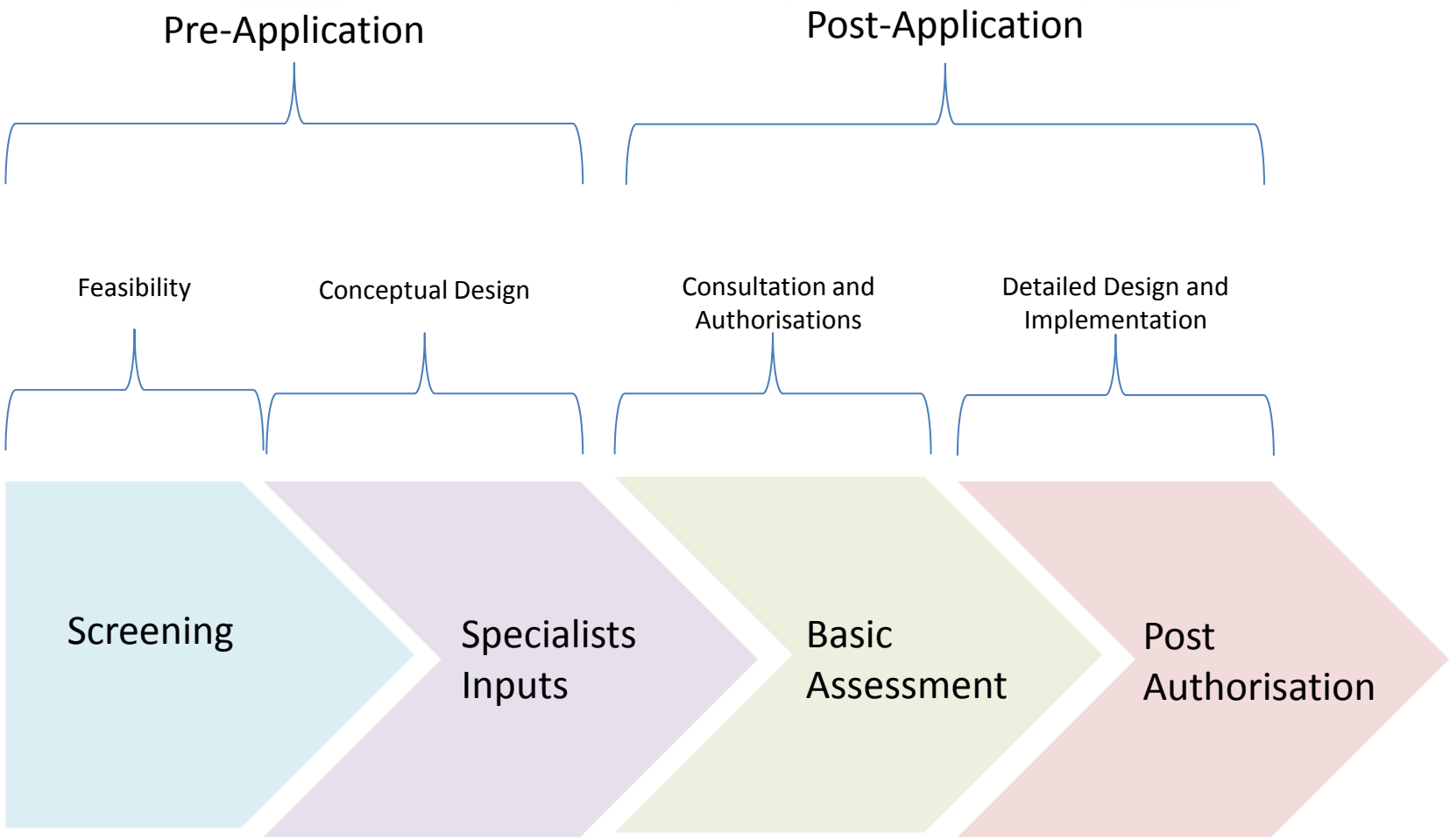
Current Environmental Impact Assessment process



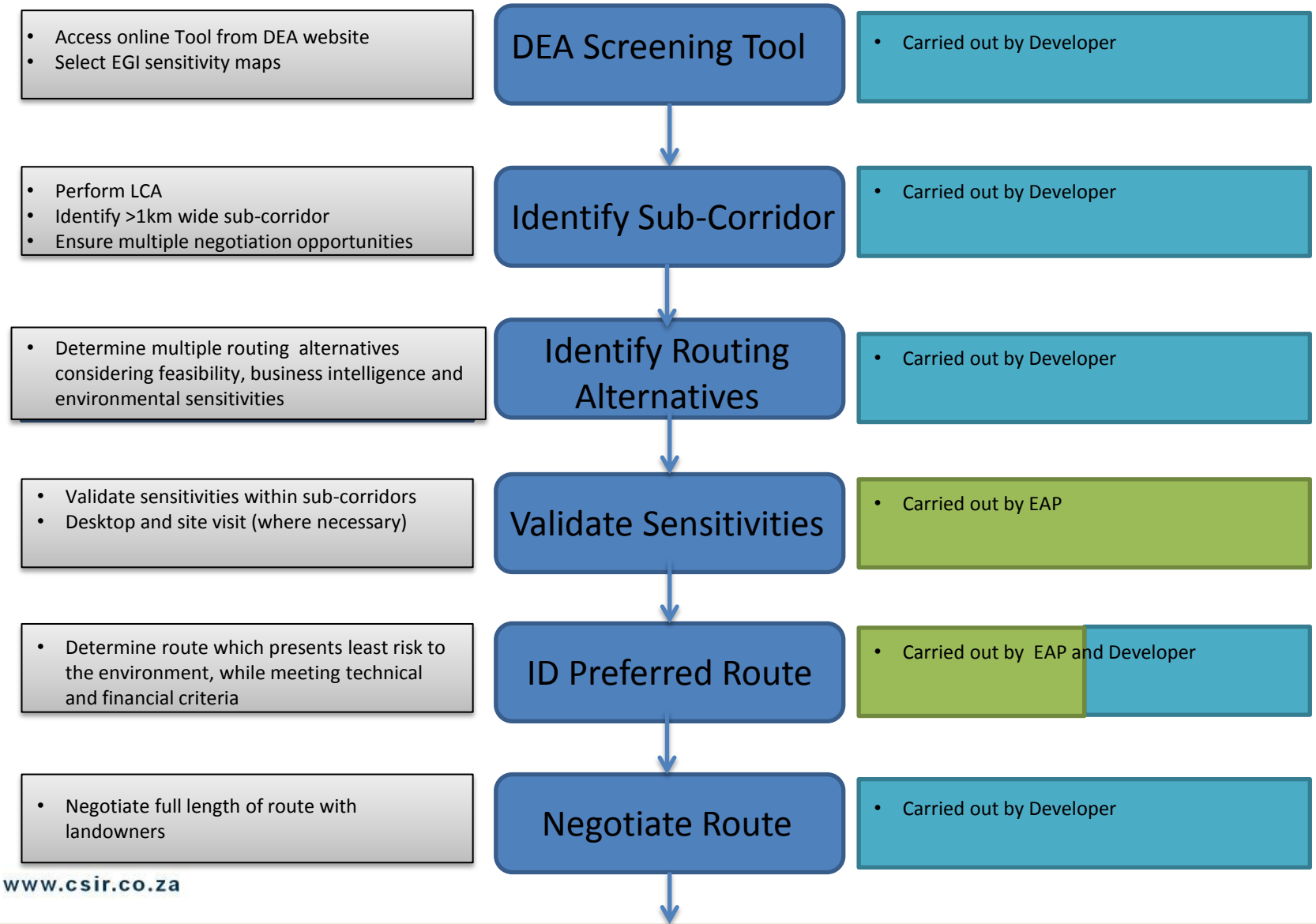
Total: 147 days

Streamlined Basic Assessment process

Proposed Pre and Post Application Process for EGI

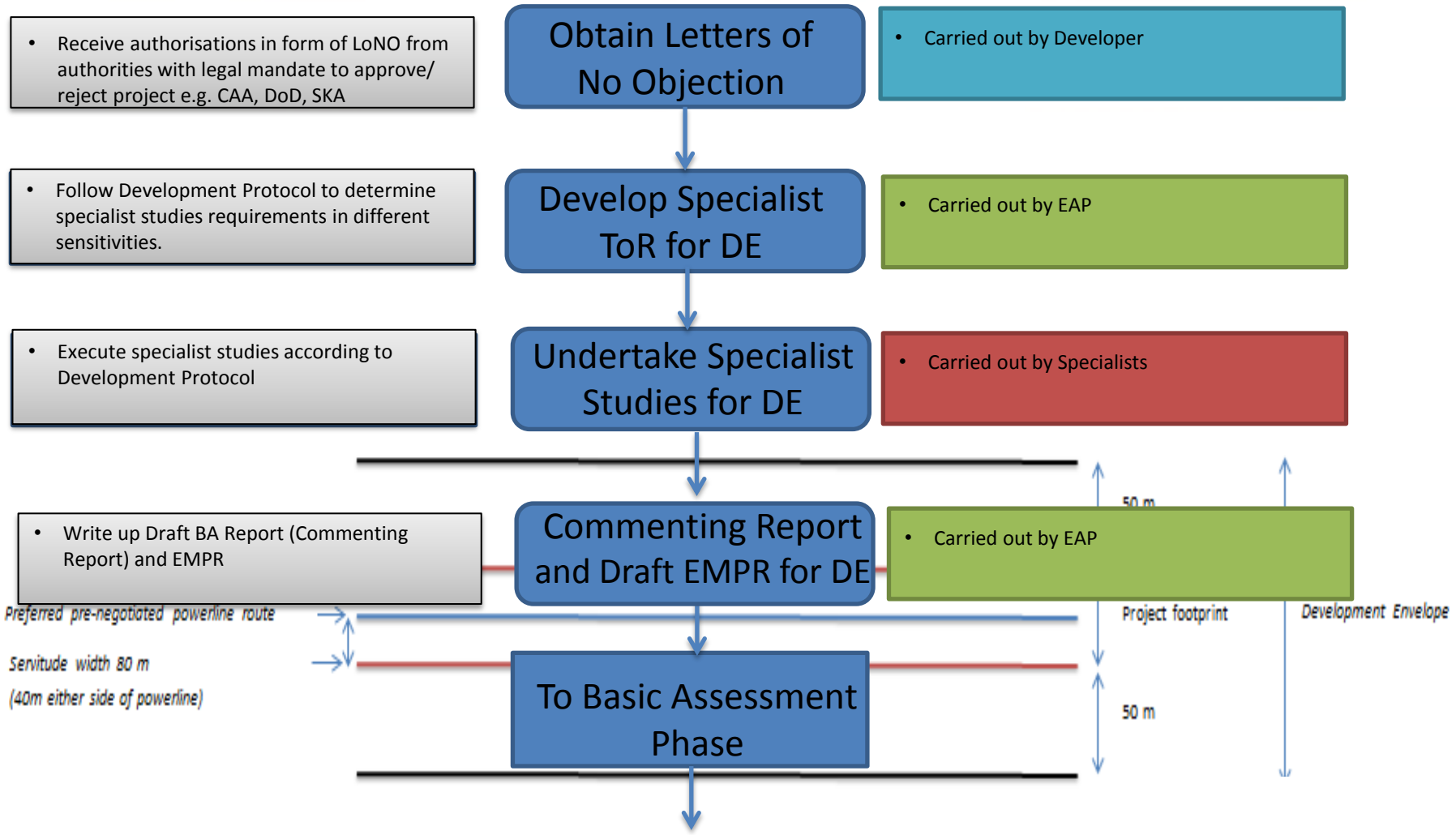


Pre-Application Screening Phase



Impact Assessment

Pre-Application Specialist Inputs Phase



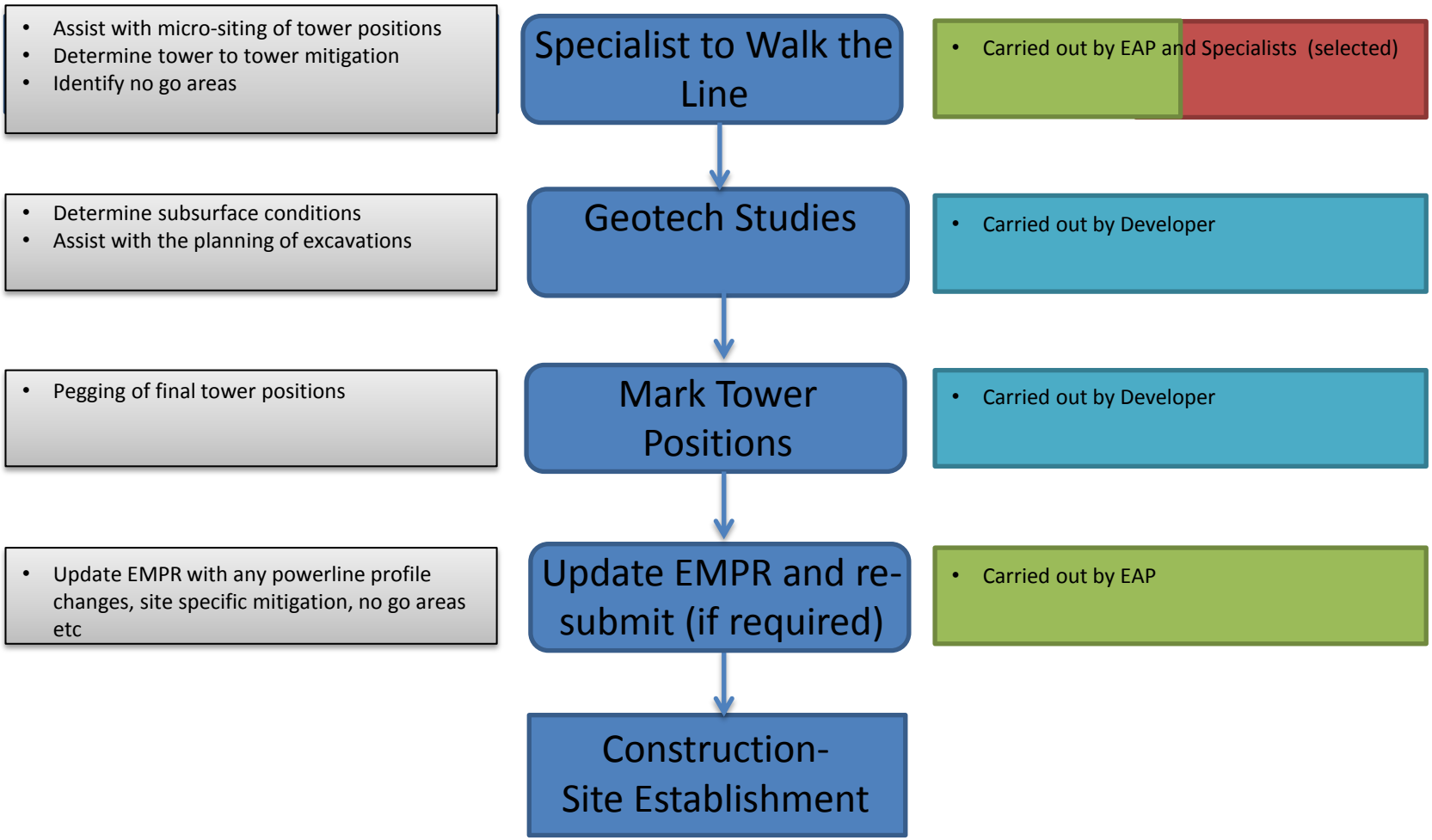
Basic Assessment

Basic Assessment Phase

• Submit draft reports and all necessary technical documentation as part of online application	**Submit BA Application** • Commenting Report and Draft BAR • Letters of No Objection • Evidence of Negotiation	• Carried out by EAP
• Subject commenting report to 30 day public participation • Commenting Authorities and I&APs	**30 Day Commenting Period**	• Carried out by EAP
• Update report with all comments • Significant changes to report will require additional 30 day commenting period	**Update Report and EMPR**	• Carried out by EAP
• Submit Final BAR and EMPR via online tool within 90 days of submitting application.	**Submit Final BAR and EMPR to CA**	• Carried out by EAP
• Competent Authority has 57 days to issue a decision on the BAR	**CA to issue decision for DE**	• Carried out by Competent Authority

Post Authorisation

Post Authorisation Phase (EMPR)



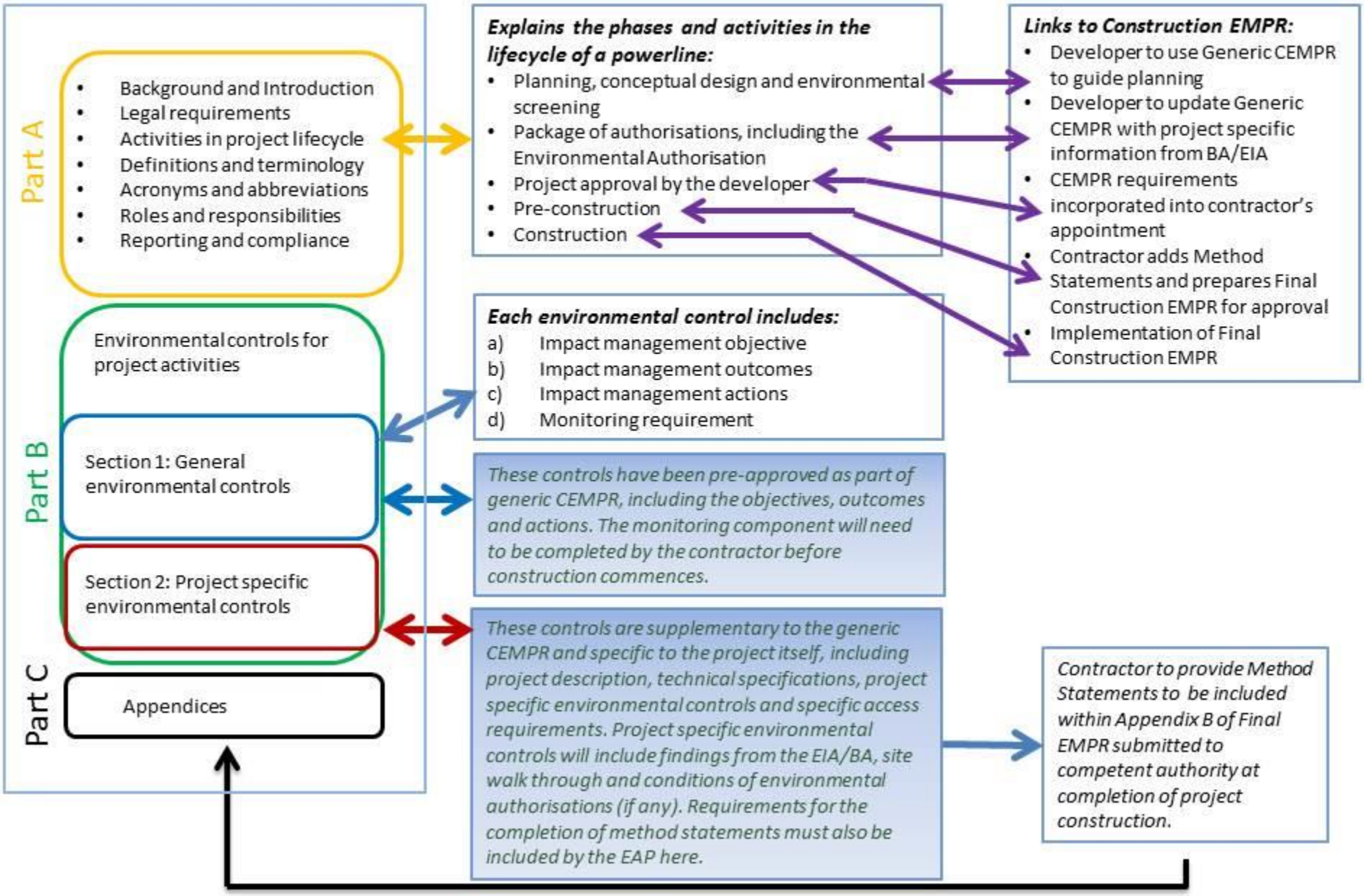
PART 6

Generic Environmental Management Programme (EMPR) For Overhead Powerline Construction

Background and Context

- Pre-approved template that is to be used by a developer when preparing an EMPR for overhead powerlines
- Applies to projects both inside and outside of these corridors
- Applies to powerlines with a capacity of 33 kilovolts or more
- Applies to Eskom and other potential powerline developers
- Applies to construction related activities only
- Captures relevant learning, best practice and experience to enable authorities to pre-approve the EMPR template
  - Consistency – impact avoidance, reporting, complaince
  - Pro-active – meeting the needs of authorities upfront
  - Efficient – approvals
- Satisfies the requirements of Section 24N of the NEMA regulations and regulation 19 of the NEMA EIA Regulation of 2014

Framework for Generic Construction EMPR



General Environmental Controls

Management Objective:	**PREDEFINED AS PART OF GENERIC CEMPR**
Management Outcome:	**PREDEFINED AS PART OF GENERIC CEMPR**

Impact Management Actions	**Implementation**		**Monitoring**		
	Responsible person	**Time Period**	**Method**	**Frequency**	**Mechanism for Monitoring Compliance**
PREDEFINED AS PART OF GENERIC CEMPR	**TO BE COMPLETED BY CONTRACTOR**	**TO BE COMPLETED BY CONTRACTOR**	**TO BE COMPLETED BY CONTRACTOR**	**TO BE COMPLETED BY CONTRACTOR**	**TO BE COMPLETED BY CONTRACTOR**

6.10.8 Solid waste management

Management Objectives: To avoid, manage and mitigate potential impacts to the environment caused by the incorrect storage, handling and disposal of general and hazardous solid waste.

Management Outcomes: Solid waste management is undertaken in accordance with relevant national and provincial legislation and local by-laws.

Impact Management Actions	Implementation		Monitoring		
	Responsible person	Time Period	Method	Frequency	Mechanism for Monitoring Compliance
1. All measures regarding waste management shall be undertaken using an integrated waste management approach; 2. Sufficient, covered waste collection bins (scavenger and weatherproof) shall be provided; 3. A suitably positioned and clearly demarcated waste collection site shall be identified and provided; 4. The waste collection site shall be maintained in a clean and orderly fashion; 5. Waste shall be segregated into separate bins and clearly marked for each waste type; 6. Staff shall be trained in waste segregation; 7. Recycling of waste types shall be maximised; 8. Bins shall be emptied regularly; 9. General waste shall be disposed of at recognised and registered waste disposal sites/ recycling company; 10. Hazardous waste shall be disposed of at a registered waste disposal site; 11. Certificates of disposal for general, hazardous and recycled waste shall be maintained; 12. Under no circumstances shall any waste be disposed of, burned or buried on site.					

6.10.19 Batching plants

Management Objective: To control concrete and cement batching activities in order to prevent spillages and concomitant contamination of soil, surface water and groundwater environment.

Management Outcome: The management, handling and storage of sand, stone and cement is undertake in accordance with the CEMPR

Impact Management Actions	Implementation		Monitoring		
	Responsible person	Time Period	Method	Frequency	Mechanism for Monitoring Compliance
1. Concrete mixing shall be carried out on an impermeable surface (such as on boards or plastic sheeting and/or within a bunded area with an impermeable surface); 2. Concrete mixing areas must be fitted with a containment facility for the collection of cement laden water. This facility must be impervious to prevent soil and groundwater contamination; 3. Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; 4. A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; 5. Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; 6. Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; 7. Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to 11.20: *Dust emissions*) 8. Any excess sand, stone and cement must be removed from site on completion of construction period and disposed at a registered disposal facility; 9. Temporary fencing shall be erected around batching plants in accordance with Section 10.5: *Fencing and gate installation*.					

Site Specific Environmental Controls

6.11 Section 2: Project Specific Environmental Controls

6.11.1 Description of project [TO BE COMPLETED BY EAP]

- **Location**
- **Anticipated construction duration**
- **Anticipated number of staff (permanent and temporary)**

6.11.2 Technical specification of the line [TO BE COMPLETED BY EAP]

- **Length**
- **Construction area**
- **Tower parameters**
  - Number and types of towers
  - Tower spacing (mean and maximum)
  - Tower height (lowest, mean and height)
  - Conductor attachment height (mean)
  - Minimum ground clearance

6.11.3 Powerline profile and project specific information and mitigation requirements [TO BE COMPLETED BY EAP]

A full profile of the powerline overlaying an environmental sensitivity map shall be included in this section. All tower positions are to be numbered. The environmental sensitivity map shall indicate areas/features of sensitivity based on the findings of the BA/EIA and illustrated according to four tiers, Very High, High, Medium or Low. The sensitivity map shall also identify the nature of each sensitive feature e.g. raptor nest, threatened plant species, archaeological site etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features in the surrounding landscape. The map shall also illustrate farm portion names and gate access points. The powerline profile shall be illustrated at an appropriate resolution to enable fine scale interrogation. It is recommended that <20 km of powerline length is illustrated per page in A3 landscape format. Underlying each powerline profile map landowner contact details and any specific requirements regarding each land parcels as required by the landowner shall be defined. Furthermore, specific mitigation measures as determined by the BA/EIA findings and conditions of Environmental Authorisation with reference to specific tower positions shall be identified. Where considered appropriate, photographs of sensitive features in the context of tower positions shall be used.

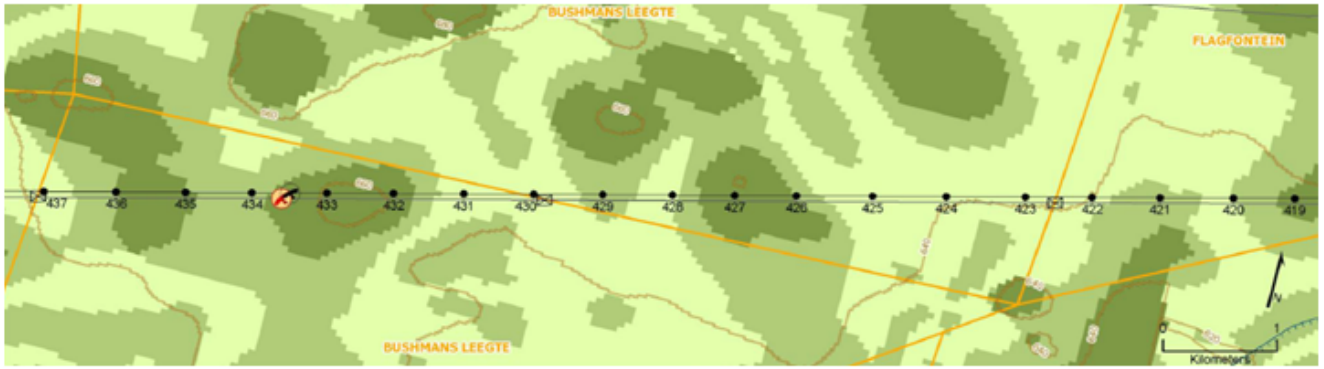


Figure 3: Example of an environmental sensitivity map in the context of a final powerline profile

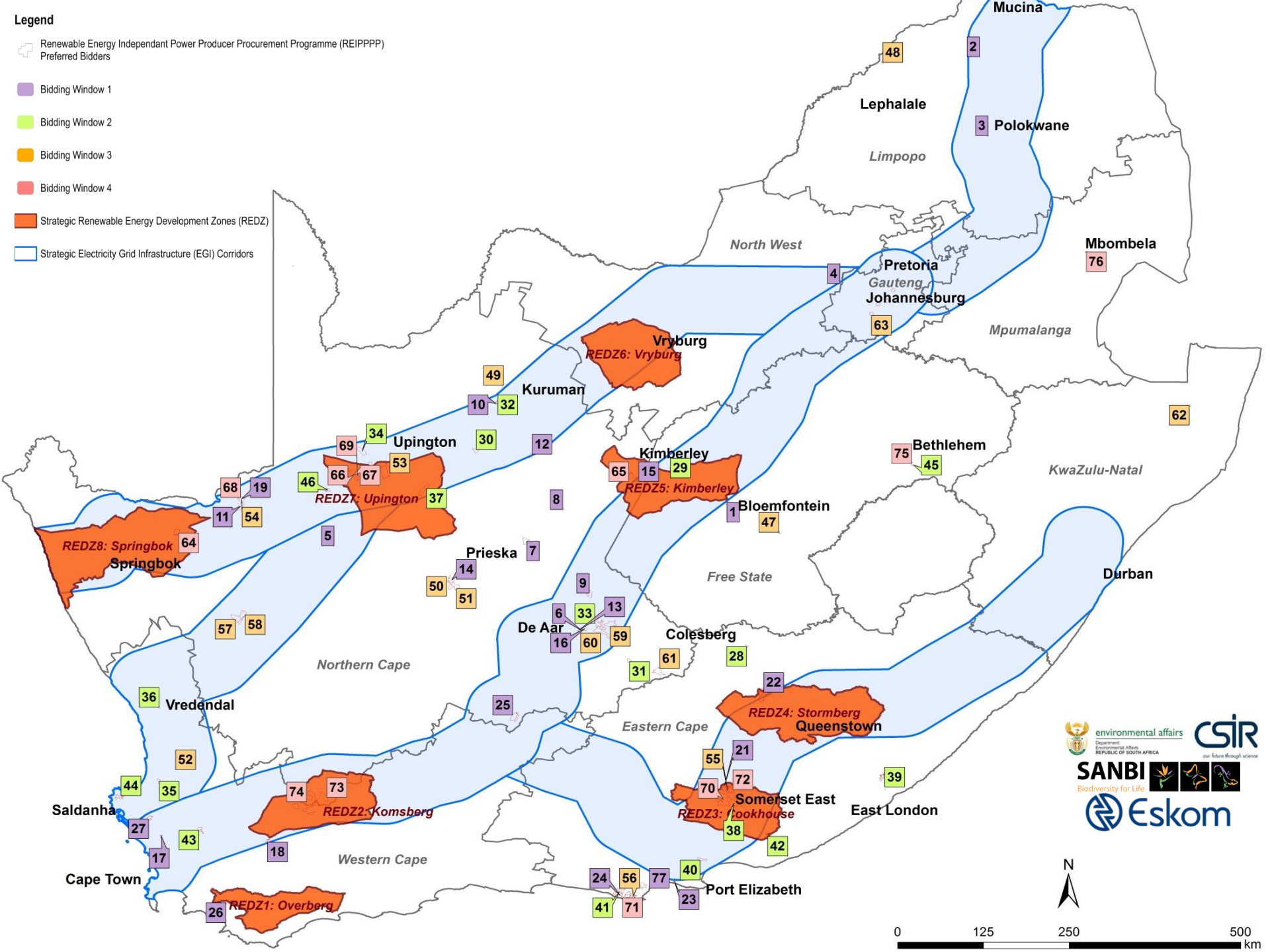
Site Specific Mitigation and Access Requirements

Table 6: Example template for landowner details and specific access requirements

Land Owner and Access Details			
Tower No.	419-422	423-429	430-437
Farm Name			
Farm Owner			
Contact Name			
Contact Number			
Special request by landowner			
Access requirements			

Table 7: Example template for project specific environmental controls

Project Specific Environmental Controls		
Tower No.	Environmental Aspect	Site Specific Mitigation
419-422		
423-429		
430-437		


Legend
Renewable Energy Independant 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
Mucina
Lephalale
Polokwane
Limpopo
North West
Pretoria
Gauteng
Johannesburg
Mbombela
Mpumalanga
Vryburg
REDZ6: Vryburg
Kuruman
Upington
REDZ7: Upington
Kimberley
REDZ5: Kimberley
Bethlehem
KwaZulu-Natal
Bloemfontein
Free State
Durban
REDZ8: Springbok
Springbok
Prieska
De Aar
Colesberg
Northern Cape
Vredendal
REDZ4: Stormberg
Queenstown
Eastern Cape
Somerset East
REDZ3: Lookhouse
East London
Saldanha
REDZ2: Komsberg
Western Cape
Cape Town
REDZ1: Overberg
Port Elizabeth
N
0
125
250
500
km

Formal Submissions from I&APs

PSC & ERG Review

- Draft report & data made available on **20 January 2016**
- Draft report treated as **confidential** & not be distributed publicly

- How to Access the Report & Data:
  - ftp://ftp.csir.co.za (Windows Explorer not Internet Explorer)
  - Username: **EGI_SEA** Password: **EGI_SEA**
  - **NB:** COPY, not cut, all files (zip folder & pdf) to your local computer
  - Published ArcGIS projects containing all SEA GIS data available on FTP site & can be viewed with ArcReader

- How to Submit Inputs:
  - **1 consolidated submission** on behalf of organisation
  - Submission in **PDF format** & on **official letterhead**
  - Submit inputs via email to egi@csir.co.za by **Wednesday 10 February 2016.**

Thank you

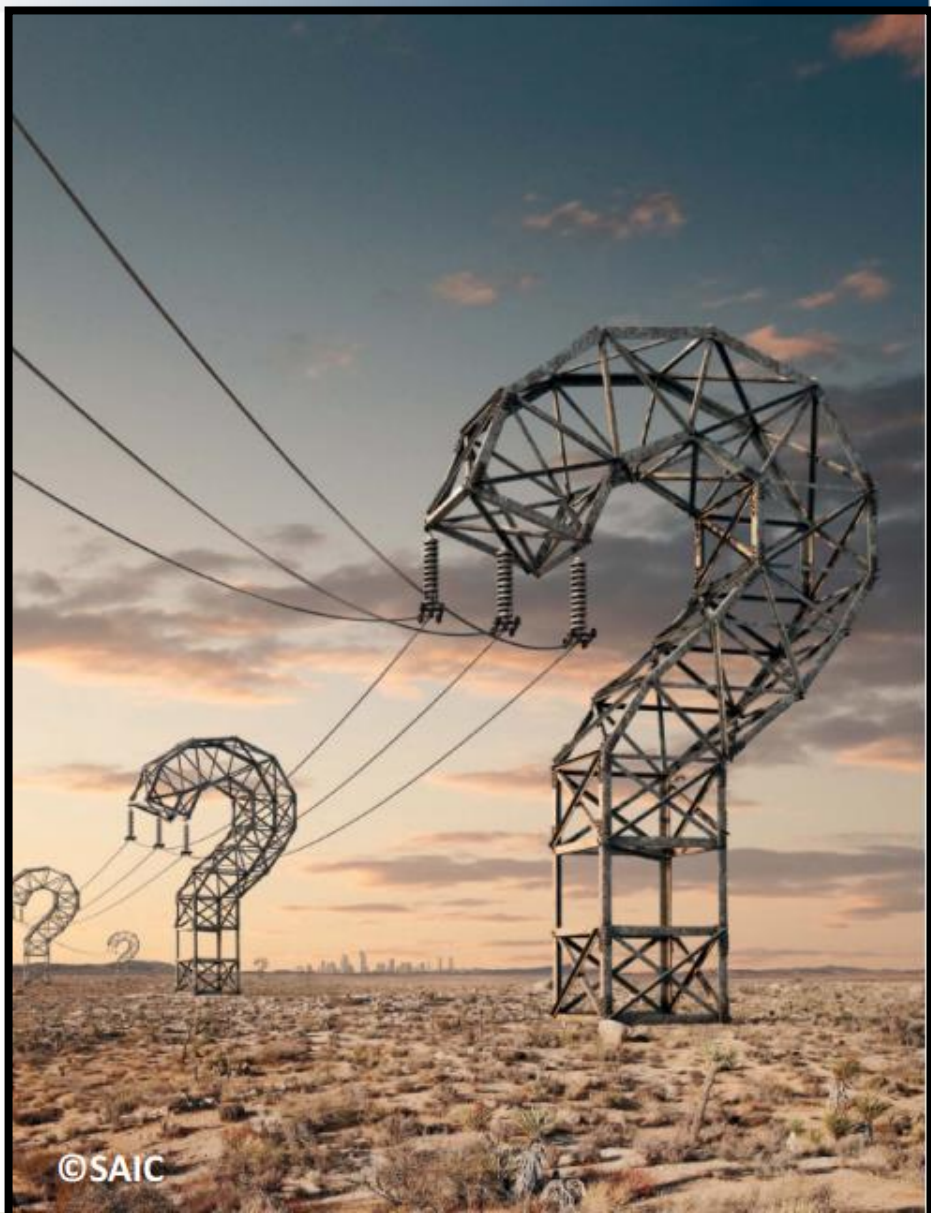
EGI SEA Webpage: https://egi.csir.co.za/

D Fischer- DEA: dfischer@environment.gov.za

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

J Manual- SANBI: J.Manuel@sanbi.org.za

M Mabin- CSIR: mmabin@csir.co.za



environmental affairs
Department: Environmental Affairs
REPUBLIC OF SOUTH AFRICA
CSIR
our future through science
SANBI
Biodiversity for Life
Eskom