ESKOM TRANSMISSION

PROPOSED ARIADNE-EROS 400/132 KV MULTI-CIRCUIT TRANSMISSION POWER LINE FROM ARIADNE SUBSTATION TO EROS SUBSTATION AND THE EXPANSION AND UPGRADE OF THE ARIADNE SUBSTATION (DEAT EIA: 12/12/20/1272)

AND

THE EROS SUBSTATION (DEAT EIA: 12/12/20/1277), KWAZULU-NATAL

DRAFT SCOPING REPORT

ESKOM TRANSMISSION

Proposed Ariadne-Eros 400/132 kV Multi-circuit Transmission Power Line from Ariadne Substation to Eros Substation and the expansion and upgrade of the Ariadne Substation (DEAT EIA: 12/12/20/1272)
and
The Eros Substation (DEAT EIA: 12/12/20/1277),
KwaZulu-Natal

Draft Scoping Report

Report prepared for:

Eskom Transmission
PO Box 1091
Johannesburg
2000

Report prepared by:

ACER (Africa) Environmental Management Consultants
P O Box 503
Mtunzini
3867

May 2009

PURPOSE OF THE DRAFT SCOPING REPORT

Eskom Transmission is currently undertaking an Environmental Impact Assessment to investigate the proposed construction and operation of one 400/132 multi-circuit kV transmission lines between the Ariadne (Pietermaritzburg) and Eros (Harding) Substation in the KwaZulu-Natal Province of South Africa. The Environmental Impact Assessment, including its associated Public Participation Programme, are being undertaken by ACER (Africa) Environmental Management Consultants in terms of the Environmental Impact Assessment Regulations, 2006 published in Government Notice R 385 of 21 April 2006, under Section 24 of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) (as amended).

An Environmental Impact Assessment must show the authorities and the proponent what the consequences of their decisions to choose particular alternatives will be in environmental, economic and social terms. An extremely important phase of an Environmental Impact Assessment is Scoping. This is the phase during which issues and concerns should be identified in order to focus the assessment and to provide a framework within which the assessment is to be undertaken. This will include studies by technical specialists on specific subjects identified during Scoping.

In accordance with the EIA Regulations of 2006, Interested and Affected Parties (members of the public, the development proponent, technical specialists and the authorities) must have **the opportunity to verify that all the issues they raised during Scoping have been captured, understood, interpreted and contextualised.** This is the main purpose of the Draft Scoping Report that will be available for comment from 03 July 2009 – 24 August 2009 (the extended commenting period is to allow for the winter school break). After the public comment period, a Final Scoping Report will be submitted to the lead environmental authority, the Department of Environmental Affairs and Tourism (DEAT) who, in close collaboration with their Provincial counterparts, will consider the scope to be covered by the Specialist Studies, after which these studies will proceed.

YOUR COMMENTS PLEASE

Please submit your comments to
Candace Brown/Nolwandle Nkwanyana/Percy Langa Ariadne-Eros EIA Public Participation Office ACER (Africa) Environmental Management Consultants PO Box 503, Mtunzini, 3867 Tel: 035-3402715 or 0860104958 Fax: 035-3402232 Email: eskomAE@acerafrica.co.za
The due date for comments on the Draft Scoping Report is 24 August 2009

DRAFT SCOPING REPORT DISTRIBUTION

This Draft Scoping Report will be distributed to key stakeholders and will also be left in the following public places in the project area from 03 July 2009 to 24 August 2009 (the extended period is to allow for the winter school break).

uMgungundlovu District Municipality:			
Area	**Venue**	**Street address**	**Telephone number**
Pietermaritzburg	uMgungundlovu District Municipality	242 Langalibalele Street (previously Longmarket), Pietermaritzburg	(033) 897 6709
Pietermaritzburg	Msunduzi Local Municipality	City Hall, cnr Church and Chief Albert Luthuli Street (formerly Commercial Street), Pietermaritzburg	(033) 392 2011
Pietermaritzburg	Pietermaritzburg Public Library	260 Church Street	(033) 392 2634
Camperdown	Mkhambathini Local Municipality	18 Old Main Road, Camperdown	(031) 785 9300 (031) 785 9313
Camperdown	Camperdown Public Library	18 Old Main Road, Camperdown	(031) 785 1742
Richmond	Richmond Local Municipality	57 Shepstone Street, Richmond	(033) 212 2155
Richmond	Richmond Public Library	57 Shepstone Street, Richmond	(033) 212 2155
Ugu District Municipality: Vulamehlo Local Municipality			
Area	**Venue**	**Street address**	**Telephone number**
Port Shepstone	Ugu District Municipality	28 Connor Street, Port Shepstone	(039) 688 5700
Port Shepstone	Hibiscus Coast Local Municipality	10 Connor Street, Port Shepstone	(039) 688 2000
Port Shepstone	Port Shepstone Public Library	10 Connor Street, Port Shepstone	(039) 688 2000
Scottburgh	uMdoni Local Municipality	Williamson Street, Scottburgh	(039) 976 1202
Dududu	Vulamehlo Local Municipality	Main Road, Dududu (opposite Dududu Police Station)	(039) 974 0450 (039) 974 0452
uMzinto	uMzinto Public Library	Main Road, uMzinto	(039) 974 1121

Hibberdene	uMzumbe Local Municipality	Sipho Funa Road, Hibberdene	(039) 972 0005
Ezingolweni	Ezingolweni Local Municipality	Main Harding Road (opposite Taxi Rank), Ezinqoleni	(039) 534 1582 (039) 534 1584
Harding	uMuziwabantu Local Municipality	Murchison Street, Harding	(039) 433 1205
Harding	Harding Public Library	Murchison Street, Harding	(039) 433 1205
eThekwini District Municipality: Vulamehlo Local Municipality			
Area	**Venue**	**Street address**	**Telephone number**
Durban	eThekwini District Municipality	City Hall, West Street, Durban	(031) 311 2110

The following methods of public review of the Draft Scoping Report are available:

- Completing the comment sheet enclosed with the report.
- Additional written submissions.
- Comment by email, fax or telephone.
- Comment during public meetings to be held to discuss the contents of this Draft Scoping Report. Details of the public meetings are provided in the table below.

PUBLIC MEETINGS

uMgungundlovu District:			
Area	**Date**	**Venue**	**Time**
Eston	13 July 2009	Bella Vista Country Lodge	09:00
Ugu District:			
Scottburgh	13 July 2009	Cutty Sark Hotel	14:00
Port Shepstone	14 July 2009	Port Shepstone Country Club	09:00
Harding	14 July 2009	Harding Country Club	14:00

EXECUTIVE SUMMARY

INTRODUCTION

Eskom, a South African public utility, is responsible for the generation, transmission and distribution of electricity in the country. Power is primarily generated in a number of coal-fired power stations (although other forms of generation are also used, for example, nuclear and hydro).

The Eskom transmission network supplying electricity to the KwaZulu-Natal (KZN) midlands and southern KZN requires strengthening to meet growing demand as well as to improve service quality and reliability. To address this situation, Eskom Transmission proposes to strengthen its network by constructing new transmission lines over a total distance of 470 km in five continuous sections from the Alpha Substation (near Standerton, Mpumalanga) to the Eros Substation (Harding, KwaZulu-Natal). For purposes of project management and environmental authorisation, the continuous transmission network linking the Alpha - Eros Substations has been divided into four sections, each of which is being separately project managed and which are undergoing separate environmental authorisation processes. This report deals with the environmental impact assessment (EIA) process for a proposed 400/132 kV multi-circuit transmission line from the Ariadne Substation (near Pietermaritzburg) to the vicinity of Oribi Substation (near Port Shepstone) and the continuation of a single circuit 400kV transmission line to the Eros Substation (near Harding). The proposed 132 kV power line will be used by Eskom Distribution to supply electricity to communities (in particular, rural communities) along the south coast and its hinterland who presently do not have electricity. The approximate total distance of this multi-circuit line is 178 km.

This project also entails:

- The expansion and upgrade of the Ariadne Substation.
- The expansion and upgrade of the Eros Substation.
- Turn-ins at Ariadne and Eros Substations.
- Turn-ins at four key Distribution Substations along the route.

In terms of the EIA Regulations of 2006, Eskom Transmission (the applicant) has appointed ACER (Africa) Environmental Management Consultants (ACER) as the Environmental Assessment Practitioner (the EAP) to undertake the Environmental Impact Assessment for the proposed Ariadne-Eros Transmission line and associated expansion and upgrading of Ariadne and Eros Substations.

LEGAL FRAMEWORK

The key legal requirements for the proposed Ariadne-Eros Transmission line can be summarised as follows:

- Constitution of the Republic of South Africa Act (Act No. 108 of 1996).
- National Environmental Management Act (Act No. 107 of 1998).
- Electricity Regulation Act (Act No. 4 of 2006).
- Eskom Conversion Act (Act No 13 of 2001).
- Eskom Act (Act No 40 of 1987).
- National Heritage Resources Act (Act No 25 of 1999).
- KwaZulu-Natal Heritage Act, 1997 (Act No. 10 of 1997).

The concept of sustainability underpinning this assessment considers three inter-related dimensions of the environment, viz. the biophysical, social and economic dimensions. For all development options to be sustainable, it needs to demonstrate ecological integrity, social soundness and economic viability.

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The Environmental Impact Assessment is currently in the Scoping Phase, where issues for further investigation are identified so that they can be considered for inclusion in the Specialist Studies that will be done during the next phase, viz. the Impact Assessment Phase.

The technical Scoping process comprised the following activities:

- Information gathering.
- Assessment and collation of information.
- Evaluation and prioritisation of issues and impacts.

The public participation process complies with legal requirements as stipulated in Chapter 5 of the EIA Regulations of 2006. The key objective of public participation during Scoping is to identify and define significant environmental issues, which are being investigated during the Impact Assessment Phase through the following activities:

- Announcement of the project.
- Registration of Interested & Affected Parties.
- Obtaining and dealing with comments from Interested & Affected Parties.
- Key Stakeholder Meetings.
- Traditional Authority Meetings.
- Issues and Response Report.
- Public review of the Draft Scoping Report.

Interested & Affected Parties are advised to register so that they become a part of the EIA process. Registered I&APs will be notified about the availability of the Draft Scoping Report (DSR), and will be provided with an opportunity to review and comment on the report. A Final Scoping Report will be produced following the public review process. It will be submitted to the Competent Authority (DEAT) for consideration and decision-making.

DESCRIPTION OF THE PROJECT

The proposed Ariadne-Eros Transmission line project is located in the southern region of KZN and transverses several municipalities including uMgungundlovu and Ugu District municipalities. The project comprises of the following three components:

- The construction of a 400 kV/132 kV Multi-Circuit Transmission line from the Ariadne substation (near Pietermaritzburg) to the vicinity of Oribi substation (near Port Shepstone) and the continuation of a single circuit 400 kV line to the Eros Substation (near Harding). The approximate distance of the proposed transmission line is 178 km.
- The expansion and upgrade of the Ariadne substation (near Pietermaritzburg).
- The expansion and upgrade of the Eros substation (near Harding).
- Turn-ins at the Ariadne and Eros substations.

The exact lengths and positions of the turn-ins are unknown at present, as these will be determined by the preferred alternative for the transmission line.

The proposed transmission line will require a servitude of 55 m in width. For commercial forestry areas, 76m servitude will be required. Eskom Transmission will negotiate for the servitude with the affected landowners prior to the commencement of construction. Steel towers will be constructed at intervals along the transmission line, at a spacing of approximately 300-500 m. Each tower is approximately 30-35 m high and it is anticipated that the majority of these will be Guyed V towers or cross-rope suspension towers. Strain towers will be used for bends greater than 3º and/or in difficult terrain. Final towers that will be used will be once profiling has been done.

The construction of the transmission line will require approximately 14 months to complete. There are five main teams responsible for the excavation of foundations, concrete works, erection of steel structures, stringing of transmission cables, and rehabilitation. All activities, including vehicular access and the pylon anchors, are required to take place within the negotiated servitude.

ALTERNATIVES

A number of technically and environmentally feasible options are being assessed as part of this EIA, with input from relevant authorities, Eskom Transmission, affected landowners, the public and the EIA Team. Three potential alternative alignments, including minor alignments, are being investigated. Eskom Transmission identified these alternatives prior to the commencement of Scoping based on a number of criteria, they include:

- The minimisation of visual impacts, especially over high terrain such as hills and mountains.
- Optimising alignments over difficult terrain, providing sufficient space for the supporting towers, for example, mountaintops and saddles, and gradients with manageable side-slopes.
- As far as possible, the avoidance of sudden changes in topography and altitude such as valley-mountain interfaces.
- The avoidance of unstable geological and soil areas with potential slip zones and other forms of substrate instability.
- Avoidance of areas with a high potential for erosion and overgrazed areas with fragile soils.
- Avoidance of sensitive bird areas including foraging, nesting and roosting sites.

It is a requirement of legislation, and best practice in environmental management, that relevant alternatives be considered within an EIA. For the Ariadne-Eros Transmission line EIA, the possible alternatives were divided into four categories:

- Macro Alternatives.
- Alignment Alternatives.
- Technical Alternatives.
- Micro Alternatives.

Each alternative has been investigated with a view to understanding the environmental consequences and to select those alternatives that will be carried forward for assessment during the EIA Phase.

DESCRIPTION OF THE RECEIVING ENVIRONMENT

The broader study area is located in the southern part of KZN and extends from near Pietermaritzburg (Ariadne substation) in a south-easterly direction to Port Shepstone (Oribi Substation) and then westerly to Harding (Eros Substation). It falls within two district

municipalities, uMgungundlovu District Municipality (DC22) and Ugu District Municipality (DC21). Within these District Municipalities, a number of Local Municipalities are affected by the proposed development, namely:

- Within the uMgungundlovu District Municipality (DC22), there are two affected local municipalities, namely: Richmond Local Municipality (KZ227) and Mkhambathini Local Municipality (KZ226).
- Within the Ugu District Municipality (DC21), there are six affected local municipalities, namely: Vulamehlo Local Municipality (KZ211), uMdoni Local Municipality (KZ212), uMzumbe Local Municipality (KZ213), uMuziwabantu Local Municipality (KZ214), Ezingolweni Local Municipality (KZ215) and Hibiscus Coast Local Municipality (KZ216).

The study area is large, inhabited and utilized by a range of land-users. Commercial agriculture, forestry, communal land with subsistence farming and small-scale agriculture are dominant throughout. Small towns and trading centres, like Eston and Mid-Illovo are found throughout and are linked by a system of secondary roads such as the R56, R102 and others that connect with the two national roads, namely, the N2 coastal road and N3 (Durban – Gauteng). In more rural regions of the study area gravel roads link smaller settlements.

The study area slopes in an easterly direction and crosses a number of river catchments that have shaped the geography of the landscape. Two major river catchments, namely the Mkomazi and Umzimkulu, two medium sized catchments, the IlLovo and uMlazi, and smaller catchments, the Mzumbe, Mthwalume, Ifafa and Mpambanyoni all drain in an east to south-easterly direction and empty into the Indian Ocean. These rivers are all perennial and are fed by numerous smaller tributaries. A diversity of flora species is supported and sustained by these riverine environments. They also provide habitat and migratory corridors for a number of faunal species. Of importance economically, is that these rivers also sustain agriculture and industry in the area.

A temperate, sub-tropical climate with warm temperatures and summer rainfall is typical of this region. Summers are hot and humid while winters are milder and drier. The more inland sections of the study area towards Ariadne (Pietermaritzburg) and Eros (Harding) experience lower winter temperatures due to increased altitude and greater distance from the coast. Frost and occasional light snowfalls occur in these areas in the winter months.

The underlying geology of the area comprises sandstones, tillite rocks and shales derived from the Natal, Dywka and Ecca Groups. Topographical features such as the impressive Oribi Gorge are a result of these erosive processes. Soil forms range from that of high agricultural potential, especially in the hinterland of the study area, to moderate potential soils along the coastal section.

Fauna and flora in the study area is rich, due to the different ecosystems, habitat types and topographical features. Grasslands, valley bushveld and scarp forest are found throughout the area. Nine veld types are found within the area of which the Midlands Mistbelt Grassland and KwaZulu-Natal Coastal Belt are endangered, largely due to habitat destruction. The flora and variety of habitats supports a diversity of birdlife. There are two nature reserves within the study area, which are administered by Ezemvelo KZN Wildlife. The largest and most prominent is the Oribi Gorge Nature Reserve, which is located near Port Shepstone within the Hibiscus Coast Municipality. The reserve is home to a number of species. Of conservation significance are the Cape Vultures that nest on the sandstone cliffs and which are extremely prone to collisions with transmission lines. The Oribi Gorge and its surrounding areas have been flagged as having high sensitivity regarding avifaunal activity. Vernon Crookes Nature Reserve, a smaller reserve, is located near uMzinto within the Vulamehlo Municipality. The reserve encompasses open grassland (Ngongoni Veld and KZN Coastal Belt), rolling hills, small pockets of scarp forest and ocean views. It is home to a range of wildlife.

Within the study area, it is unknown what surveys of archaeological sites or research projects have been undertaken. This will be addressed during the Impact Assessment Phase of the EIA.

ENVIRONMENTAL ISSUES, IMPACTS AND SPECIALIST STUDIES

This Draft Scoping Report presents and discusses ten key issues that have been formulated as questions:

- What economic and socio-economic benefits will the transmission line have (locally and regionally)?
- What effects will the proposed transmission line have on existing residential settlements and infrastructure including telecommunication structures?
- Will the transmission line result in the loss of use of productive agricultural land (commercial and subsistence) and associated economic opportunities?
- How will the visual changes to the landscape affect the social and socio-economic environment?
- Are the proposed route alignments compatible with town planning initiatives (Integrated Development Plans, Spatial Development Plans and other initiatives)?
- What effects will the transmission line have on the natural environment (flora and fauna) and natural areas worthy of protection and conservation?
- What effects will the transmission line have on avi-fauna (birds)?
- What effects will the transmission line have on cultural and heritage resources?
- What technical constraints will the biophysical environment place on the routing, construction and operation of the transmission line?
- Can the transmission line be detrimental to the health and safety of local communities?

These issues and their associated potential impacts will be investigated and assessed during the Impact Assessment phase via the commissioning of ten Specialist Studies:

- Vegetation assessment.
- Faunal assessment.
- Avi-faunal assessment.
- Agricultural potential and agricultural economic assessment.
- Visual and aesthetics assessment.
- Social and socio-economic assessment.
- Heritage assessment.
- Economic overview.
- Town and regional planning overview.
- Technical overview.
- Electromagnetic field (EMF) overview.

The findings of the Specialist Studies will be used by the EIA Team to undertake an integrated assessment of the proposed transmission line project. This will be documented in an Environmental Impact Assessment Report, inclusive of an Environmental Management Plan, which will be released in the public domain for comment at the appropriate time.

CONCLUDING REMARKS

The EIA Team is of the opinion that a due environmental process has been followed during the undertaking of this scoping process and associated public participation programme. The analysis of key issues during Scoping has shown that there are no negative impacts that can be classified as fatal flaws. However, a number of impacts have been identified as significant and have been highlighted for further investigation in order to assess their significance and to determine the kinds of mitigation measures required for their management and minimisation. These will be investigated as part of the Impact Assessment Phase.

UMBIKO OFINGQIWE

ISINGENISO

U-Eskom, inkampani yomphakathi yase Ningizimu Afrika, inomthwalo wokuphehla, ukuhambisa kanye nokusabalalisa ugesi kuleli lizwe. Ugesi uphehlwa ikakhulukazi eziteshini eziningana ezibaselwa ngamalahle (nakuba zikhona ezinye izindlela ezisetshenziswayo, kubalwa ukusetshenziswa kwamandla enunzi kanye namanzi).

Ingqalasizinda ka-Eskom esabalalisa ugesi ezindaweni ezimaphakathi neKwaZulu-Natali kanye nasezindaweni eziseningizimu neKwaZulu-Natali kudingeka ukuthi zikhuliswe ukuze zikwazi ukumelana nesidingo esikhulayo sikagesi kanye nokwenzangcono ukulethwa kwezinsiza eziyikhwalithi kanye nokwethembeka kwalesi sidingo. Ukuze kulungiswe lesi simo, u-Eskom Transmission uhlela ukukhulisa ingqalasizinda yakhe ngokuthi ifake izintambo ezintsha endaweni engaphezu kwebanga elingamakhilomitha angu-470 ezingxenyeni zesiteshi i-Alpha Substation (ngase Standerton, eMpumalanga) ne-Eros Substation (eHarding, KwaZulu-Natali). Ngenhloso yokuphathwa kwephrojekthi nokulandela izigunyaziso zezemvelo, ingqalasizinda ehambisa ugesi exhumanisa amaSubstation i-Alpha-Eros ahlukaniswe izigaba ezine, lezo, zigaba ngasinye siphethwe ngendlela yephrojekthi kanti futhi zigunyazwa ngokwezemvelo isigaba ngasinye. Lo mbiko ubhekene nomsebenzi ongumthelela wokuhlolwa kwezemvelo kwezintambo ezingama-400/132 kV zamasekethe amaningi ahlongozwayo ukusukela e-Ariadne Substation (ngaseMgungundlovu) ukuya endaweni yase-Oribi Substation (ngasePort Shepstone) kanye nokuqhutshelwa kwentambo kagesi eyisekethe elihamba ngalodwa elingama-400 kV e-Eros Substation (ngaseHarding). Olayini bogesi abanomthamo ongu-132 kV ezihlongozwayo zizosetshenziswa ngu-Eskom Distribution ukusabalalisela ugesi emiphakathini (ikakhulukazi imiphakathi yasemakhaya) ukugudla ugu olungaseningizimu namaphethelo okuyizindawo ezingenawo ugesi sikhuluma nje. Ibanga elikhankanywayo lwale ntambo enamasekethe amaningi lingamakhilomitha ayi-178.

Incazelo ngale phrojekthi:

- Ukukhuliswa kanye nokuhlelwa kabusha kwesiteshi i-Ariadne.
- Ukukhuliswa kanye nokuhlelwa kabusha kwesiteshi i-Eros.
- Okungena eziteshini i-Ariadne kanye ne-Eros.
- Okungena kuma-Transmission Station amane asemqoka afumaneka kulowo mzila.

Ngokulandela uMthetho Wocwaningo Lokungenzeka Emvelweni ka-2006, u-Eskom Transmission (ofake isicelo) uqoke inkampani i-ACER (Africa) Abeluleki Bezokuphathwa Kwezemvelo njengoNgoti Bocwaningo Lwemvelo ukuze babhekane noCwaningo Lokungenzeka Emvelweni kulokhu kuhlongozwa kolayini i-Ariadne-Eros Transmission kanye nokukhuliswa nokuhlelwa kabusha okuhambisanayo kweziteshi i-Ariadne ne-Eros.

UHLAKA LWEZOMTHETHO

Izimfuno zezomthetho ezisemqoka ze-Transmisssion i-Ariadne-Eros ehlongozwayo zingafingqwa kanje:

- UMthethosisekelo waseRiphabhuliki YaseNingizimu Afrika (Umthetho ongunombolo 108 ka 1996).
- UMthetho Kazwelonke Wokuphathwa Kwezemvelo (Umthetho ongunombolo 107 ka 1998).
- UMthetho Wezokuphathwa kukaGesi (Umthetho ongunombolo 4 ka 2006).
- UMthetho Owengamele u-Eskom (Umthetho ongunombolo 13 ka 2001)

- UMthetho ka-Eskom (Umthetho ongunombolo 40 ka 1987).
- UMthetho Kazwelonke Wokongiwa Kwezindawo Zamagugu (Umthetho ongunombolo 25 ka 1999).
- UMthetho Wezamafa aKwaZulu-Natali, ka1997 (Umthetho ongunombolo 10 ka 1997).

Umqondo wokuqinqisa loku kuhlolwa ubhekisisa izingxenye ezintathu ezihlobene nezemvelo, Indlela okuphilwa ngayo kanye nesimo sezomnotho. Ukuze izinhlobo zonke zentuthuko zisekeleke kuzofanela ukuthi zikhombise ukuvikeleka ngakwezemvelo, nangendlela okuphilwa ngayo nokuthi isimo somnotho ziqinisekisiwe.

UMGUDU WOCWANINGO LOKUNGENZEKA EMVELWENI

Ucwaningo Lokungenzeka Emvelweni okwamanje lusesesigabeni sokuQoqwa Kwezimvo, lapho kuhlonzwa khona izinto okufanele ziphenyisiswe kabusha ukuze zimbhandakanywe Ezifundweni Zochwepheshe ezizokwenziwa ngesikhathi Socwaningo Lwemvelo.

Umgudu wochwepheshe wokuQoqwa Kwezimvo uphethe lemisebenzi elandelayo:

- Ukuhlanganiswa noma ukuqoqwa kolwazi.
- Ukucubungula nokuhlanganisa ulwazi.
- Ukuhlolwa kwezingqinamba, ukuveza ukubaluleka kwezingqinamba nemithelela yakhona.

Indlela yokuzimbandakanya kwomphakathi ihambisana nezimfuno zezomthetho njengoba kubalula iSigaba 5 soMthetho Wocwaningo Lokungenzeka Emvelweni ka 2006. Inhlosongqangi yokuzimbandakanya komphakathi ngesikhathi sokuqoqwa kwezimvo wukuhlonza kanye nokuchaza izindaba ezibalulekile zezemvelo ekuyizona eziphenyisiswayo ngesikhathi socwaningo lwemvelo ngokulandela lezi zimo ezilandelayo:

- Ukumenyezelwa kwephrojekthi.
- Ukubhaliswa Kwamaqembu Athintekile kanye nalawo Afisa Ukubamba iqhaza.
- Ukuthola kanye nokubhekana nezimvo ezibuya emaqenjini Athintekile kanye nalawo Afisa Ukubamba iqhaza.
- Imihlangano Yabahlomuli.
- Imihlangano Yemikhandlu Yamkhosi.
- Izimvo kanye noMbiko Ophendulayo.
- Ukubuyekezwa kwombiko Owumhlahlandlela Wokuqoqwa Kwezimvo.

Amaqembu Athintekayo kanye nalawo Afisa ukubamba iqhaza ayelulekwa ukuthi abhalise ukuze abeyingxenye yendlela Yomthelela Wokuhlolwa Kwezemvelo. La Maqembu Athintekayo nalawo Afisa Ukubamba iqhaza Abhalisiwe azokwaziswa ngokutholakala Kwombiko Owumhlahlandlela Wokuqoqwa Kwezimvo, futhi aze anikezwe ithuba lokubuyekeza kanye nokuphawula ngalo mbiko. Kuzokhishwa Umbiko Wokugcina Wokuqoqwa Kwezimvo bese kulandela ukuthi ubuyekezwe ngumphakathi. Uzobe usuthulwa esikhungweni esaziwa ngele-Competent Authority (DEAT) ukuthi siwubukisise bese sithatha isinqumo.

INCAZELO NGEPHROJEKTHI

Iphrojekthi kalayini we-Transmission i-Ariadne-Eros ohlongozwayo utholakala esifundeni esiseningizimu neKwaZulu-Natali futhi udabula phakathi omasipala abaningana kubalwa Omasipala Besifunda uMgungundlovu kanye no-Ugu. Iphrojekthi iqukethe izingxenye ezintathu ezilandelayo:

- Ukwakhiwa kukalayini weTransmission enomthamo onamasekethe amaningi angu 400 kV/132 kV kusukela esiteshini i-Ariadne (ngase Pietermaritzburg) ukuya esiteshini i-Oribi (ngase Port Shepstone) nokuqhutshekiswa kukalayini ohamba ngawodwa onomthamo ongu 400 kV esiteshini i-Eros (ngase Harding). Ibanga elihlongozwayo likalayini kagesi cishe lingamakhilomitha ayi-178.
- Ukukhuliswa kanye nokulungiswa kwesiteshi i-Ariadne (ngase Pietermaritzburg).
- Ukukhuliswa kanye nokulungiswa kwesiteshi i-Eros (ngase Harding).
- Okungena eziteshini i-Ariadne kanye ne-Eros.

Ubude bangempela kanye nezimo zangempela zalokho okuqoqwayo abukaziwa okwamanje ngoba lokhu kuzobalulwa wukuqoka ukusetshenziswa kukalayini mumbe kagesi.

Lo layini kagesi ohlongozwayo uzodinga umthwalo onobubanzi obungamamitha angama-55. Ezindaweni lapho kunanamahlathi akha inzuzo, khona kuzodingeka umthwalo ongamamitha angama-76. U-Eskom Transmission uzokhulumisana nabaninimhlaba abathintekayo ngalokhu ngaphambi kokuthi aqale ukwakha. Imibhoshongo yensimbi izokwakhiwa ngezikhawu ihambe eduze kolayini bakagesi kodwa iqhelelane cishe ngesikhala esingamamitha angama-300-500. Umbhoshongo ngamunye cishe ungamamitha angama-30-35 ukuphakama kanti kulindeleke ukuthi iningi layo izoba yile nhlobo ebizwa nge-Guyed V noma le mibhoshongo ephambanisa izintambo. Imibhoshongo eyaziwa ngele-Strain towers yona izosetshenziswa emajikeni angaphezu ka-3º nasezindaweni ezingafinyeleleki kalula. Imibhoshongo eyaziwa ngegama i-Final towers yona izosetshenziswa uma sekubhekwe zonke izimo.

Kuhlawumbiselwa ukuthi umsebenzi wokwakha ulayini kagesi uzothatha izinyanga eziyi-14 ukuthi uphele. Kukhona amaqembu amahlanu abalulekile abhekene nokumba izisekelo, umsebenzi wokukhonka, ukumiswa kwezigxobo zensimbi, ukulungiswa kwezintambo zikagesi kanye nokuzihlumelelisa. Yonke le misebenzi, kubalwa nokufinyeleleka kokuhamba ngamasondo kanye nama-anchor ensimbi, kufanele ukuthi kwenzeke ngesikhathi okuvunyelwene ngaso.

IZINDLELA EZINGASETSHENZISWA

Kukhona ezimbalwa zobuchwepheshe nezilungele imvelo ezisacwaningwa njengengxenye yalolu Cwaningo Lokungenzeka Emvelweni, kubekwa nemibono yezikhulu ezithintekayo, okubalwa kuzo u-Eskom Transmission, abaninimhlaba abathintekayo, umphakathi kanye neThimba Locwaningo Lokungenzeka Emvelweni. Okuthathu kwalokho okungenziwa, kubalwa ushintsho oluncane, kuyaphenywa. U-Eskom Transmission uhlonze lokhu okunye okungenziwa ngaphambi kwokuqala Kokuhlolwa Kwezimvo kulandela imibandela eminingana, ebala loku okulandelayo:

- Ukuncishiswa kwemithelela engabakhona ekubukekeni kwendawo, ikakhulukazi ezindaweni eziphakeme ezifana namagquma kanye nezintaba.
- Ukulungiswa kwezithiyo ezisezindaweni ezingafinyeleleki kalula, kunikezwa imibhoshongo yokuxhasa isikhala esanele, isibonelo izicongo zezintaba kanye nezihlalo, kanye nezindawo ezehlelayo.
- Kufanele ukuthi kugwenywe ngakhokonke izindawo ezinomhlaba ongamile kahle kubalwa izintaba nezigodi.
- Ukugwenywa kwesimo esingazinzile sezwe nezindawo zenhlabathi enokushelelisa engazinzile.
- Ukugwenywa kwezindawo ezikhukhuleke ngokweqile kanye namadlelo asetshenziswa ngokweqile anhlabathi yakhona ithikamezekile.
- Kugwenywe izindawo ezithandwa yizinyoni eziningi esetshenziselwa ukuzalela nokunye.

Umthetho udinga ukuthi kubhekwe ezinye izindlela ezikhona Ocwaningweni Lokuzokwenzeka Emvelweni kanti futhi kungumkhuba omuhle wokuphathwa kwezemvelo. Ezinye izindlela ebezingasetshenziselwa ulayini we-Ariadne-Eros Transmission, zona zazihlukaniswe izigaba ezine:

- Izindlela Ezinkulu Ezingasetshenziswa.
- Imizila Engasetshenziswa.
- Ubuchwepheshe obungasetshenziswa.
- Izindlela Ezincane Ezingasetshenziswa.

Indlela ngayinye engasetshenziswa iphenyisisiwe ukuze kwaziwe imiphumela yezemvelo futhi kukhethwe lezo zindlela ezingasetshenziswa nokuzoqhutshekwa nazo uma sekubhekwa isigaba Socwaningo Lokungenzeka Emvelweni.

INCAZELO NGENDAWO YENTUTHUKO

Indawo enkulu yocwaningo iseningizimu neKwaZulu-Natali, isuka ngase Pietermaritzburg (esiteshini i-Ariadne) ibheke eningizimu-mpulanga ngasePort Shepstone (esiteshini i-Oribi) bese ibheka entshonalanga ngaseHarding (esiteshini i-Eros). Iwela phakathi komasipala besifunda ababili, okunguMgungundlovu (DC22) kanye noMasipala wesiFunda Ugu (DC21). Phakathi kwalabo Masipala Besifunda, iningi loMasipala Basekhaya lithintekile yile ntuthuko ehlongozwayo, bona yilaba:

- KuMasipala Wesifunda uMgungundlovu (DC22), kunomasipala basemakhaya ababili abathintekile, okunguMasipala Wasekhaya i-Richmond (KZ227) kanye noMasipala Wasekhaya iMkhambathini (KZ226).
- KuMasipala Wesifunda Ugu (DC21), kukhona omasipala basekhaya abayisithupha abathintekile, okungoMasipala Basekhaya abalandelayo: iVulamehlo (KZ211), uMdoni (KZ212) uMzumbe (KZ213), uMuziwabantu (KZ214), Ezingolweni (KZ215) kanye neHibiscus Coast (KZ216).

Indawo yocwaningo inkulu, ihlala abantu futhi isetshenziswa ngabantu abanhlobonhlobo abasebenzisa umhlaba. Ukulima amasimu ukuze kuthengiswe, amahlathi, imihlaba kawonkewonke enamapulazi okudla kanye namasimu amancane yikhona okuhamba phambili kule ndawo nakubahlali bayo. Amadolobha amancane kanye nezikhungo zokuhwebelana, ezifana ne-Eston kanye neMid-Illovo zitholakala yonke indawo kanti zihlanganiswa imigwaqo emincane efana no R56, R102 kanye neminye engenela emigwaqweni emikhulu, okungu N2, nokungumgwaqo ogudle ugu kanye no N3 (osuka eThekwini uya eGoli). Ezifundeni eziningi zezindawo zasemakhaya kwindawo yocwaningo, imigwaqo eyibhuqu iyona ehlanganisa izindawo ezincane abantu abahlala kuzo.

Indawo yocwaningo ikapakela ngasohlangothini lwangasempumalanga bese idabula imizila eminingi yemifula nokuyona eyenze umumo wokubukeka kwezwe. Imizila emibili yemifula emikhulu, okunguMkomazi kanye noMzimkulu, imizila emibili ephakathi nendawo, okuyi-IlLovo kanye noMlazi, kanye nemizila emincane, okunguMzumbe, uMthwalume, Ifafa kanye neMpambanyoni yonke ichithekela emzileni osuka empumalanga uya eningizimu wohlangothi lwasempumalnga bese ingenela olwandle i-Indian Ocean. Yonke le mifula ihlale igeleza ayishi kanti igcwaliswa imingenelo emincanyana enhlobonhlobo. Ingxubevange yezihlahla ezinhlobonhlobo zisimamiswa zibuye zigcinwe yilezi zindawo ezinamanzi. Iphinde ihlinzeke izindawo zokuhlala kanye nemigudu yokufuduka yezilwane eningi ezinhlobonhlobo. Okubaluleke kakhulu ngakwezomnotho ukuthi le mifula iphinde igcine ezolimo kanye nezimboni ezisendaweni.

Isimo somoya esilingene, ukushisa okukhulu okunemimoya efudumele kanye nezimvula zasehlobo yikhona lesi sifunda esidume ngakho. Ihlobo liyashisa futhi liswakeme kanti ubusika bupholile futhi bomile. Izingxenye ezimaphakathi nendawo kwindawo yocwaningo uma usuya ngako-Ariadne (eMgungundlovu) kanye nase-Eros (eHarding) zibhekana namazinga okushisha aphansi kakhulu ebusika ngenxa yokwenyuka kwamazinga okuphakama ngaphezu kolwandle kanye nebanga elide ukuqhelelana nogu. Isithwathwa kanye nokukhithika kweqhwa elincane okuthuke kwenzeke yizona zinto ezenzekayo kulezi zindawo ezinyangeni zobusika.

Isimo esiphathelene namatshe akule ndawo sihlanganisa amachoba, izimbokodo kanye namatshe abushelelezi athathelwa eNatali, eDywka kanye nasemaQenjini ama-Ecca. Izinto ezigqamileyo zakule ndawo ezifana ne-Oribi Gorge enhle kakhulu zingumphumela walezi zigigaba zokugebhuka komhlabathi. Umhlabathi wakha izindunduma kusukela kulowo onobuhle bokukwazi ukulinywa, ikakhulukazi ezindaweni ezisenhla nendawo yocwaningo, ukuze ukwazi ukuhlukanisa imihlabathi ebalulekile ezingxenyeni ezigudle ugu.

Imithi kanye nezilwane ezisendaweni yocwaningo zondlekile, ngenxa yobudlelwano obuhle obuphakathi kwezinto ezahlukahlukene eziphila kule ndawo, izinhlobo zezindawo zokuhlala kanye nezakhi ezigqamile zakule ndawo. Izindawo ezinotshani, amagquma anezihlahla kanye namahlathi acijile ayatholakala kuyo yonke le ndawo. Izinhlobo eziyisishiyagalolunye zamahlathi ziyatholakala kule ndawo nalapho iMidlands Mistbelt Grassland kanye neKwaZulu-Natal Coastal Belt zinobungozi kakhulu, ikakhulukazi ngenxa yokuphazamiseka kwezindawo zokuhlala. Izilwane ezinhlobonhlobo kanye nezindawo zokuhlala ezinhlobonhlobo zixhasa impilo eyingxubevange yezinyoni. Kunezindawo ezimbili zokongiwa kwemvelo endaweni yocwaningo, neziphethwe ngabeZemvelo KZN Wildlife. Enkulu nedume kunazo zonke isiqiwi i-Oribi Gorge Nature Reserve, esakhiwe eduze kwasePort Shepstone ngaphakathi kukaMasipala iHibiscus Coast. Isiqiwi siyikhaya ezidalweni eziningi ezinhlobonhlobo. Okukhombisa ukubaluleka okukhulu kokongiwa kwemvelo ngaManqe aseKapa azalela emaweni amachoba futhi akuthanda kakhulu ukungqubuzana nezintambo zokuxhumana. I-Oribi Gorge kanye nezindawo eyakhelene nazo sezidume ngokuba nozwelo kakhulu mayelana nemidlalo ethinta izinyoni ezinhlobonhlobo. Isiqiwi iVernon Crookes Nature Reserve, nokuyisiqiwi esincane, sakhiwe eduze noMzinto phakathi kukaMasipala iVulamehlo. Isiqiwi sizungeleze izindawo zotshani ezingudedangendlale (iNgongoni Veld kanye neKZN Coastal Belt), amagquma angamawa, izihluthu ezincane zamahlathi acijile kanye nezindawo zokubuka ulwandle. Siyikhaya lezinto zemvelo ezihlukahlukene.

Endaweni yocwaningo, akwaziwa ukuthi yiluphi ucwaningo lwezizinda eziphethe imilando yasemandulo noma izinhlelo zocwaningo esezike zenziwa kule ndawo. Lokhu kuzokwaziswa ngesikhathi seSigaba Sokuhlolwa Komthelela we-Thimba Locwaningo Lokungenzeka Emvelweni.

IZINGQINAMBA NGEMVELO, IMITHELELA NOCWANINGO LONGOTI

Lo Mbiko Wohlaka Lokuqoqa izimvo wethula uphinde uxoxe kabanzi ngezingqinamba eziyishumi ezibalulekile neseziphendulwe zaba yisimo semibuzo:

- Ngabe yiziphi izinzuzo ngokomnotho nangokwesimo senhlalo-mnotho olayini bogesi abazoba nazo (emakhaya nasesifundeni)?
- Ngabe yimiphi imithelela ulayini kagesi ohlongozwayo ozoba nayo ezindaweni zokuhlala abantu ezivele sezikhona kanye nengqalasizinda ehlanganisa nezinhlaka zokuxhumana?
- Ngabe ulayini kagesi uzoholela ekulahlekeni kokusetshenziwa ngempumelelo umhlaba wokulima (owokudayisa nowokudla) kanye namathuba omnotho ahambisana nalokho?

- Ngabe ushintsho ekubukekeni kwesimo sezwe lizokuba namthelela muni endaweni yokuhlalisana kanye nesimo senhlalo-mnotho?
- Ngabe ukuxhumana kwemizila ehlongozwayo kufanelene yini nemisebenzi esiqalwe ngabahlela idolobha (Amasu Adidiyelwe Entuthuko, Amasu Okuthuthukisa Umkhathi kanye nezinye izinto eseziqaliwe)?
- Ngabe olayini bakagesi bazoba namthelela muni ezidalweni zemvelo (izilwane nezihlahla) kanye nasezindaweni zemvelo ezifanelwe ukuvikelwa nokulondolozwa?
- Ngabe olayini bakagesi bazoba namthelela muni ezilwaneni ezindizayo (izinyoni)?
- Ngabe yimiphi imithelela olayini bakagesi abazoba nayo ezizindeni zamasiko namagugu endabuko?
- Ngabe yiziphi izingqinamba zokusebenza ezizodalwa yindawo yokuphila kwabantu ekuvuleni imizila, ekwakhiweni kanye nasekusebenzeni komzila kagesi?
- Ngabe ulayini kagesi ungakhubaza impilo kanye nokuphepha komphakathi wendawo?

Lezi zinkinga kanye nemithelela esemqoka ezihambisana nayo izophenyisiswa iphindwe ihlolwe ngesikhathi seSigaba Sokuhlolwa Komthelela ngokugunyaza uCwaningo Longoti abayishumi:

- Ukuhlolwa kwezihlahla.
- Ukuhlolwa kwezilwane.
- Ukuhlolwa kwezinyoni.
- Ukuhlolwa kokubaluleka kwezolimo kanye nomnotho ogxile kwezolimo.
- Ukuhlolwa kwezinto ezibonakalayo nezizwakalayo.
- Ukuhlolwa kwesimo Senhlalo kanye neSenhlalo-mnotho.
- Ukuhlolwa kwamasiko namagugu ezomdabu.
- Ukuhlaziywa komnotho.
- Ukuhlaziywa kokuhlela idolobha kanye nesifunda.
- Ukuhlaziywa kobuchwepheshe.
- Ukuhlaziywa komusi odalwa ngugesi .

Imiphumela Yocwaningo Longoti izosetshenziswa yiThimba Locwaningo Lokungenzeka Emvelweni uma sekwenziwa ukuhlola okudidiyelwe kohlelo oluhlongoziwe lolayini bakagesi. Lokhu kuzofakwa kuMbiko Wokungenzeka Emvelweni, nokuhlanganiswe ndawonye neSu Lokuphathwa Kwemvelo, nelizonikezelwa emphakathini ngesikhathi esifanele ukuba uphawule ngawo.

AMAZWI OKUVALA

Ithimba Locwaningo Lokungenzeka Emvelweni likholelwa ukuthi kulandelwe umgudu wezemvelo ofanele ngesikhathi somgudu wokuqoqwa kwezimvo nezinhlelo eziphathelene nokubamba iqhaza komphakathi. Ukuhlaziywa kwezingqinamba ezibalulekile ngesikhathi kuqoqwa izimvo kukhombise ukuthi ayikho imithelela emibi engadala ukuba iprojekthi ingaqhubekeli esigabeni esilandelayo. Noma kunjalo, ziningi izingqinamba ezingaholela ekutholakaleni kwemithelela ebonakala sengathi ingaba khona emvelweni. Le mithelela izoba yingxenye yocwaningo oluqhubekayo ukuze kuhlolwe imithelela nokuthi kutholakale izisombululo ezidingekayo zokwehlisa nokugada leyo mithelela. Lokhu kuzohlolwa njengengxenye yeSigaba Sokuhlolwa Komthelela.

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ABBREVIATIONS AND ACRONYMS

ACER:	ACER (Africa) Environmental Management Consultants
BID:	Background Information Document
DAEA:	Provincial Department of Agriculture and Environmental Affairs
DEAT:	National Department of Environmental Affairs and Tourism
DSR:	Draft Scoping Report
DSM:	Demand-Side Management
EAP:	Environmental Assessment Practitioner
ECO:	Environmental Control Officer
EKZNW:	Ezemvelo KwaZulu-Natal Wildlife
EIA:	Environmental Impact Assessment
EIAR:	Environmental Impact Assessment Report
EMF:	Electro-Magnetic Field
EMP:	Environmental Management Plan
EWT:	Endangered Wildlife Trust
FSR:	Final Scoping Report
IDP:	Integrated Development Plan
I&APs:	Interested and Affected Parties
KZN:	KwaZulu-Natal Province
NEF:	National Electrification Fund
NEMA:	National Environmental Management Act

PROPONENT

Eskom Transmission, a Division of Eskom Holdings Limited, is the project proponent who has commissioned this EIA. Contact details are as follows:

Proponent:	Eskom Holdings Limited (Transmission Division)
Contact person:	Ms M Mafumo Senior Environmental Advisor
Physical address:	Megawatt Park, Maxwell Drive, Sunninghill, Sandton
Postal address:	PO Box 1091, Johannesburg, 2000
Telephone:	(011) 800 2621
Fax:	(011) 800 3917
Email	mamokete.mafumo@eskom.co.za

ENVIRONMENTAL ASSESSMENT PRACTITIONER

Consultant:	ACER (Africa) Environmental Management Consultants
Contact persons:	Mr P Langa and Dr R-D Heinsohn (Pr.Sci.Nat)
Physical address:	Suites 5&6, Golden Penny Centre, 26 Hely Hutchinson Road, Mtunzini
Postal address:	PO Box 503, Mtunzini, 3867
Telephone:	035-3402715
Fax:	035-3402232
Email	percy.langa@acerafrica.co.za

REGULATORY REQUIREMENTS CHECKLISTS

	Contents of a Scoping Report (Chapter 3, Part 3, Section 29)	Covered in Draft Scoping Report
1	Info necessary for proper understanding of nature of issues identified during scoping and must include:	Draft Scoping Report, Chapter 7
a	Details and expertise of the EAP who prepared the report and carried out the scoping process	Draft Scoping Report, Page xx
b	Description of the proposed activity and of any feasible and reasonable alternatives that have been identified.	Draft Scoping Report, Chapters 4 & 5
c	Description of the property on which the activity is to be undertaken and the location of the activity on the property	Draft Scoping Report, Chapter 6
d	Description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity	Draft Scoping Report, Chapter 6 & 7
e	Identification of all legislation and guidelines that have been considered in the preparation of the scoping report	Draft Scoping Report, Chapters 1 & 3
f	Description of all environmental issues and potential impacts, including cumulative impacts that have been identified.	Draft Scoping Report, Chapter 7
g	Information on the methodology that will be adopted in assessing the potential impacts, including any specialist studies or specialised processes that will be undertaken	Draft Scoping Report, Chapter 8
h	Details of the public participation process conducted in terms of regulation 28(a) *(28(a)) = 56 detailed in next spreadsheet)*	Draft Scoping Report, Chapter 3
I	Plan of study for impact assessment which sets out the proposed approach of the EIA, which includes (i) a description of tasks of the IA (including specialist studies) and the manner in which such tasks will be undertaken, (ii) an indication of the stages at which the authority will be consulted, (iii) a description of the method of assessing the issues/alternatives, (iv) particulars of the PPP	Draft Scoping Report, Chapter 8
j	A scoping report must take into account any guidelines applicable to the kind of activity which is the subject of the application	Draft Scoping Report, Undertaken.

Public Participation Process (Chapter 3, Sections 3.3 - 3.4)		Undertaken during Scoping
56.2	The PPP must take into account any guidelines applicable to the PPP and give notice to all I&APs by:	
a	Fixing a notice board at a place conspicuous to the public at the (i) site and (ii) alternative sites	Draft Scoping Report, Appendix 2.
b	Giving written notice to (i) owners and occupiers of land adjacent to the site or alternative sites (ii) owners or occupiers of land within 100 metres of the site or alternative sites (iii) municipal ward councillor of the site or alternative sites (iv) municipality (v) organ of state having jurisdiction	Draft Scoping Report, Appendix 2.
c	Placing an advertisement in (i) one local newspaper or (ii) official gazette that is published for the purpose of providing public notice	Draft Scoping Report, Appendix 2.
d	Placing an advertisement in at least one provincial newspaper or national newspaper (if activity impacts extend beyond boundaries of metro or local municipality)	Draft Scoping Report, Appendix 2.
3	A notice, notice board or advertisement referred to above must:	Draft Scoping Report, Appendix 2.
a	Give details of application which is subject to PPP	Draft Scoping Report, Appendix 2
b	State (i) application has been or is to be submitted to authority in terms of these Regs. (ii) whether basic assessment or scoping being applied (iii) nature and location of activity (iv) where further info can be obtained (v) manner in which and person to whom representations can be made	Draft Scoping Report, Appendix 1.
4	A notice board must be (a) 60 cm by 42 cm (b) display the required info in lettering and format determined by authority	Draft Scoping Report, Appendix 2.
5	If application is for linear or ocean activity, compliance with (2) is inappropriate and must be agreed with authority	The application is for a linear activity.
6	Person conducting PPP must ensure that (a) info is made available to I&APs (b) participation by I&APs is facilitated to provide all with a reasonable opportunity to comment	Draft Scoping Report, Appendix 2.
57.1	EAP must open and maintain register with details of:	
1	Persons who have submitted written comment or attended meetings	Draft Scoping Report, Appendix 2.
b	Persons who have requested names to be added	Draft Scoping Report, Appendix 2.
c	All organs of state which have jurisdiction	Draft Scoping Report, Appendix 2.
2	EAP must give access of register to any persons who requests	Draft Scoping Report, Appendix 2.
58.1	A registered I&AP is entitled to comment in writing in all written submissions made to authority and raise issues, provided that:	
a	Comments submitted within (1) timeframes that have been approved or set by authority (ii) extension of a timeframe agreed to	Undertaken during Scoping.

Public Participation Process (Chapter 3, Sections 3.3 - 3.4)		**Undertaken during Scoping**
b	Copy of comments submitted directly to authority is served to applicant or EAP	Undertaken during Scoping.
c	I&AP discloses direct business, financial, personal or other interest in approval/refusal of application	Undertaken during Scoping.
2	Before EAP submits report, the EAP must give registered I&APs access to and an opportunity to comment in writing	To be undertaken.
3	Reports include (a) BAR (b) BAR amended and resubmitted (c) SR (d) SR amended and resubmitted (e) specialist reports (f) EIRs (g) EMPs	The Draft Scoping Report is applicable.
4	Written comment must accompany the report when submitted to authority	Undertaken during Scoping.
5	A registered I&AP may comment on final reports submitted by reviewer where report contains substantive information not previously made available	n/a
59	EAP must ensure that comments of I&APs are recorded in reports submitted to authority: provided that comments may be attached to the report w/o recording in report itself	Draft Scoping Report, Appendix 3.

1. INTRODUCTION

1.1 Background

Eskom, a South African public utility, is responsible for the generation, transmission and distribution of electricity. Power is primarily generated in a number of coal-fired stations but also from additional sources such as nuclear and wind. From generation facilities, electricity is transmitted to load centres from where it is distributed to users. The Eskom transmission network supplying electricity to the KwaZulu-Natal (KZN) midlands and southern KZN requires strengthening to meet growing demand as well as to improve service quality and reliability.

To address this situation, Eskom Transmission proposes to strengthen its network by constructing new transmission lines over a total distance of 470 km in four continuous sections (Figure 1) from the Majuba Substation (Amersfoort, Mpumalanga) to the Eros Substation (Harding, KwaZulu-Natal). For purposes of project management and environmental authorisation, the continuous transmission network linking the Alpha Substation to the Eros Substation has been divided into four separate sections (listed below), each of which is being separately project managed and are undergoing separate environmental authorisation processes.

- Section 1: Two 765 kV lines from the Alpha Substation near Standerton, Mpumalanga to the Majuba Substation near Amersfoort, Mpumalanga, over a distance of approximately 50 km.
- Section 2: A 765 kV line from the Majuba Substation near Amersfoort to the Venus Substation near Estcourt, KZN, over a distance of approximately 200 km.
- Section 3: A 765 kV line continuing from the vicinity of the Venus Substation to a proposed new Sigma Substation in the Albert Falls/Greytown area of KZN, over a distance of approximately 100 km. From the new Sigma Substation, a 400 kV double circuit transmission line is proposed to connect the Sigma Substation to the Hector Substation close to Cato Ridge. In addition, it is proposed to energise the second 400 kV conductor installed on the Ariadne-Hector 400 kV double circuit line, which currently exists, to complete the link between the Ariadne and Venus Substations.
- **Section 4: A 400 kV/132 kV multi-circuit transmission line from the Ariadne Substation (near Pietermaritzburg) to the vicinity of Oribi Substation (near Port Shepstone) and the continuation of a single circuit 400kV line to the Eros Substation (near Harding), including the expansion and upgrade of the Ariadne and Eros Substations. The proposed line will follow a coastal route over a distance of approximately 178 km.**

This report deals with the environmental impact assessment (EIA) process for Section 4. This Section also includes turn-ins (a turn-in is a short section of transmission line that links the main line with a substation).

For ease of reference, for the remainder of the report, this project will be referred to as the proposed Ariadne-Eros Transmission line (which includes turn-ins and the expansion and upgrading of the Ariadne and Eros Substations).

Figure 1 Map illustrating Eskom's KZN Strengthening Project

1.2 Environmental Authorisation Requirements

Eskom Transmission has appointed ACER (Africa) Environmental Management Consultants (ACER (Africa)) as the independent Environmental Assessment Practitioner (EAP) to manage and undertake the process required to apply for environmental authorisation for the project.

In terms of the Environmental Impact Assessment Regulations, 2006, published in Government Notice R 385, 386 & 387 of 21 April 2006 under Section 24 of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998) (as amended), the proposed Ariadne-Eros Transmission line triggers activities that may significantly affect the environment. Eskom Transmission therefore requires authorisation from the lead authority viz. the National Department of Environmental Affairs and Tourism (DEAT)[1] in collaboration with the provincial department, the KwaZulu-Natal Department of Agriculture and Environmental Affairs (DAEA). DEAT will collate and consider comments submitted by DAEA in reaching a final decision on the application for environmental authorisation.

The activities triggered by the proposed Ariadne-Eros Transmission line, as listed in GN R386 and GN R387, are shown in Table 1.

In line with the requirements of Sections 27-36 of R385, an application for authorisation for the proposed Ariadne-Eros Transmission line project is subject to a full Environmental Impact Assessment (EIA) process, viz. Scoping and EIA.

The Scoping Phase entails the identification of significant environmental issues and potential impacts, including cumulative impacts, as well as feasible and reasonable alternatives. The EIA Phase entails a detailed assessment of the significance of the identified environmental issues and a comparative assessment of alternatives. Potentially significant impacts are assessed and measures to mitigate or enhance impacts are indicated. Both phases will culminate in reports that are submitted to DEAT, viz.

- A Scoping Report (including a Plan of Study for EIA).
- An EIA Report (which includes Specialist Studies and a draft Environmental Management Plan).

This report fulfils the function of the Draft Scoping Report (DSR), the findings of which will be reviewed by the public, prior to submission of the Final Scoping Report to the environmental authorities. DEAT, in collaboration with DAEA, will consider the Final Scoping Report. After consideration, DEAT will inform ACER whether or not the report has been accepted. If accepted, DEAT will advise ACER to proceed to the EIA Phase.

As an initial step in Scoping, an environmental application has been submitted to DEAT (Appendix 1).

1 In cases where an applicant is an organ of state or a parastatal, DEAT is the Lead Authority, considering the application in close consultation with its provincial counterparts.

Table 1 Scheduled activities in terms of which Eskom is seeking environmental authorisation for the proposed Ariadne-Eros Transmission line

Number and date of relevant notice	Activity Number	Activity Description
No. R. 387, 21 April 2006	1(c)	The construction of facilities or infrastructure, including associated structures or infrastructure, for the above-ground storage of dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 1,000 m^3 at any one location or site, including the storage of one or more dangerous goods, in a tank farm.
No. R. 387, 21 April 2006	1(l)	The construction of facilities or infrastructure, including associated structures or infrastructure, for the transmission and distribution of above ground electricity with a capacity of 132 kilovolts or more.
No. R. 387, 21 April 2006	2	Any development activity, including associated structures or infrastructure, where the total area is, or intended to be, 20 hectares or more.
No. R. 386, 21 April 2006	1(m)	The construction of facilities or infrastructure, including associated structures or infrastructure, for any purpose in the one in ten year flood line of a river or stream, or within 32 m from the bank of a river or stream where the flood line is unknown, excluding purposes associated with existing residential use, but including canals, channels, bridges, dams and weirs.
No. R. 386, 21 April 2006	4	The dredging, excavation, infilling, removal or moving of soil, sand or rock exceeding 5 cubic metres from a river, tidal lagoon, tidal river, lake, in-stream dam, floodplain or wetland.
No. R. 386, 21 April 2006	12	The transformation or removal of indigenous vegetation of 3 hectares or more of any size where the transformation or removal would occur within a critically endangered or an endangered ecosystem listed in terms of Section 52 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
No. R. 386, 21 April 2006	14	The construction of masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission.
No. R. 386, 21 April 2006	15	The construction of a road that is wider than 4 meters or that has a reserve wider than 6 meters, excluding roads that fall within the ambit of another listed activity or which are access roads less than 30 meters long.
No. R. 386, 21 April 2006	20	The transformation of an area zoned for use as public open space or for a conservation purpose to another use.

1.3 Environmental Assessment Practitioner

The following is a brief snapshot of the experience and expertises of the EIA Team:

Dr Dieter Heinsohn (Project Director):
Originally trained as a plant physiologist, Dieter has developed an impeccable reputation in environmental management. Of particular note is his experience in social impact assessments, the design and running of public involvement programmes, resettlement planning and implementation, and the management of large and/or complex environmental impact assessment processes. Dieter is also Chief Executive of MBB Services International. In this role he is able to provide a seamless interface between ACER's environmental competencies and the engineering expertise and experience of ACER's sister company, MBB Consulting Engineers.

Mr Percy Langa (Project Manager):
A graduate from the University of the Witwatersrand, holds a BSc (Hons) in Town and Regional Planning. He recently joined ACER as an environmental consultant following years of experience as a state employee within the field of Integrated Environmental Management and Environmental Compliance. In particular, he has valuable experience in the review of environmental impact reports and environmental management plans within South Africa.

Ms Candace Brown (Public Participation Consultant):
Ms Brown holds a BComm (Hons) in Marketing from the University of Zululand. Ms Brown has recently attended an intensive Public Participation training course run by Golda Associates. Ms Brown joined ACER in 2008 and has already proved herself to be capable of managing public participation programs efficiently.

1.4 Draft Scoping Report

This Draft Scoping Report (DSR) is one of several information documents that will be produced during the EIA for the proposed Ariadne-Eros Transmission line. The information that has to be supplied in a Scoping Report complies with the legal requirements of Section 29 of Regulation 385. To meet these requirements, the Scoping Report has been structured in the following manner:

- A broad perspective of the legal environment within which the project will take place (including the legal framework that governs this assessment).
- An outline of the approach to the EIA process including the important elements of the public participation process (as required by the Regulations).
- A detailed description of the proposed project including an understanding of the purpose and need for the proposed project.
- A discussion of the feasible and reasonable alternatives that have been identified.
- A description of the receiving environment.
- A description of environmental issues and potential impacts including a presentation of the overarching scope of specialist studies to be commissioned during the Impact Assessment.
- A plan of study for EIA and a description of the assessment process that will be used.

The Scoping Report also contains appendices that present the following information:

- The application for environmental authorisation that has been submitted to DEAT.
- Public participation documentation.

ACER has compiled this Scoping Report, and also coordinated those sections that contain selected inputs by discipline-specific specialists.

2. LEGAL FRAMEWORK

2.1 Introduction

The key legislation that provides the regulatory framework for environmental management in South Africa is listed below:

- The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996).
- The National Environmental Management Act, 1998 (Act No. 107 of 1998).
- The Environmental Impact Assessment Regulations, 2006.

2.2 The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)

The Constitution is the supreme law of South Africa, against which all other laws are measured. It sets out of a number of fundamental environmental rights, which include:

The Environmental Clause
Section 24 of the Constitution outlines the basic framework for all environmental policy and legislation: It states:

"Everyone has the right –

a) to an environment that is not harmful to their health or well-being; and
b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
  i) prevent pollution and ecological degradation;
  ii) promote conservation; and
  iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".

Access to Information
Section 32 of the Constitution provides that everyone has the right of access to any information held by the State or another juristic person, and that is required for the exercise or protection of any rights.

Fair Administrative Action
Section 33 of the Constitution provides the right to lawful, reasonable and procedurally fair administrative action.

Enforcement of Rights and Administrative Review
Section 38 of the Constitution guarantees the right to approach a court of law and to seek legal relief in the case where any of the rights that are entrenched in the Bill of Rights are infringed or threatened.

2.3 National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended)

NEMA provides the legislative framework for Integrated Environmental Management (IEM) in South Africa. Section 24 provides that all activities that may significantly affect the environment and require authorisation by law, must be assessed prior to approval. Section 2 of NEMA provides a set of principles that apply to the actions of all organs of state that may significantly affect the environment. These principles include the following:

- The sustainability principle.
- The life-cycle, cradle-to-grave principle.
- The 'polluter pays' principle.
- The precautionary principle.
- The duty of care principle.
- Fair and transparent public consultation.

2.4 The Environmental Impact Assessment Regulations of 2006

The EIA Regulations contained in Government Notices R 385, 386 and 387 published in April 2006 terms of Section 24 of the NEMA regulate environmental management in South Africa. Activities that require authorisation from the competent authority prior to their commencement are listed in Government Notices R 386 and 387. The procedures dealing with the EIA Regulations are contained in Government Notice R 385.

Table 1 outlines the activities requiring environmental assessment, for the proposed Ariadne-Eros Transmission line project.

It is important to note that due to the nature of the proposed Ariadne-Eros Transmission line, a linear activity, the EIA Regulations (2006) require ACER only *to notify* the affected landowners about the development proposal. For non-linear activities and where the applicant is not the landowner of the land in question, the applicant is required *to obtain consent* from the landowner in order to undertake the proposed development of that land.

2.5 Other applicable environmental legislation

Table 2 provides a list of other relevant legislation that is applicable to the proposed Ariadne-Eros Transmission line project.

2.6 Legislation and policy applicable to Eskom

Legislation and policy applicable to Eskom are outlined in Table 3.

2.7 Assessment Framework

The concept of sustainability underpinning this assessment considers three inter-related dimensions of the environment, viz. the social, economic and biophysical dimensions (Figure 2). For an option or project to be sustainable, it needs to demonstrate economic growth, social acceptability and soundness, and ecological integrity within a framework of good governance.

All three dimensions of the environment, and the interactions between them, contribute to achieving sustainability and, therefore, each dimension, singly, and as it interacts with the other two dimensions, needs to be taken into account when assessing a proposed option or project, taking due cognisance that the three dimensions are seldom in perfect balance, with optimised solutions often being dictated by local circumstances.

In terms of sustainability and the assessment framework, key principles include:

- Development must not irretrievably degrade the natural, built, social, economic and governance resources on which it is based.

- Current actions should not cause irreversible damage to natural and other resources, as this potentially precludes sustainable options.
- Where there is uncertainty about the impact of activities on the environment, caution should be exercised in favour of the environment.
- Land-use and environmental planning need to be integrated.
- Immediate and long-term actions need to be identified and planned for, so that urgent needs can be met while still progressing towards longer-term sustainable solutions.

In the case of the proposed Ariadne-Eros Transmission line, all three dimensions of environment are the primary drivers. Therefore, within the assessment, particular focus and care will need to be placed on all dimensions.

2.8 Summary

In summary, Eskom has a number of legal obligations in terms of legislation, the pertinent obligations being:

- An obligation to supply electricity to the citizens of South Africa.
- An obligation to undertake an EIA for activities that fall within the scope of Government Notices R 386 and 387 of 2006.
- An obligation to obtain permits in terms of other relevant environmental legislation (for example, heritage, water and biodiversity).
- Adherence to the principles of sustainability.

Table 2 Relevant legislation that is applicable to the proposed Ariadne-Eros Transmission line Project

Name of Act	Applicability	Administrative Authority
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	To provide for the management and conservation of South Africa's biodiversity, to protect species and ecosystems, to ensure sustainable use of indigenous biological resources, to ensure fair and equitable sharing of benefits arising from the commercial use of these resources, and to establish a South African National Biodiversity Institute. The Act also covers alien and invasive species and genetically modified organisms that pose a threat to biodiversity.	Department of Environmental Affairs and Tourism
National Environmental Management: Air Quality Act (Act No 39 of 2004)	To provide for the management of air quality in South Africa.	Department of Environmental Affairs and Tourism
National Environmental Management: Protected Areas Act (Act No 57 of 2003)	To provide for the administration and management of protected areas in South Africa.	Department of Environmental Affairs and Tourism
Environment Conservation Act (Act No 73 of 1989)	Matters relating to conservation, waste management, and the regulation of noise.	Department of Environmental Affairs and Tourism
Mineral and Petroleum Resources Development Act (Act No 28 of 2002)	Controls land use and infrastructure on mining and prospecting areas. Controls environmental matters in areas to which this Act applies, for example, the removal of trees and bushes.	Department of Minerals and Energy
National Water Act (Act No 36 of 1998)	Provides for the protection of water resources, the use of water resources, the treatment and disposal of waste and wastewater. It deals with prevention of pollution of water resources. It also deals with the regulation of the use of water and the requirements for controlled activities, general authorisations and licences. In general, a water use must be licensed unless it is listed in Schedule 1 of the Act, is an existing lawful water use, is permissible under a general authorisation or if a responsible authority waives the need or a license.	Department of Water Affairs and Forestry

Name of Act	Applicability	Administrative Authority
National Forests Act (Act No 84 of 1998)	Control of veld, forest and mountain fires and the protection of biota and ecosystems. Controls the removal/damaging of indigenous forest species.	Department of Water Affairs and Forestry
Conservation of Agricultural Resources Act (Act No 43 of 1983)	The Act provides for control over the utilisation of the natural agricultural resources in the Republic in order to promote the conservation of soil, the water resources, the vegetation and the combating of weeds and invader plants.	Department of Agriculture
National Heritage Resources Act (Act No 25 of 1999)	The Act aims to promote an integrated system for the identification, assessment, and management of the heritage resources of South Africa.	South African Heritage Resources Agency
KwaZulu-Natal Heritage Act, (Act No 10 of 1997)	The Act aims to promote an integrated system for the identification, assessment, and management of the heritage resources of KZN. The Act also established a provincial body, Heritage KwaZulu Natal (Amafa AkwaZulu Natali), as the competent authority for the protection and management of heritage resources in KZN.	Amafa aKwaZulu-Natali
KwaZulu-Natal Nature Conservation Management Act (Act No 9 of 1997)	The Act provides for the management of nature conservation with KZN and protected areas. It also provides for the development and promotion of eco-tourism facilities within protected areas.	Ezemvelo KZN Wildlife (KZN Wildlife)

Figure 2 Illustrates the inter-related dimensions of the environment contributing to the achievement of sustainability

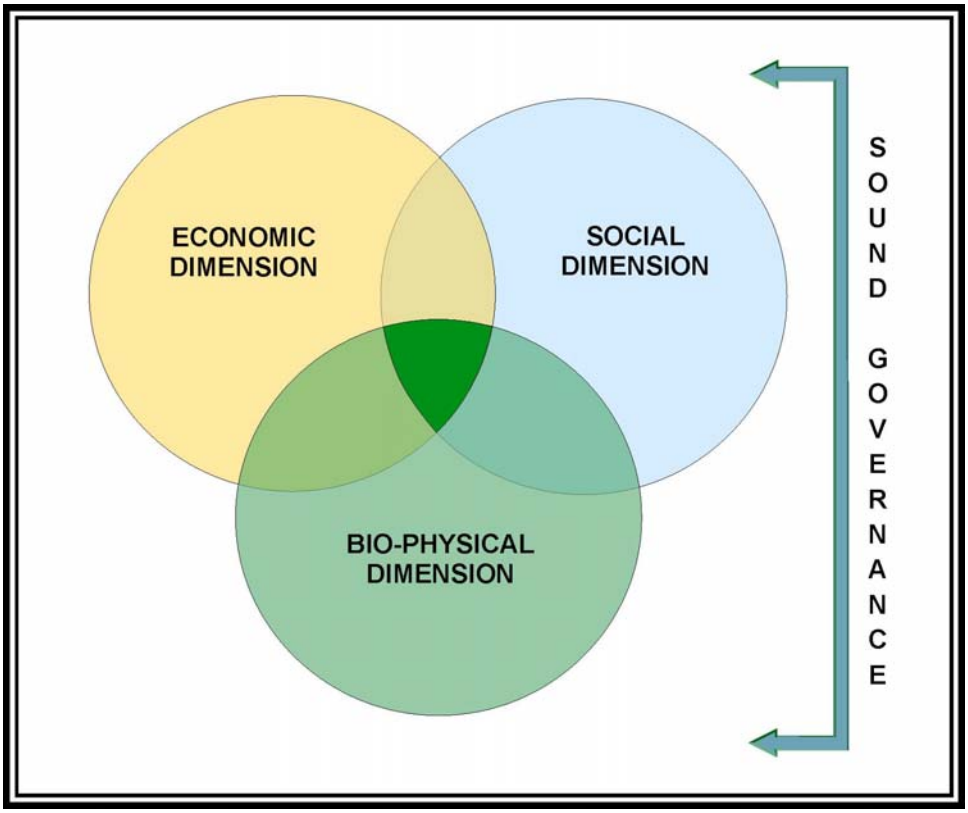


Table 3 Legislation and policy applicable to Eskom

Name of Act	Applicability	Administrative Authority
Eskom Act (Act No 40 of 1987)	The Act sets out the objectives of Eskom, being the provision of a system by which the electricity needs of the consumers may be satisfied in the most cost effective manner, subject to resource constraints and the national interest. The National Energy Regulator of South Africa exercises control over the performance of Eskom's functions and the execution of its powers and duties. Section 12 of the Act sets out the functions, powers, and duties of Eskom.	Department of Minerals and Energy
Eskom Conversion Act (Act No 13 of 2001)	The objective of the Eskom Conversion Act is to convert Eskom into a public company in terms of the Companies Act, and to provide for powers and duties of Eskom.	Department of Minerals and Energy
Electricity Regulation Act (Act No 4 of 2006)	The Act governs the control of the generation and supply of electricity in South Africa, and the existence and functions of the Electricity Control Regulator.	National Energy Regulator of South Africa (NERSA)
White Paper on the Energy Policy of the Republic of South Africa (December 1998)	Policy objectives identified include increasing access to affordable energy services, improving energy governance, stimulating economic development (including the encouragement of cost-effective energy prices which include quantifiable externalities), managing energy-related environmental and health impacts and securing supply through diversity.	Department of Minerals and Energy

3. SCOPING AND PUBLIC PARTICIPATION PROCESS

3.1 Approach

The EIA Team has adopted a robust framework within which environmental aspects arising from or influencing the proposed project will be considered. Key elements of the framework are as follows:

- The concept of sustainability, which considers the inter-related dimensions of the environment, viz. the social, economic and biophysical dimensions, underpinned by a system of sound governance.
- Legal/statutory requirements of South Africa, specifically, NEMA and the associated EIA Regulations (Sections 2.3 and 2.4).

A standard environmental authorisation process is being followed, comprising the following main activities (the activities in *italics* have been completed):

- *Pre-application consultation with the Authorities.*
- *Submission of Application to the Authorities.*
- *Scoping Study and preparation of the Draft Scoping Report (this document).*
- Submission of Scoping Report and Plan of Study for EIA to the Authorities.
- Conducting specialist studies.
- Compilation of an Environmental Impact Assessment Report (EIAR) and Environmental Management Plan (EMP).
- Submission of EIAR and EMP to the Authorities.
- Environmental Authorisation from the Authorities, either authorising or declining the proposed project.

The four main phases of the environmental impact assessment process are shown in Figure 3, which also indicates the current stage of the process.

3.2 Scoping

The EIA is currently in the Scoping Phase. This is the phase during which issues for further investigation are identified so that they can be considered for inclusion in the Specialist Studies that will be done during the next phase of the EIA, viz. the Impact Assessment Phase.

Scoping has been conducted in accordance with the requirements of the EIA Regulations (2006) and applicable guidelines. The following objectives have guided the study:

- To identity all applicable legislation and guidelines.
- Identify and consult with Interested & Affected Parties (I&APs).
- Identify environmental issues and potential impacts, including cumulative impacts.
- Identify significant environmental issues that will require further investigation and which will define the scope of study for specialist studies.

The proposed Ariadne-Eros Transmission line is subject to the Environmental Regulations of the National Environmental Management Act (Act No 107 of 1998). A standard environmental authorisation process is being followed, comprising:

- Pre-application meeting with the Authorities (National and Provincial).
- Submission of Application to the Authorities.
- Scoping Study and preparation of the Draft Scoping Report (this document).
- Submission of Scoping Report and Plan of Study for EIA to the Authorities.
- Conducting specialist studies.
- Compilation of an Environmental Impact Report and Environmental Management Plan.
- Submission of EIR and EMP to the Authorities.
- Environmental Authorisation from the Competent Authority.

3.2.1 Technical scoping

During Scoping, the project and studies to be undertaken must be defined in a way that will result in a thorough and scientifically defensible EIR, to ensure that if the proposed project proceeds, it does so in an environmentally sound manner.

The technical process needs to provide scientifically sound information on issues of concern relating to the proposed development, and must also identify all significant issues that need to be addressed by specialist studies during the Impact Assessment.

Issues of concern have to be identified and assessed with regard to the significance of potential impacts. As such, the technical process comprised the following activities:

3.2.1.1 Information gathering

Information gathering focussed on gaining an understanding of the environmental context and status in order to:

- Identify and assess the significance of environmentally related issues of concern.
- Focus and tailor the scope of work for specialist studies to address each issue of concern identified during Scoping.

The information-gathering phase included input from the project proponent, the technical team, and the public participation programme.

3.2.1.2 Assessment and collation of information

The information obtained was collated and assessed to gain an understanding of the environmental context and status. The collation and assessment of information included the following activities:

- Determining the limits, constraints and provisions applying to information.
- Checking and verifying the integrity and reliability of information.
- Agreeing on terminology and nomenclature.
- Determining shortcomings in information.

3.2.1.3 Evaluation and prioritisation of issues and impacts

The issues and impacts raised during the technical and public participation processes were collated, grouped on the basis of their underlying potential impacts, and evaluated in terms of their significance and need to be further investigated during the Impact Assessment. In conformance with the requirements of NEMA, careful attention was paid to cumulative impacts, and those impacts that may be expressed at a location that is far from where the original activity occurred, or where an impact may only be experienced at some future date.

Once the issues and impacts had been defined and evaluated in terms of the criteria, a process of prioritisation was followed. Prioritisation was based on professional judgment, and also took into account the importance placed on each issue by stakeholders.

The significance of an impact was determined by incorporating various criteria (nature of impact, extent, duration, intensity and probability of occurrence). By addressing issues of uncertainty in the preliminary assessment of impacts, it was anticipated that the major significant impacts would emerge. These significant issues are to be addressed in the Impact Assessment. Impacts that were considered less significant or not significant are to be addressed in commensurately less detail.

An impact is described as “low” where it is considered unlikely to have an influence on the decision, “medium” where it should have an influence on the decision unless it is mitigated, or “high” where it should influence the decision regardless of any possible mitigation.

Issues and potential impacts are described and discussed in Chapter 7. Chapter 8 provides information on how these issues and potential impacts will be investigated during the Impact Assessment. Approximate timings of when different activities will occur are also provided.

3.3 Public participation

The public participation process for the proposed Ariadne-Eros Transmission line has been designed to satisfy the requirements laid down in legislation and the NEMA Regulations.

This section of the report highlights the key elements of the public participation process to date. Sections 56 to 59 of Regulation R385 are applicable. The important elements relating to the public participation process that are required by the Regulations are the following:

- The manner in which potential Interested and Affected Parties (I&APs) were notified of the application for authorisation, and that a public participation process was mandatory. This includes notice boards, giving written notice to land owners, letters, information documents and advertisements in the media (Section 56).
- Opening and maintaining a register, which contains the names and addresses of I&APs. These include all persons who have attended meetings, submitted comments, are organs of State who have some form of jurisdiction in the assessment process, and all those who have requested that they be placed on the register as registered I&APs (Section 57).
- Registered I&APs are entitled to comment, in writing, on all written submissions made to the competent authority by the applicant or the EAP managing the application, and to bring to the attention of the competent authority any issues, which that party believes may be of significance when the application is considered for authorisation (Section 58).
- The comments of registered I&APs must be recorded and included in the reports submitted to the competent authority (Section 59).

The objectives of public participation in an EIA are to provide sufficient and accessible information to I&APs in an objective manner to assist them to:

- During Scoping.
  - Identify issues of concern, and provide suggestions for enhanced benefits and alternatives.
  - Contribute local knowledge and experience.
  - Verify that their issues have been considered.

- During the Impact Assessment.
  - Verify that their issues have been considered either by the EIA Specialist Studies, or elsewhere.
  - Comment on the findings of the EIA, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

The key objective of public participation during Scoping is to assist to define the scope of the technical studies to be undertaken during the Impact Assessment.

3.3.1 Notification of the application

An application for environmental authorisation was submitted to DEAT in July 2008.

3.3.2 Registration of I&APs

The direct mailing list for this EIA consists of 2777 individuals and organisations from both within the project area and beyond its boundaries. Table 4 shows that these I&APs represent a broad spectrum of sectors of society. While consultation has taken place with representatives of different sectors of society, special efforts have been made to obtain the contributions of all people who may be affected directly by the proposed project. These efforts will be on-going for the duration of the entire EIA.

3.3.3 Project announcement

The opportunity to participate in the EIA was announced in February 2009 in two languages (English and isiZulu) as follows:

- Media adverts in local and provincial newspapers.
- Electronic mail and telephone notifications
- Placement of on-site and public notices on 12 June 2009 in the following areas:
  - On-site notices:
    - → Ariadne substation
    - → Eston substation
    - → Oribi substation
    - → Eros substation
  - Public libraries:
    - → Camperdown
    - → Richmond
    - → Scottburgh
    - → uMzinto
    - → Pennington

→ Hibberdene
→ Port Shepstone
→ Harding

In addition, a number of stakeholder meetings (see 3.3.4 below) were held in order to inform stakeholders about the project.

3.3.4 Obtaining and dealing with comments from I&APs

The following opportunities were provided during Scoping for I&APs to contribute comments:

- Completing and returning Registration and Comment Sheets.
- Providing comment telephonically or by email.
- Meeting with Eskom Internal Stakeholders (Distribution and Transmission) on 16 February 2009.
- Three Key Stakeholder Meetings were held as follows:
  - Eston (24 March 2009).
  - Port Shepstone (24 March 2009).
  - Harding (25 March 2009).
- Focus group meetings with Farmers' Associations (refer to Appendix 2: Attendance Registers for a complete list).
- Traditional Authority Meetings in Ugu (16 April 2009), uMgungundlovu (30 April 2009) and eThekwini (26 March 2009) District Municipalities.
- One-on-one meeting with affected traditional authorities within the above-said District Municipalities during the months of May and June 2009 (refer to Appendix 2: Attendance Registers for a complete list).

During these meetings, I&APs raised both environmental, technical and public participation issues. Those relevant to the project configuration have been carried forward into the EIA.

Detailed public participation documentation is attached to Appendix 2.

Table 4 Sectors of society represented by I&APs on the direct mailing list

Government (National, Provincial and Local)
Traditional Authorities
Representative Associations: ▪ Farmers Association ▪ Conservation Organisations ▪ Tourism Organisations
Non-governmental Organisations
Landowners and local residents
Conservation Authorities
Commercial Forestry
Business and Industry
Media

3.3.5 Stakeholder Meetings

A considerable effort was made in contacting landowners directly affected (as individuals and through their representative structures such as Farmers Associations) and those surrounding the proposed Ariadne-Eros Transmission line. Landowners who attended meetings assisted the EIA Team with the identification of potentially affected landowners and, where possible, also provided relevant contact details. This process will continue throughout the EIA.

Details of these meetings are provided in 3.3.4 above.

3.3.6 Issues and Response Report

Issues raised have been captured in an Issues and Response Report, which is appended to this DSR (Appendix 3). This report will be updated to include any additional contributions from I&APs that may be received as the EIA process proceeds, and as the findings of the EIA become available.

3.3.7 Draft Scoping Report

The purpose of the DSR is to enable I&APs to verify that their contributions have been captured, understood and correctly interpreted. At the end of Scoping, the issues identified by the I&APs and the EIA Team, will be used to define the terms of reference for the specialist studies that will be conducted during the Impact Assessment Phase of the EIA. A period of 51 calendar days is available for public review of the DSR (the extended period is to allow for the winter school break).

3.3.8 Public participation after completion of the Draft Scoping Report

Upon completion of the DSR, all registered I&APs will be advised of the availability of the document and will be provided with an opportunity to review and comment on this report. The following are proposed tasks/actions associated with the public review process of the DSR:

- The DSR, with comment sheets, will be made available in the public domain for review and comment before it is finalised and submitted to the DEAT and DAEA.
- A letter (in English and isiZulu) will be sent to all registered I&APs informing them of the availability of the report and comment period.
- The DSR will be posted on Eskom's website (www.eskom.co.za/eia).
- The findings of the DSR will also be presented to I&APs at public meetings. The details of these meetings are provided in Table 5. I&APs will be notified timeously about these meetings.
- Where required, assistance will be provided to I&APs in order to facilitate understanding of the DSR.
- Comments on the DSR will be included in the Issues and Response Report submitted to the Environmental Authorities with the Final Scoping Report (FSR).
- Compilation of the FSR and submission to the Environmental Authorities.
- Sending out progress feedback letters to stakeholders.

Table 5 List of public places in the project area where the Draft Scoping Report will be placed for public review

uMgungundlovu District Municipality:			
Area	**Venue**	**Street address**	**Telephone number**
Pietermaritzburg	uMgungundlovu District Municipality	242 Langalibalele Street (previously Longmarket), Pietermaritzburg	(033) 897 6709
Pietermaritzburg	Msunduzi Local Municipality	City Hall, cnr Church and Chief Albert Luthuli Street (formerly Commercial Street), Pietermaritzburg	(033) 392 2011
Pietermaritzburg	Pietermaritzburg Public Library	260 Church Street	(033) 392 2634
Camperdown	Mkhambathini Local Municipality	18 Old Main Road, Camperdown	(031) 785 9300 (031) 785 9313
Camperdown	Camperdown Public Library	18 Old Main Road, Camperdown	(031) 785 1742
Richmond	Richmond Local Municipality	57 Shepstone Street, Richmond	(033) 212 2155
Richmond	Richmond Public Library	57 Shepstone Street, Richmond	(033) 212 2155
Ugu District Municipality: Vulamehlo Local Municipality			
Area	**Venue**	**Street address**	**Telephone number**
Port Shepstone	Ugu District Municipality	28 Connor Street, Port Shepstone	(039) 688 5700
Port Shepstone	Hibiscus Coast Local Municipality	10 Connor Street, Port Shepstone	(039) 688 2000
Port Shepstone	Port Shepstone Public Library	10 Connor Street, Port Shepstone	(039) 688 2000
Scottburgh	uMdoni Local Municipality	Williamson Street, Scottburgh	(039) 976 1202
Dududu	Vulamehlo Local Municipality	Main Road, Dududu (opposite Dududu Police Station)	(039) 974 0450 (039) 974 0452
uMzinto	uMzinto Public Library	Main Road, uMzinto	(039) 974 1121
Hibberdene	uMzumbe Local Municipality	Sipho Funa Road, Hibberdene	(039) 972 0005
Ezingolweni	Ezingolweni Local Municipality	Main Harding Road (opposite Taxi Rank), Ezinqoleni	(039) 534 1582 (039) 534 1584
Harding	uMuziwabantu Local Municipality	Murchison Street, Harding	(039) 433 1205
Harding	Harding Public Library	Murchison Street, Harding	(039) 433 1205
eThekwini District Municipality: Vulamehlo Local Municipality			
Area	**Venue**	**Street address**	**Telephone number**
Durban	eThekwini District Municipality	City Hall, West Street, Durban	(031) 311 2110

3.3.9 Final Scoping Report

The FSR will include any additional issues raised by I&APs and will also contain any new information that may have been generated as a result of the DSR public review process. It will be submitted to the Authorities, with a request that the EIA can proceed to the next phase, viz. the Impact Assessment.

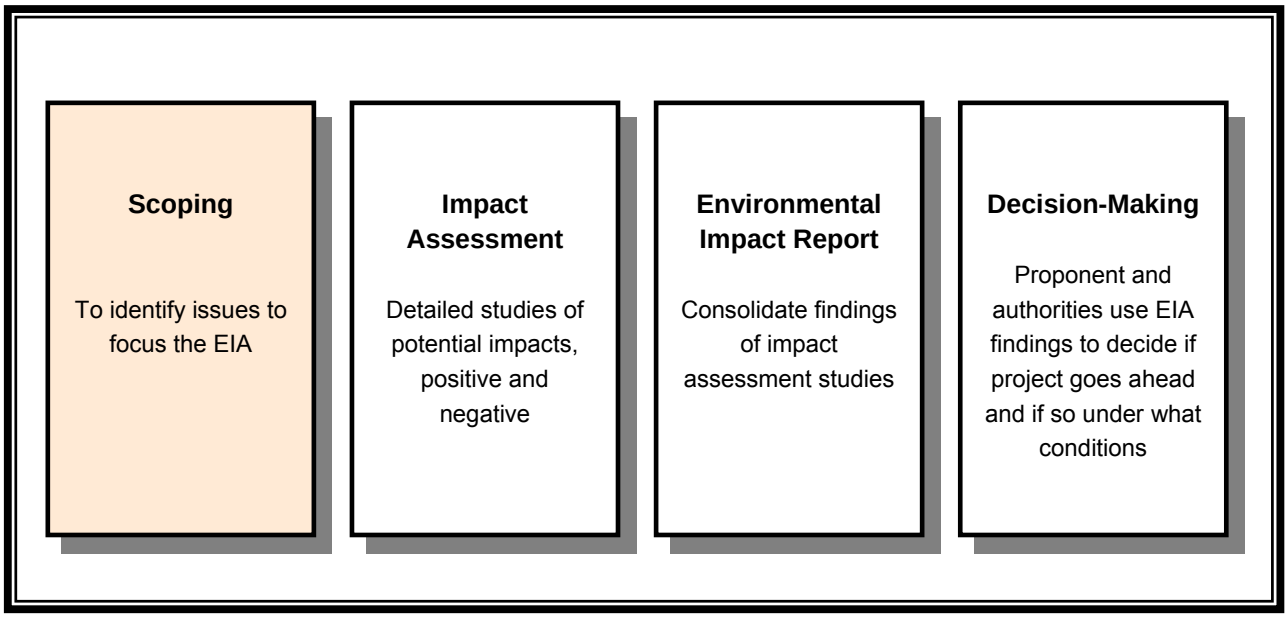
Once DEAT has approved the FSR, the Impact Assessment Phase of the EIA will commence. This will comprise various specialist studies to assess the potential positive and negative impacts of the proposed project, and to recommend appropriate measures to enhance positive impacts and avoid or reduce negative ones. I&APs will be kept informed of progress with these studies.

3.4 Public participation during the Impact Assessment

Public participation during the Impact Assessment Phase will mainly involve a review of the findings of the EIA, presented in the Draft Environmental Impact Report and the various specialist study reports.

I&APs will be advised in good time of the availability of these reports, how to obtain them, and the dates and venues for public and other meetings where the contents of the reports will be presented for comment.

Figure 3 The four main phases of an environmental impact assessment



4. DESCRIPTION OF THE PROPOSED PROJECT

4.1 Purpose and need

Eskom's transmission network supplying electricity to the KZN midlands and southern KZN requires strengthening to meet growing demand and to improve service quality and reliability. The proposed Ariadne-Eros Transmission line project forms part of Eskom's KZN Strengthening project and will service the southern part of KZN and parts of the Eastern Cape.

Currently, there is only one 400 kV transmission line between the Ariadne and Eros substations feeding the area south of Pietermaritzburg to Harding. It is Eskom's Transmission licence requirement that the Transmission network must be able to withstand a loss of a power line without affecting the customers. The current situation is that unplanned loss of the existing Ariadne – Eros 400kV line during peak demand will result in low voltages in the networks being supplied from Eros Substation. To improve reliability and avoid shedding of load, Eskom proposes to construct a second 400 kV transmission line running from south of Pietermaritzburg (Ariadne Substation) to the vicinity of Port Shepstone (Oribi Substation) and on to Harding (Eros Substation). This will create the second 400kV circuit linking the Ariadne and Eros substations.

In addition, Eskom proposes to run a new 132 kV distribution line in the same servitude and on the same 400kV tower. The 132kV line will run between Pietermaritzburg (Ariadne Substation) and Port Shepstone (Oribi Substation), en route linking into the existing 132 kV Eskom Distribution substations. These lines will be used by Eskom Distribution to supply electricity to communities (in particular, rural communities) along the south coast and its hinterland who presently do not have electricity.

Eskom also needs to expand both the Ariadne and Eros Substations to accommodate the additional 400 kV transmission line. This expansion is expected to occur within the existing substation terrace and will entail the establishment of 400kV of feeder bays at both Substations. No extension will be required at both Substations.

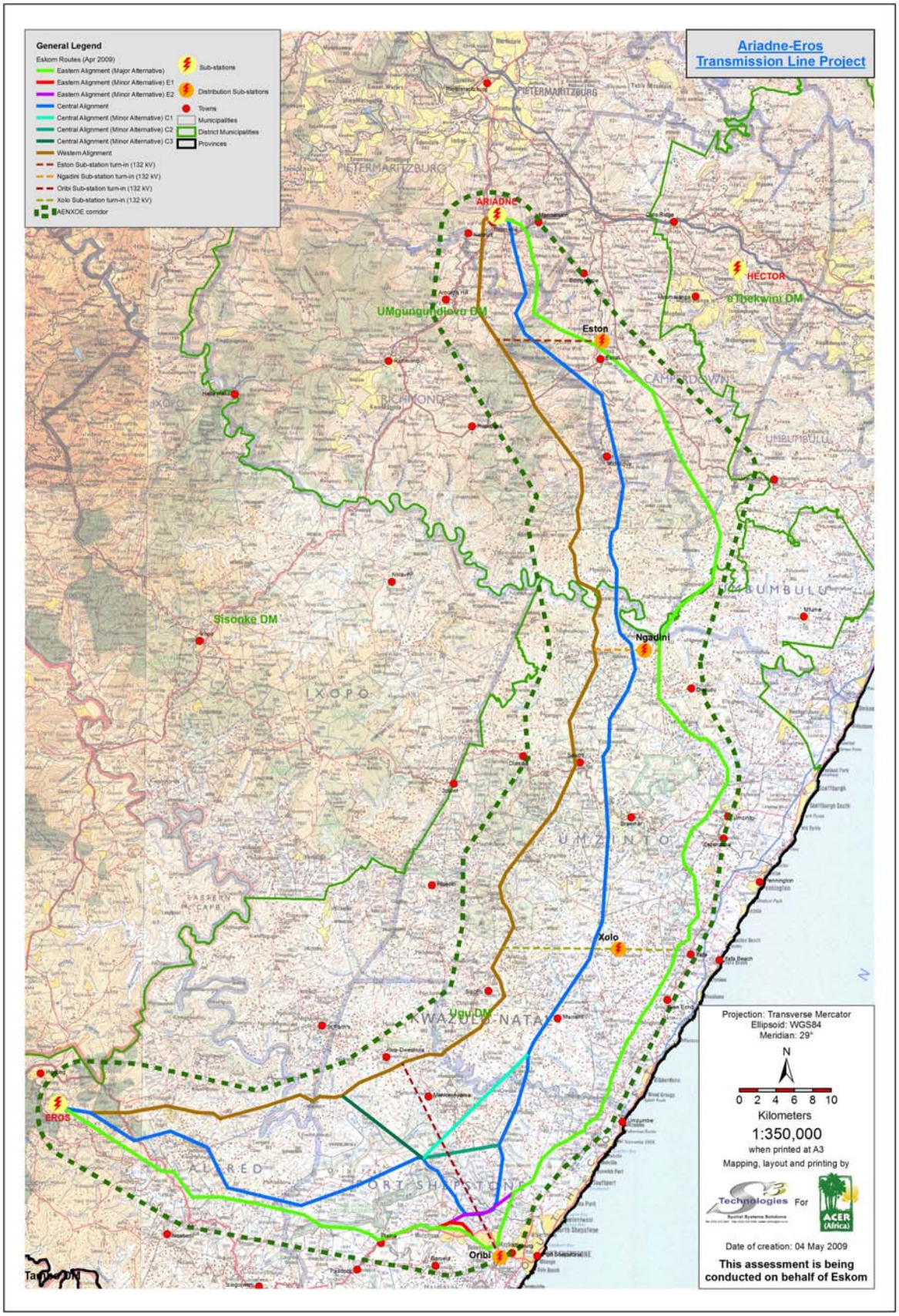
4.2 Project location and main components

The proposed Ariadne-Eros Transmission line is located in the southern part of KZN (Figures 1 & 4). It affects two district municipalities, viz. the Ugu and the uMgungundlovu District Municipalities. The study area covers the area between the Ariadne Substation (Pietermaritzburg), the Oribi Substation (Port Shepstone) and the Eros Substation (Harding). The approximate length of the proposed transmission line is 178 km.

The Ariadne-Eros Transmission line project comprises the following main components:

- Construction of 1 x 400/132 kV multi-circuit transmission line between Eros and Ariadne substations.
- Expansion and upgrading of the Ariadne Substation, that is construction of 400kV Feeder bay on existing terrace.
- Expansion and upgrading of the Eros Substation, that is construction of 400kV Feeder bay on existing terrace.

Figure 4 Map illustrating the proposed Ariadne-Eros Transmission line Project and the three alternative alignments



- Turn-ins at four Eskom Distribution substations located along the route.
  - Eston Distribution Substation (Eston).
  - Ngadini Distribution Substation (near Dududu).
  - Xolo Distribution Substation (near Ifafa).
  - Oribi Distribution Substation (Port Shepstone).
- Construction and maintenance of access roads in areas where there is currently no access roads, and a centre line track within the servitude.

The lengths and positions of the turn-ins are unknown at present, as these will be determined by the preferred alternative route identified for the transmission line.

A number of technically and environmentally feasible options (including three alternative transmission line routes) will be assessed as part of this study (Chapter 5), with input from the relevant authorities, Eskom Transmission, affected landowners, the public, and the EIA Team. Once a preferred alternative has been identified, assessed, and has received environmental authorisation, Eskom Transmission will negotiate servitude rights with the relevant landowners, and agree on compensation terms.

4.3 Ariadne-Eros 400kV/132 kV Multi-Circuit Transmission line

4.3.1 Typical process for construction and operation of Transmission lines

A typical process followed by Eskom Transmission in the construction and operation of transmission lines is outlined below.

With respect to construction:

- Aerial survey of the route.
- Determine technically feasible alternative transmission line routes or corridors.
- Investigate the environmental feasibility of alternatives and recommend a preferred route or corridor.
- Authority authorisation with regard to the preferred route or corridor.
- Negotiation of final route alignment within corridor with landowners.
- Selection of best-suited structures and foundations.
- Final design of line and placement of towers.
- Establishment of construction camps and construction of access roads.
- Vegetation clearance and gate erection.
- Centre line track establishment.
- Construction of foundations.
- Assembly and erection of towers.
- Stringing of conductors.
- Rehabilitation of working areas and protection of areas susceptible to erosion.
- Testing and commissioning of the power line.

With respect to operation:

- Ongoing maintenance (including aerial inspections, vehicle patrol, live-line maintenance by helicopters, periodic clearing and pruning of vegetation, and periodic clearing of the centre line track).

4.3.2 Specifications for servitudes and towers

The proposed 400 kV transmission power line will require servitude of 55 m in width, i.e. 27.5 m both sides of the centre line. For forestry, the required servitude is 76 in width, i.e. 38 m both sides of the centre line, due to fire risk and tree felling. No permanent residence is allowed within the servitude. The servitude is required for the safe operation of the power line and reliability of electricity supply to consumers.

Steel towers will be constructed at intervals along the transmission line, at a spacing of approximately 300-500 m. Each tower is approximately 30 - 35 m high (Figure 5) and it is anticipated that the majority of these will be Guyed V towers (Figures 6(a) and 6(b)). Strain towers (Figures 7(a) and 7(b)) will be used for bends greater than 3º and/or in difficult terrain. Cross-roped suspension towers (Figure 8) could also be used for this transmission line. Final towers to be used will be determined after survey and profiling of the line.

For safety reasons, the transmission line requires minimum clearance distances. These are summarised as follows:

- The minimum vertical clearance distance between the ground and power line conductors is 8.1 m (Figure 9).
- The maximum crop height within the servitude is 4.3 m (Figure 9).
- The minimum vertical clearance to any fixed structure that does not form part of the power line is 5.6 m.
- The minimum distance of a 400 kV power line from a proclaimed public road is 95 m from the centreline of the road.
- The minimum safe distance required from the centre of the power line to the edge of a domestic house is 40 m (27.5 m of servitude plus an additional 12.5 m).

Most farming activities, except for sugar cane and commercial forestry, can be practiced under the conductors, provided that there is adherence to safe working clearances, crop height restrictions and building restrictions. Sugar cane contains a high-fuel content (sugar) and therefore poses a higher fire risk.

4.3.3 Servitude negotiations and registration

Before construction commences on a transmission line, Eskom Transmission needs to secure servitude rights by negotiating with affected landowners.

The proposed Ariadne-Eros Transmission line will require the registration of a 55 m wide servitude across all land traversed by the proposed power line. A servitude does not mean that the holder of the servitude, viz. Eskom, is the owner of the land, but merely that Eskom has the right of way to convey electricity across the land, subject to conditions agreed between Eskom Transmission and affected landowners.

Figure 5 A typical multi-circuit tower

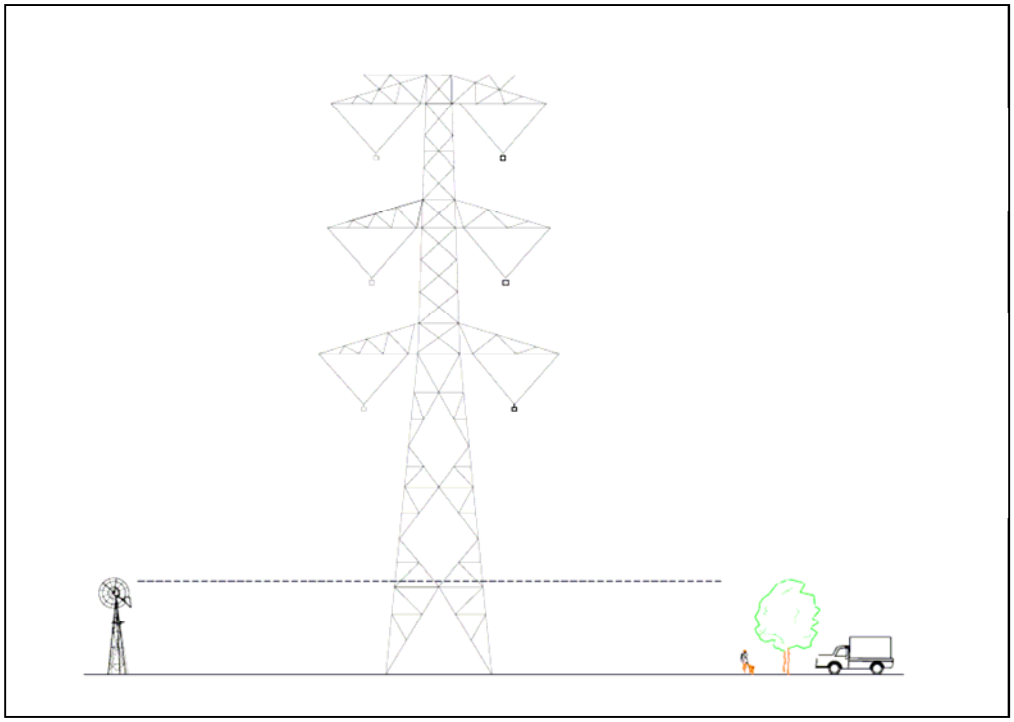


Figure 6(a) Guyed V tower

Figure 6(b) Guyed V tower

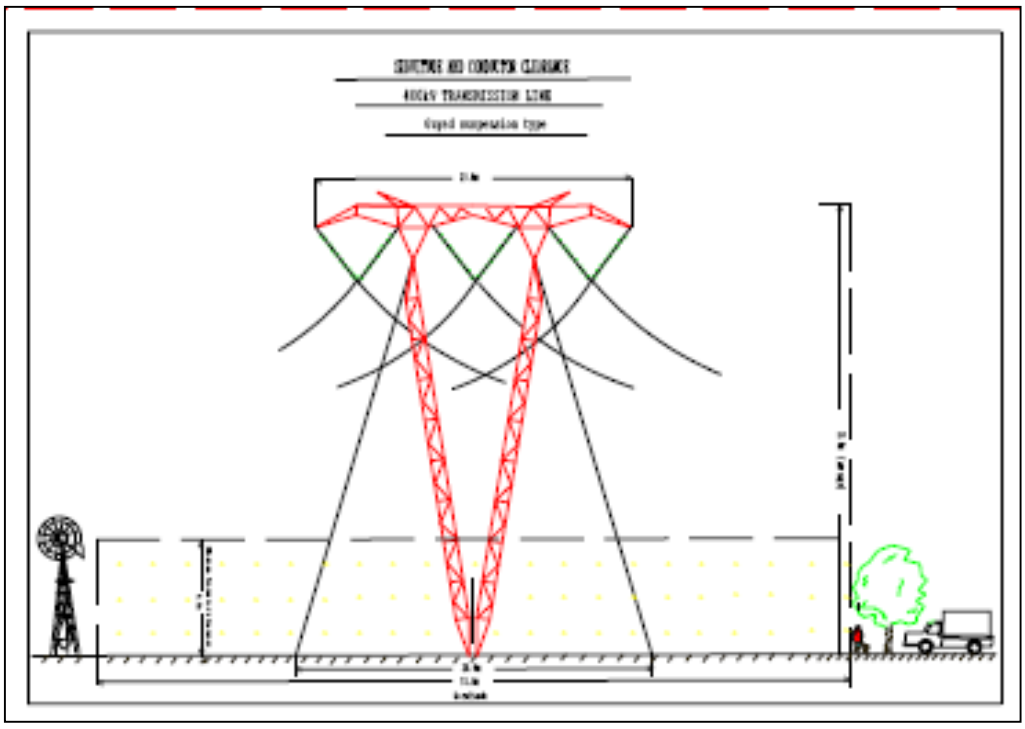


Figure 7(a) Strain tower

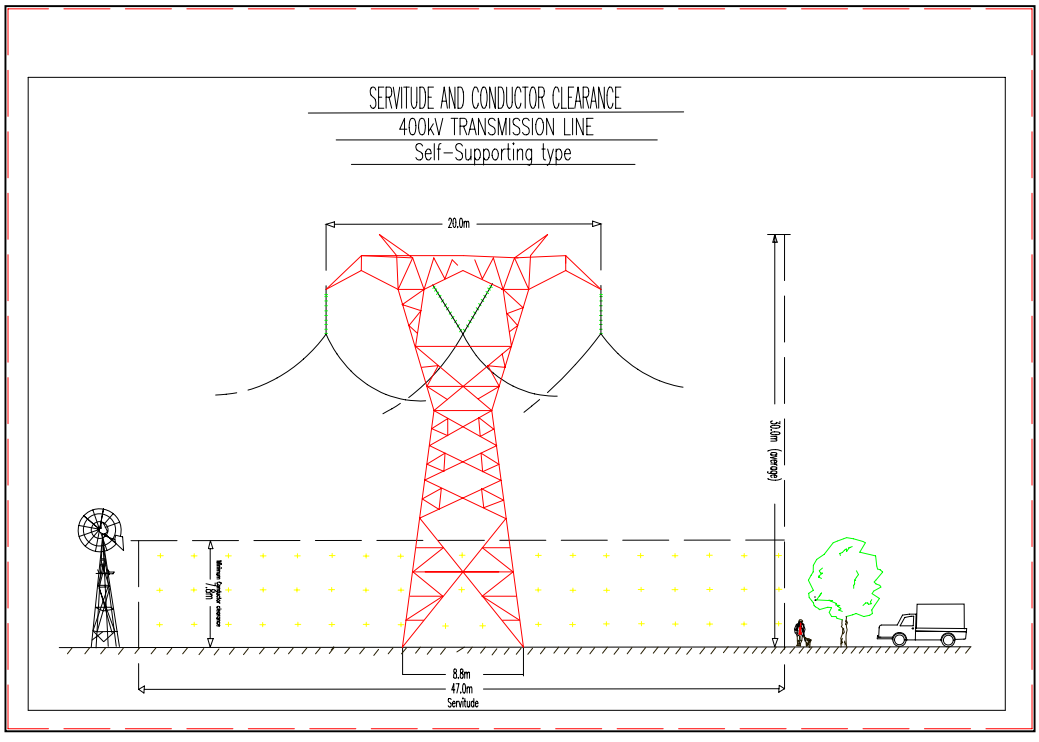


Figure 7(b) Strain tower

Figure 8 Cross-roped suspension tower

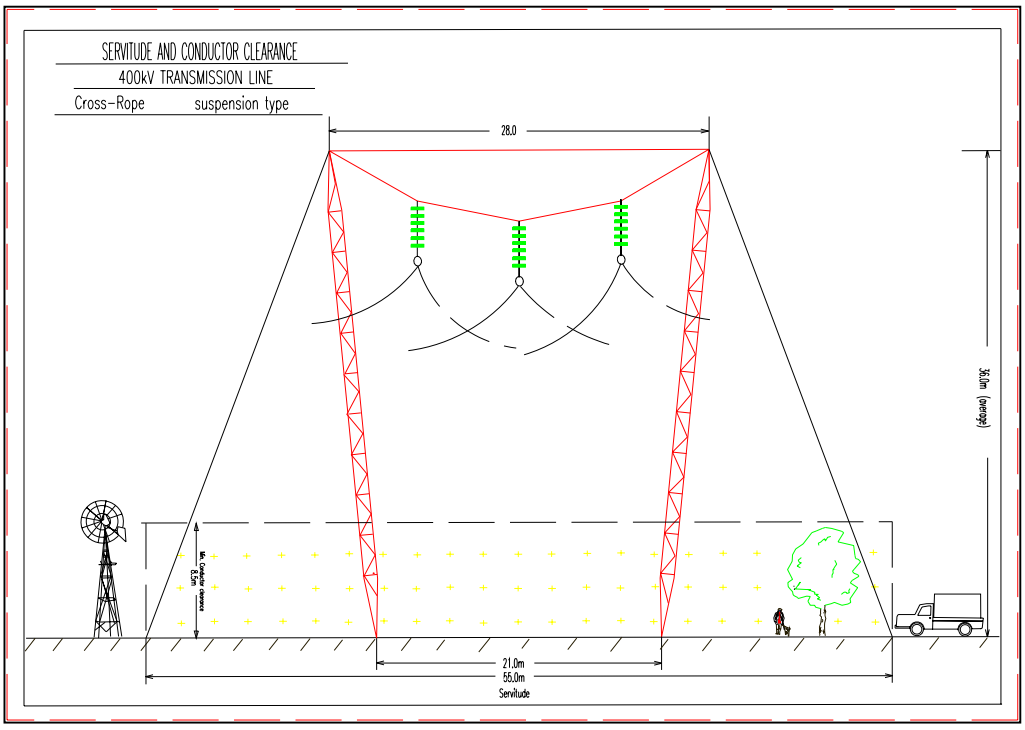
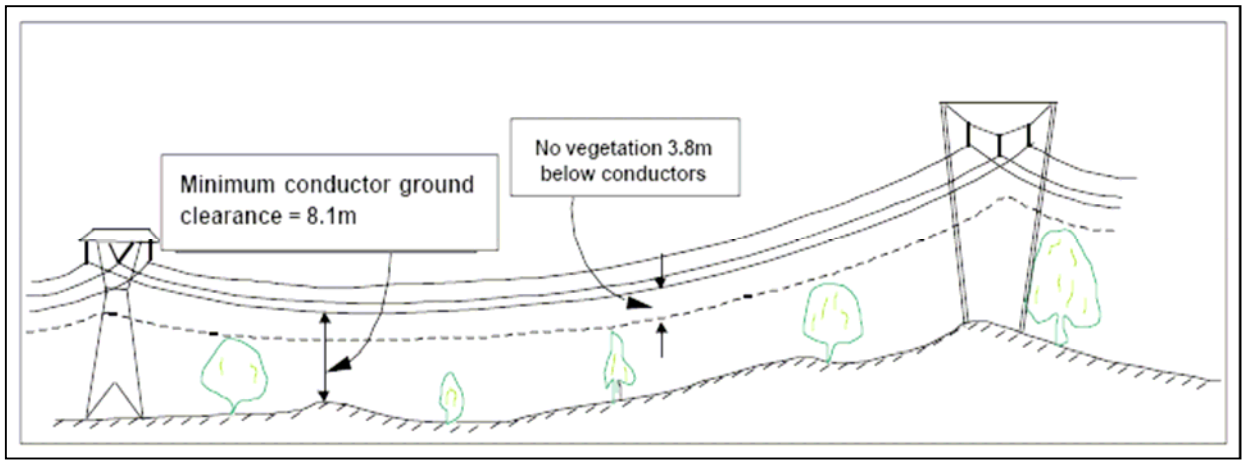


Figure 9 Tower illustration indicating minimum conductor ground clearance and vegetation height specifications



A servitude provides Eskom certain defined rights for the use of the specific area of land. These include:

- Access to erect a transmission line along a specific agreed route.
- Reasonable access to operate and maintain the line inside the servitude area.
- The removal of trees and vegetation that will interfere with the operation of the line.

The registration of servitudes can be a lengthy process, as it requires contractual negotiations with each affected landowner. Once this is complete, an application for registration of the servitude is lodged with the Provincial Deeds Office against the property deed.

The actual location of the towers on which the conductors will be strung is determined by a number of different factors, including:

- The outcome of Eskom negotiations with landowners.
- Environmental features and technical requirements.

As a result of these factors, it is challenging to predict the exact position of the towers within the EIA process, and final positions are often identified at the stage when the final Environmental Management Plan is compiled, with site-specific input from specialists.

4.3.4 Construction activities

The construction of the transmission line will require 14 months to complete. There are five main teams responsible for the excavation of foundations, concrete works, erection of steel structures, stringing of transmission cables and rehabilitation. All activities, including vehicular access and the pylon anchors, are required to take place within the negotiated servitude.

Construction activities will not be continuous for long but intermittent periods of time. Therefore, it is anticipated that any impacts associated with construction workers are likely to be of medium intensity as a result of the low numbers of people employed intermittently over a large area.

Specifications necessary for the construction camps will be contained within the EMP, with specialist input where required.

A summary of the different construction phases is outlined below.

ACCESS NEGOTIATIONS

Negotiations between the landowner, contractor and Eskom Transmission are undertaken in order to determine access routes. Access roads are established through recurring use of the route(s), and are only constructed or upgraded under special circumstances.

ESTABLISHMENT OF CONSTRUCTION CAMPS

The establishment of construction camps will be done in accordance to the stipulations of the final Environmental Management Plan and negotiations with the affected landowners.

TOWER PEGGING

Eskom appoints a surveyor to undertake this process. Once central line pegging has taken place, the surveyor sets out the footprint of the transmission line and towers. This is done in two phases:

- The centre points of the proposed route and towers are marked.
- The position of the tower pegs is marked.

The surveying team then makes the first basic track[2] to the proposed site, and pegs the position of the tower. However, if there are difficulties with the site, for example, gully erosion, then the problem is recorded and the site is moved[3]. Once the site has been pegged, the team moves to the position of the next tower, and the process begins again. The surveyed line and tower positions are passed onto the relevant specialists (for example, cultural heritage and flora specialists) who undertake their inspections before there is any construction. If there is a problem with a route or tower site, the surveyor is recalled to find a suitable alternative.

GATE INSTALLATION

Gates are installed where it is necessary to breach existing fence lines.

EXCAVATION OF FOUNDATIONS

Foundation holes (each 1.5 m x 1.5 m) for a tower are excavated (Figure 10) and the minimum working area required for a tower varies depending of the tower type (20 m x 20 m for a Strain tower and 30 m x 30 m for a Guyed V tower). The foundations are filled with concrete (Figure 11). During construction, fences will be temporarily erected around holes and working areas as a safety precaution. The anchor holes are covered with a safety plate.

FOUNDATION OF STEELWORK

The foundation structures are positioned into the excavated holes, and are tied together for support.

CONCRETE FILLING/FOUNDATION POURING

A “ready-mix” truck, which contains 6 m^3 of concrete, moves onto site and concrete is poured into the foundation holes. If there are difficulties in gaining access for the truck, concrete is mixed on site by hand or using mobile “mini mixers”.

DELIVERY OF STEEL TO TOWER SITE

The steelwork is usually delivered to the site approximately one month after the foundation has been poured. Where possible, the steel is transported to the site by truck. If access is difficult by truck, then a helicopter is used. Access roads are clearly marked to facilitate movement to and from each tower position.

2 Repeated vehicular movement on the same tracks create the access roads along the servitude.
3 Within the negotiated servitude.

Figure 10 Transmission line tower foundation

Figure 11 Pouring of concrete into the tower foundations

ASSEMBLY TEAM, PUNCH AND PAINT

A team of approximately 50 people assembles the galvanized steel tower. The tower is assembled whilst it is lying on the ground (Figure 12). Every nut is screwed into the framework and painted with a non-corrosive paint ("punch and paint").

ERECTION OF TOWERS

A new team, with a maximum of two 70-ton cranes, lifts the towers into place (Figure 13). If different tower structures[4] are erected along the route, the number of cranes required per site may vary. If the cranes cannot access a site, a helicopter is used to lift the tower into position.

STRINGING, SAG AND TENSION

Large equipment is utilised during this activity. Two cable drums, with a winch in-between, are placed approximately 5 km apart. A pilot tractor lays the cable, which is then pulled up to the pylons with the use of pulleys. Once the tension has been exacted, the conductor cables are strung, never touching the ground.

In mountainous areas, the pilot cables are flown in by helicopter or shot across valleys, to create the correct tension to pull through the conductor. A small team of people, with survey equipment, conducts the sag and tension process. Tension is then created, the conductors clamped into place at the tower, and the excess cable is cut off.

REHABILITATION

This is a continuous process, conducted throughout the construction phase. Temporary access roads are ploughed over, contoured and replanted with endemic grasses.

4.3.5 Permanent proposed infrastructure

The proposed Ariadne-Eros Transmission line will require the following permanent infrastructure:

- 1 x 400kV/132 kV Multi-Circuit Transmission line with the required towers. The proposed tower types include Guyed – V and multi circuit tower towers and strain towers. Due to the expanse and visual intrusiveness of the latter, transmission lines are planned with as few bends as possible. The actual number of towers is difficult to determine at this stage, as this will vary according to the final route alignment and the topography that needs to be traversed.
- The expansion and upgrade of Ariadne and Eros Substations.
- Turn-ins at both substations.
- Turn-ins at four Eskom Distribution substations that are located along the transmission line route.

4 Guyed V and strain towers.

Figure 12 Illustrations showing the construction of the tower on the ground and the tower erection process

Figure 13 Illustration of a crane lifting the tower into place

Where the transmission line crosses a fence between neighbouring landowners and there is no suitable access gate in place, Eskom will erect a suitable gate in consultation with the landowners. These gates are necessary to ensure access to the land for maintenance and repair purposes. The installation and use of access gates is regulated through Eskom's Gates Guideline.

Existing road infrastructure will be utilised as far as possible, to provide access for construction vehicles during the construction process, and for inspection and maintenance during operation. It is also likely that new access roads will need to be established.

4.3.6 Temporary proposed infrastructure

Temporary infrastructure is mainly associated with contractor's camps and includes accommodation, sanitary and storage facilities, will be erected on separate sites identified and rented by contractors during construction and also during major repair work to the towers.

4.3.7 Design limitations and physical parameters required for the transmission line

Although some aspects of the transmission line alignment can be negotiated or altered due to the presence of environmental limitations, there are some parameters that are obligatory: These include:

- The servitude of 55 m for a 400 kV transmission line, i.e. 27.5 m both sides of the centre line.
- For forestry, the required servitude is 76 m due to fire risk and the felling of trees, i.e. 38 m both sides of the centre line.
- Sugar cane-free and forestry-free servitude.
- Legislation prevents the construction of new transmission lines through Protected Areas (except where existing servitudes are used).
- A 400 kV transmission line may not be closer than 95 m from the centre line of a proclaimed public road, unless agreed to by the roads department.
- Guyed V towers cannot bear the strain of a bend of more than 3 degrees. Where the line needs to accommodate such a bend, a strain tower is required.
- The spacing between pylons is approximately 300 - 500 m. The minimum clearance between the mid-span point of the line and the ground is 8.1 m.
- It is not economically viable to place a transmission line of this voltage underground, as the cost is estimated at 10 times more expensive, and the environmental damage is extremely high as a significantly wider servitude is required for oil-cooled conductors. Added to this, no land-use is permitted within this servitude. There are currently no underground transmission lines of this capacity in South Africa.
- The minimum safe distance required from the centre of the line to the edge of a domestic house is 40 m (27.5 m of servitude plus an additional 12.5 m).

4.3.8 Construction and maintenance of roads

Although the proposed transmission line would follow existing lines and servitudes where possible, there is the eventuality that new access roads may need to be constructed. These will be type 6 gravel roads that comprises the following:

- Widening to a final gravel carriageway width of 6 m on raised earthworks.
- Drainage is to be provided in the form of meadow drains (on flat terrain) and "v" drains (on steeper terrain). Some new culverts may be required.
- Fencing will be erected where required.
- The total width of carriageway and drainage ranges between about 14 m (flat terrain) and 16 m (rolling terrain).
- Gravel will be obtained from the nearest legal quarry or borrow pit of suitable material.

Particular attention will be paid to storm water management, with erosion protection measures being put in place where indicated by the terrain (geology, soils, and topography) and climate (in particular, rainfall and high rainfall events in short periods of time). Furthermore, any access roads will be aligned and constructed within the provision and specifications of the private landowners. This is considered important for three reasons:

- The access roads should fulfil multipurpose functions, serving the needs of Eskom and the landowner.
- Landowners are acutely aware of sensitivities on their land, and should be in an excellent position to inform Eskom of optimum alignments.
- Post construction, Eskom will be responsible for the maintenance of the access roads[5]. It is possible that Eskom will enter into a contractual agreement with landowners to undertake road maintenance on their properties.

The specifications for access roads will be contained within the EMP that will be prepared for construction, and which will become legally binding on Eskom, and contractually binding on Eskom-appointed contractors.

4.3.9 Temporary storage of hazardous substances

The hazardous substances referred to comprise fuels, oils and lubricants that will be stored and dispensed at construction camps. Specifications for the storage and dispensing of fuels, oils and lubricants include the following:

- Specifically designated areas.
- All fuels, oils and lubricants shall be stored above ground and under cover.
- All designated areas will be bunded.
- Each designated area will be equipped with adequate fire protection equipment appropriate for the nature of the fuels, oils and lubricants that are stored and dispensed.
- All areas shall be properly signed in all applicable languages.
- All employees must be properly trained in the storage and dispensing of specific fuels, oils and lubricants.
- A specific procedure for emergency situations, including accidental spills, must be formulated and must be available on site at all times.

5 Where the roads are built exclusively for Eskom use.

Specifications will be contained within an EMP that will be prepared for construction, and which will become legally binding on Eskom, and contractually binding on Eskom-appointed contractors.

4.3.10 Use of services and resources during construction

WATER

Water will be required for potable use and in the construction of the foundations for the towers. The water will be sourced from approved abstraction points at locations closest to the area of construction.

SEWERAGE

The generation of sewerage is anticipated for the duration of construction. Use will be made of chemical toilets that will be regularly serviced by the service provider. Grey water from construction camps will be directed to soak-aways.

ROADS

Existing roads will be utilised as far as possible during construction and operation. The use of roads on landowner property is subject to the provisions of an EMP that will be prepared for the project, with individual landowner specifications being determined during discussions with landowners during the servitude negotiation process.

STORMWATER

Stormwater will be managed according to the Eskom Guidelines for Erosion Control and Vegetation Management, as well as the provisions of the EMP, which will be compiled for the project.

SOLID WASTE DISPOSAL

Eskom has a strong commitment to waste minimisation and recycling. All solid waste will be collected at a central location at each construction site, and will be stored temporarily until removal for recycling or disposal at an appropriately permitted landfill site in the vicinity of the construction site.

ELECTRICITY

Diesel generators will be utilised for the provision of electricity.

Approximately 200 people, including drivers, will be employed for the entire construction process. However, it is anticipated that there will seldom be more than 50 people employed in any one phase at a time. Construction activities will not be continuous, and people will be employed throughout the process over a wide area for a long period of time. Therefore, it is anticipated that any impacts associated with construction workers are likely to be limited as a result of the low numbers of people employed over a large area.

It is important to note that the construction of transmission lines is a specialised undertaking, requiring skilled people. It is probable that the appointed contractors will bring in skilled labour from other areas. By implication, job opportunities for local people will be limited to unskilled jobs, on site and in construction camps. Apart from direct employment, local people and businesses will benefit through the supply of goods and services to the appointed contractors.

4.4 Expansion of the Ariadne and Eros Substations

Eskom also needs to expand both the Ariadne and Eros Substations to accommodate the additional 400 kV transmission line. This expansion is expected to occur within the existing substation terrace and will entail the establishment of 400kV of feeder bays at both Substations. No extension will be required at both Substations.

A substation is an important element of an electricity generation, transmission and distribution system. Its function is normally to transform voltages from high to low or the reverse, using transformers and other heavy-duty electrical switchgear. By having a substation in a transmission network, it is possible for Eskom to de-energise a transmission line or other electrical switchgear for maintenance or for new construction or installation. In this way Eskom is able to maintain reliability of supply as maintenance work is being performed while still keeping the whole system running.

4.5 Substation turn-ins

Eskom proposes to run a new 132 kV distribution line in the same servitude and on the same tower infrastructure to be used for the 400kV line, between Pietermaritzburg (Ariadne Substation) and Port Shepstone (Oribi Substation). This will be used by Eskom Distribution to increase the capacity of four key Distribution substations along the south coast and its hinterland (namely Eros, Ngadini (proposed) and Xolo (proposed) Substations). The purpose of the 132 kV power line is to supply electricity to communities in these areas (particularly in rural areas where communities presently do not have electricity).

4.6 Environmental Management Plan

A project-specific EMP will be compiled for the project, and this document will detail the specific controls, which must be in place for the duration of construction. An Environmental Control Officer (ECO), who acts as an intermediary between individual landowners, Eskom, and the contractors, will ensure compliance with the EMP. There will be one ECO for each main contractor appointed to construct the transmission line.

The EMP will outline all activities that have to be undertaken, where they will take place, the responsible persons, all possible environmental or social impacts, mitigation measures, rehabilitation plans, monitoring methods, the frequency of monitoring and performance indicators. This is a legally binding document, which is used to ensure that Eskom adheres to all conditions of the Environmental Authorisation. Once this document has been approved by DEAT, the appointed contractor can commence construction.

4.7 Operation and maintenance

During operation, Eskom Transmission requires access to the servitude to enable maintenance of the transmission line. This could require traversing private property. Maintenance is carried out at regular intervals, and is often done by helicopter so that electricity supplies are not disrupted (Figure 14). Maintenance activities are highly specialised and are, therefore, carried out by Eskom Transmission employees/contractors.

The servitude will need to be cleared occasionally to ensure that vegetation does not interfere with the operation of the line.

4.8 Decommissioning

The process of decommissioning any major transmission line has yet to take place in South Africa. However, the following are assumed:

- The physical removal of the transmission line and pylons would entail the reversal of the construction process.
- A rehabilitation programme would need to be agreed upon with the landowner before being implemented.
- The disposal of materials from the decommissioned transmission line (steel, cabling, concrete, etc.) would be at an approved waste disposal facility. Alternatively, recycling opportunities could be investigated and implemented.
- Specific considerations regarding the servitude and landowner rights would need to be negotiated with the landowner at the time of decommissioning.

Decommissioning activities as listed above would likely be subject to a separate EIA and environmental authorisation at the appropriate time.

4.9 Project timeframes

Eskom's target is to commission the line by 2013. Construction is anticipated to take 14 months. This EIA is being managed with a target date for the issuing of an Environmental Authorisation by DEAT in June 2010.

Figure 14 Maintenance undertaken by helicopter

5. ALTERNATIVES

The identification and examination of alternatives is fundamental to environmental assessment. It provides decision-makers with information that enables them to properly consider optimal solutions to development proposals. Alternatives illustrate and contrast the environmental implications and consequences of different options available to achieve the proposed objective. In this way, both the proponent and the authorities who must consider granting the authorisation, are put in a position where all involved are able to make informed choices or decisions.

During the Scoping Phase and in line with the EIA Regulations, a number of alternatives have been considered for the proposed Ariadne-Eros Transmission line project. They have been divided into four categories:

- Macro Alternatives.
- Alignment Alternatives.
- Technical Alternatives.
- Micro Alternatives.

Each alternative has been investigated with a view to understanding the environmental consequences and to select those alternatives that will be carried forward for assessment during the EIA Phase.

5.1 Macro alternatives

5.1.1 No-development option

The no-development option simply means that Eskom does nothing to address the purpose and need for the transmission line. The most significant outcomes of this approach would be a negative impact on current KZN electricity supplies, and the possibility of complete blackouts at times of high demand. Against the background of load shedding[6] events during the first quarter of 2008, not strengthening electricity supply to KZN could have potentially negative effects such as a continual lack of supply electricity for many communities and a reduction of economic growth, not only on the province, but also on South Africa as a whole. Positive outcomes include the maintenance of the current visual landscape, no additional aesthetic affects, and no additional affects on the biophysical environment.

It is the professional opinion of the EIA Team that the no-development option is unrealistic, and, indeed, following this approach would result in the stagnation or cessation of many Government strategies that have been planned and implemented.

Due to the negative consequences of the no-development option, it has been discarded from further consideration in this EIA.

6 A combination of factors, such as planned and unplanned maintenance, as well as weather, resulted in an electricity shortfall of around 3,000 MW daily in January 2008. This forced Eskom to embark on a load-shedding schedule that had serious negative effects on the general public and industry. The situation led to a forced decrease in production in the industrial and mining sectors, and, in certain instances, forced the temporary and permanent closure of factories and mines. The situation was described by Public Enterprises Minister Alec Erwin as a "national emergency" (www.globalinsight.co.za).

5.1.2 Demand-side management

Demand-side management (DSM) is a function carried out by the electricity supply utility, aimed at encouraging a reduction in the amount of electricity used at peak times. This is achieved by influencing customer usage to improve efficiency and to reduce overall demand. These efforts are intended to produce a flat load duration curve, to ensure the most efficient use of installed network capacity. By reducing peak demand and shifting load from high load to low load periods, reductions in capital expenditure (for network capacity expansion) and operating costs can be achieved. One of the basic tools is price differentiation (such as time-of-use tariffs) between peak demand time and low demand time.

DSM was implemented during the period of scheduled load shedding during the first quarter of 2008, i.e. shifting load and demand in order to maintain the integrity of the network. However, in order to implement DSM effectively, a more regular and stable electricity supply to the province is needed. Thus, while implementation of DSM should continue, it does not obviate the need to provide the infrastructure required for increasing reliability and quality of supply.

This option has been implemented already to some extent, and although it will continue to be implemented by Eskom, it is currently considered unfeasible for managing the growth forecast for KZN. As a result, this alternative has been discarded from further consideration in this EIA.

5.2 Alignment alternatives

Three potential alternative alignments, all originating at the Ariadne Substation (near Pietermaritzburg) including minor (sub-alternative) alignments, are being investigated in this EIA (Figure 4). These were identified by Eskom Transmission (technical and environmental) and the EIA Team based on the criteria listed below:

- The minimisation of visual impacts, especially over high terrain such as hills and mountains.
- Optimising alignments over difficult terrain, providing sufficient space for the supporting towers, for example, mountaintops and saddles, and gradients with manageable side-slopes.
- As far as possible, the avoidance of sudden changes in topography and altitude such as valley-mountain interfaces.
- The avoidance of unstable geological and soil areas with potential slip zones and other forms of substrate instability.
- Avoidance of areas with a high potential for erosion and overgrazed areas with fragile soils.
- Avoidance of sensitive bird areas including foraging, nesting and roosting sites.
- Avoidance of sensitive natural areas including protected areas, nature reserves and wildlife areas.
- The avoidance of wetlands including vleis, rivers, streams, ox-bow lakes, seepages and sponges.
- Avoidance, where possible, of human habitation, including farm houses, rural homesteads, tourist destinations, places of religious worship, educational facilities, health facilities, settlements, villages and towns.
- Avoidance of sand mining areas.

Additional criteria may be added as the EIA unfolds.

Each alternative alignment is detailed below. Also highlighted below are land use types and vegetation types (including the conservation status and extent of transformation) occurring along each alternative alignment.

The environmental investigation for each alternative alignment will be 2 kilometres (km), i.e. 1 km from the centre line. This will enable to Project Team and specialists to make informed recommendations when selecting the final route alignment. The latter could comprise of a combination of the three alternative alignments.

5.2.1 Central Alignment

From the Ariadne Substation en route to Eston the Central Alignment route passes through an area of Ngongoni veld of which a large portion of the area has been converted to commercial agriculture, such as sugarcane, timber plantations and vegetables. Patches of Ngongoni veld prevail on the less arable hillsides and on farms where animal husbandry is practiced. This veld type is dominated by *Aristida junciformis* and when heavily grazed, develops low species diversity. South of Eston the route follows a southerly direction to Ngadini. On the upper plains before the Umkomaas River Valley, the route passes through KZN Sandstone Sourveld, an endangered veld type rich in diversity. However, much of this area has been converted to commercial agriculture or utilised as communal land and is prone to annual burns and overgrazing. As the topography changes in the region of the Umkomaas River Valley, Eastern Valley Bushveld dominates the valleys sides and bottom. The terrain in this area is rugged and access is difficult.

From Ngadini Substation to the Oribi Substation the route passes through Ngongoni Veld in the Breamar area, then heads southwards into the dominant vegetation type in this region - KZN Coastal Belt, an endangered veld type. This is a large portion of the study area and dissects a landscape of undulating hills, valleys and rivers. The vegetation along this section of the route is influenced by a range of land uses, from communal land where small-scale agriculture and grazing of livestock is practiced, to large commercial sugar cane plantations, forestry and banana farming. On entering Port Shepstone and the Oribi Substation, the natural vegetation is sparse and mostly limited to the Umzimkulu River course.

From the Oribi Substation the route heads westward leaving the KZN Coastal Belt, and crossing through Pondoland-Ugu Sandstone Coastal Sourveld (a very vulnerable veld type), into Eastern Valley Bushveld which dominates the Oribi Gorge, and finally into Ngongoni veld leading up to the Eros Substation (Harding). As with the majority of the route, the vegetation (bar the Oribi Gorge, which is too steep to be farmed), has been converted into sugar cane plantations, commercial forestry and where it is communal, subsistence farming.

CENTRAL ALIGNMENT (MINOR ALTERNATIVES C1, C2 AND C3)

A preliminary Avi-Faunal Assessment was undertaken during Scoping, in which bird sensitive areas were identified (Figure 15). This gave rise to the identification of additional minor alternatives (Alternatives C1, C2 and C3) to avoid these areas. Importantly, however, these avi-faunal aspects will be confirmed during the Impact Assessment.

All three minor alternative cross the KZN Coastal Belt (an endangered veld type). Near Oribi Gorge, Alternative C1 and C2 crosses patches of Scarp Forest and Pondoland-Ugu Sandstone Coastal Sourveld. North of Oribi Gorge, Alternative C3 connects to the Western Alignment (as an alternative corridor link), crossing over Pondoland-Ugu Sandstone Coastal Sourveld, Eastern Valley Bushveld and small patches of Scarp Forest.

It is recommended that the Central Alignment Alternative including minor alternatives C1, C2 and C3 be carried forward for further investigation in this EIA.

5.2.2 Eastern Alignment

The Eastern Alignment follows a similar route as that of the Central Alignment, passing through predominantly Ngongoni veld and similar land use. East of Umbumbulu the route passes through KZN Hinterland Thornveld, a vulnerable veld type. As the route enters the Umkomaas River Valley it follows the river course for a section before redirecting out of the valley to link with the Ngadini Substation. The proximity and parallel route of the transmission line to the river would affect the riverine vegetation and associated fauna and avifauna.

From Ngadini the route enters the KZN Coastal Belt, mostly under agriculture or utilised as communal land. Towards Umzinto an area of rugged undeveloped terrain exists and patches of Scarp Forest are found. This route runs parallel (sometimes within 4 km of the seashore) to the coast and traverses areas of mixed land use including mostly communal land, sugar cane, forestry and banana farming.

From Oribi Substation the route turns westward, crossing through Pondoland-Ugu Sandstone Coastal Sourveld, it crosses the expansive Oribi Gorge where Scarp Forest dominates the valley floor and sides, heading through Eastern Valley Bushveld, Ngongoni Veld and small pockets of Southern Mistbelt Forest (Least Threatened) towards the Eros Substation. Most of this area is under intensive commercial agriculture.

EASTERN ALIGNMENT (MINOR ALTERNATIVES E1 AND E2)
These minor alternatives were identified by Eskom Transmission based on the criteria listed earlier, specifically, to avoid areas of dense urban settlements in Port Shepstone. Both minor alternatives pass through KZN Coastal Belt and Pondoland-Ugu Sandstone Coastal Sourveld.

It is recommended that the Eastern Alignment Alternative including minor alternatives E1 and E2 be carried forward for further investigation in this EIA.

5.2.3 Western Alignment

The Western Alignment passes through Ngongoni Veld and then dissects pockets of Midlands Mistbelt Grassland (one of the most threatened vegetation types in KZN), heading towards the rugged terrain of the mid-Illovo area where KZN Sandstone Sourveld and Eastern Valley Bushveld dominate, into the Umkomaas River Valley. Where the route crosses the Umkomaas River it follows the river course for a section before redirecting out of the valley. The proximity and parallel route of the transmission line to the river would affect the riverine vegetation and associated fauna and avifauna. From here the western alignment takes an inland course through terrain that is undulating, the valleys are moderately deeper and more incised, with the

land use being predominantly communal subsistence farming and small-scale agriculture. The route passes through areas dominated by Ngongoni Veld, Eastern Valley Bushveld, small pockets of KZN Hinterland Thornveld and pockets of KZN Coastal Belt. Where the route takes a westward course to link with the Eros Substation it passes through areas of commercial agriculture including sugar cane and forestry.

It is recommended that the Western Alignment Alternative be carried forward for further investigation in this EIA.

5.3 Technical alternatives

5.3.1 Underground transmission lines

It is not economically viable to place a transmission line of this high voltage underground (in this case, a 400 kV transmission line is proposed) as the cost is estimated at 10 times more than for conventional overhead transmission lines.

In addition to the cost factor, it must be noted that underground transmission lines are oil-cooled, requiring sealed conductors significantly larger in diameter than overhead conductors, which are air-cooled. The larger conductors require a larger servitude to keep the conductors apart. Ultimately, a servitude approximating the width of a 10-lane highway may be required for one underground transmission line. Of significance with this servitude is that the line would need to be buried to a depth of between 1.5 m and 2 m, generating significant spoil that will need to be disposed. Also, once completed, the servitudes would need to be maintained in an open, grassed fashion. Not only is this inappropriate for some parts of the study area, but, importantly for landowners, the servitude area becomes sterile for the purposes of continued agricultural activities.

With due consideration of the cost implications, technical complexities and environmental impacts associated with underground transmission lines, this alternative has been discarded from further consideration in this EIA.