Figure 2.3: Google Image showing the proposed Kwagga substation upgrade identified for investigation in the EIA process

Figure 2.4: Google Image showing the proposed Phoebus substation identified for investigation in the EIA process

Figure 2.5: View of the existing Kwagga substation when viewed southwards from Church Street

2.4.4. Technical Details of the Proposed Substation

» *Substation Design:*

Depending on the final design of the proposed upgrade to the existing Kwagga substation, a total area of 300 m^2 will be required for the upgrade of the substation (refer to Figure 2.6). As for the proposed Phoebus substation, the proposed new substation adjacent to the existing Hangklip substation, a total area of 600 m^2 will be required for the new Phoebus substation (refer to Figure 2.7). This equipment will not contain any hazardous substances (PCBs, etc), but will contain cooling oils and similar potential pollutants necessary for the operation of the equipment. The equipment will be designed according to Eskom specifications. The maximum height of the substation development will be 25 m.

Figure 2.6: An aerial view of the existing Kwagga substation and the proposed extension to the substation site

Figure 2.7: An aerial view of the existing Hangklip substation and the proposed Phoebus substation north-west of the Hangklip substation

2.5. Alternative Transmission Power Line Corridors

2.5.1. Identification of Alternative Transmission Power Line Corridors

The extent of the study area and the selection of corridors within the study area gave consideration to such aspects as ecological impacts, social impacts, visual impacts, heritage impacts, technical feasibility and cost. Technically viable,

environmentally sound and cost effective corridors were identified by Eskom Transmission for the proposed Kwagga-Phoebus power lines. These corridors are 2km wide.

The following technical requirements have been considered in the identification of feasible corridors for the establishment of the required transmission power lines:

» As far as possible, the servitude lengths between supply points should be minimised.
» As far as possible, the number and magnitude of angles along the power line should be minimised in order to allow the use of less expensive and visually intrusive tower types.
» As far as possible, the proposed new 400kV transmission power line should be constructed in parallel with existing linear infrastructure. This will assist to minimise the physical impact on individual properties and/or activities on these properties along the proposed route.
» Crossing over of existing major power lines should be avoided as far as possible, as this increases the potential for technical incidents during operation.
» The alignment should cater for known topographical/terrain constraints of the tower types to be used, as well as soil conditions for the foundations in terms of geotechnical suitability and costs.
» The proposed alignment should provide for the need of appropriate access roads to the servitude and tower positions for the both construction and maintenance/operation phases.
» The following obvious and observable environmental issues should be taken into account:
    - human settlements and communities
    - land use (where possible)
    - passing between water bodies (bird flight paths usually extend between water bodies)
    - ecologically sensitive areas
    - scenic areas with high visual/aesthetic quality
    - untransformed indigenous vegetation.

After the scoping evaluation, the biodiversity specialist recommended that another alternative corridor (deviating from Alternative 1 by following the existing transmission line corridor and deviating from Alternative 3 through Hornsnek Road) be investigated in the EIA phase (Savannah Environmental, 2009). Therefore, Alternatives 1, 2, 3 and recommended deviation have been investigated in full detail within this EIA Report (refer to Figure 2.8 and 2.9). A comparative assessment of the potential environmental impacts associated with these alternative power line corridors is presented within Chapter 6 of this report.

2.5.2. Description of Alternative Power Line Development Corridors Considered in the EIA Phase of the EIA Process

Corridor 1 (Kwagga - Phoebus) heads southwest from Hangklip Substation for approximately 6.5 km crossing the N4 highway, then heads southeast for approximately 8 km running into Kwagga Substation for 3 km in a southerly direction, while the northern section of this route passes between informal settlements. It then crosses the Magaliesburg Protected Environment 7 km north of the Kwagga Substation.

Corridor 2 (Kwagga - Phoebus) Splits off from alternative 1 approximately 4 km southwest of the proposed Phoebus Substation. It makes an easterly loop and joins back onto alternative 1 just south of the R566 Road. This route also follows a stream for the majority of the route.

Corridor 3 (Kwagga - Phoebus) Splits off from alternative 1 just south of the Brits Road before making an easterly loop and joins back onto alternative 1 just southwest of the M17 Road. From M17 it crosses the Witwatersberg ridge and agricultural land.

Recommended deviation (corridor 4) Follows Corridor 1 southwards splits off on the Farm Klipfontein 268 JR crossing over Corridor 1. This alternative then joins corridor 1 at the point where Corridor 2 joins Corridor 1. From here it continuous downwards and deviates from Corridor 1, by crossing the Magaliesberg at a different angle. This corridor joins Corridor 1 on the Farm Boekenhoutkloof 315 JR and continuous downwards until reaching the Kwagga Substation in the south (refer to Figure 2.9).

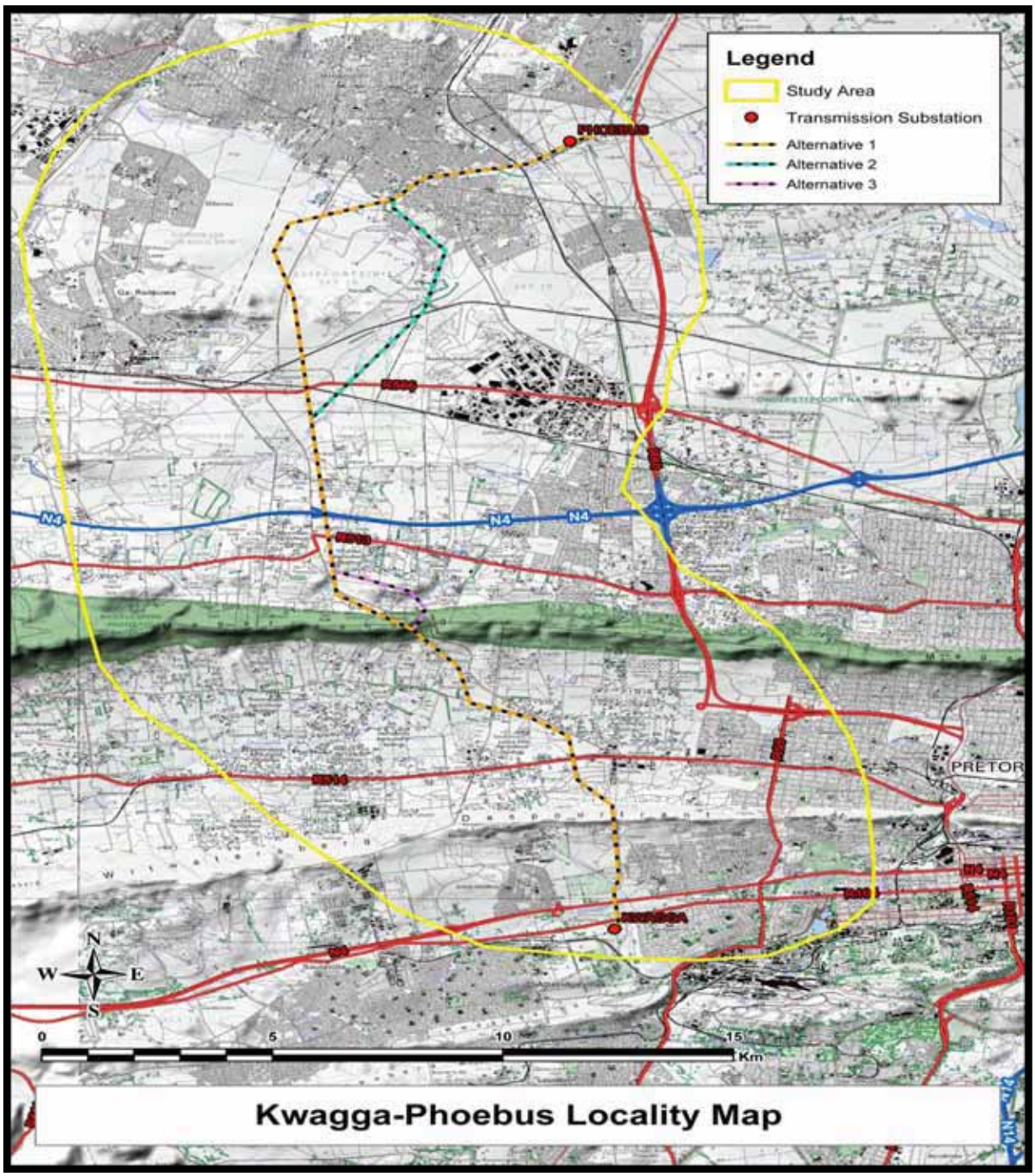

Figure 2.8: Map showing the alternative power line corridors identified by Eskom for investigation during scoping phase of the EIA process

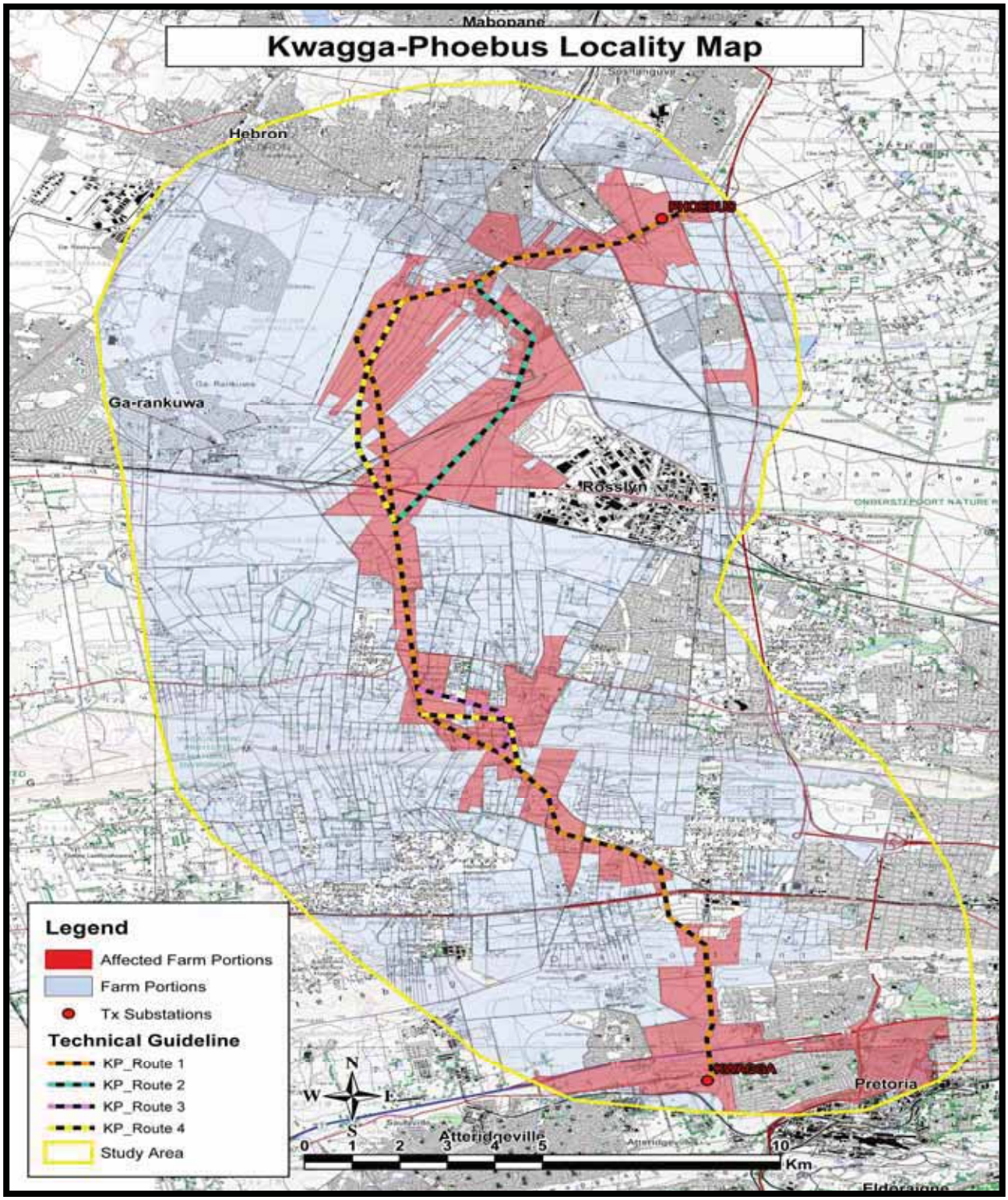

Figure 2.9: Map showing the alternative power line corridors investigated in the EIA Phase of the process

Figure 2.10: Typical self-supporting double-circuit tower used from Kwagga substation

Figure 2.11: Typical cross-rope suspension tower used for Dinaledi-Anderson power lines in the vicinity of Alternative 1

2.5.3. Construction Phase

Transmission lines are constructed in the following simplified sequence:

Step 1: Determination of technically feasible alternatives

Step 2: EIA input into route selection
Step 3: Negotiation of final route with affected landowners
Step 4: Survey of the route (by air)
Step 5: Determination of the conductor type
Step 6: Selection of best-suited conductor, towers, insulators, foundations
Step 7: Final design of line and placement of towers (including final walk-though survey by environmental specialists and compilation of site-specific Environmental Management Plan (EMP)
Step 8: Issuing of tenders, and award of contract to construction companies
Step 9: Vegetation clearance and construction of access roads (where required)
Step 10: Tower pegging
Step 11: Construction of foundations
Step 12: Assembly and erection of towers
Step 13: Stringing of conductors
Step 14: Rehabilitation of disturbed area and protection of erosion sensitive areas
Step 15: Testing and commissioning

Construction of the lines proposed as part of the entire Tshwane Strengthening Project Phase 1 will take approximately 24 months to complete. Construction of these lines is anticipated to begin in 2011.

2.5.6. Technical Details of Tower and Transmission Line Designs

All components of a transmission line are interdependent, but are distinct in the roles which they fulfil. The primary components include towers, foundations, insulators and hardware, and conductors.

» *Towers*

Transmission line conductors are strung on in-line (suspension) towers and bend (strain) towers. Various designs are available for use by Eskom on the proposed Kwagga-Phoebus power lines (refer to Figure 2.12 to 2.14). The type of towers which can be used will be dependent on the final alignment of the power lines and individual agreements with affected land owners and stakeholders.

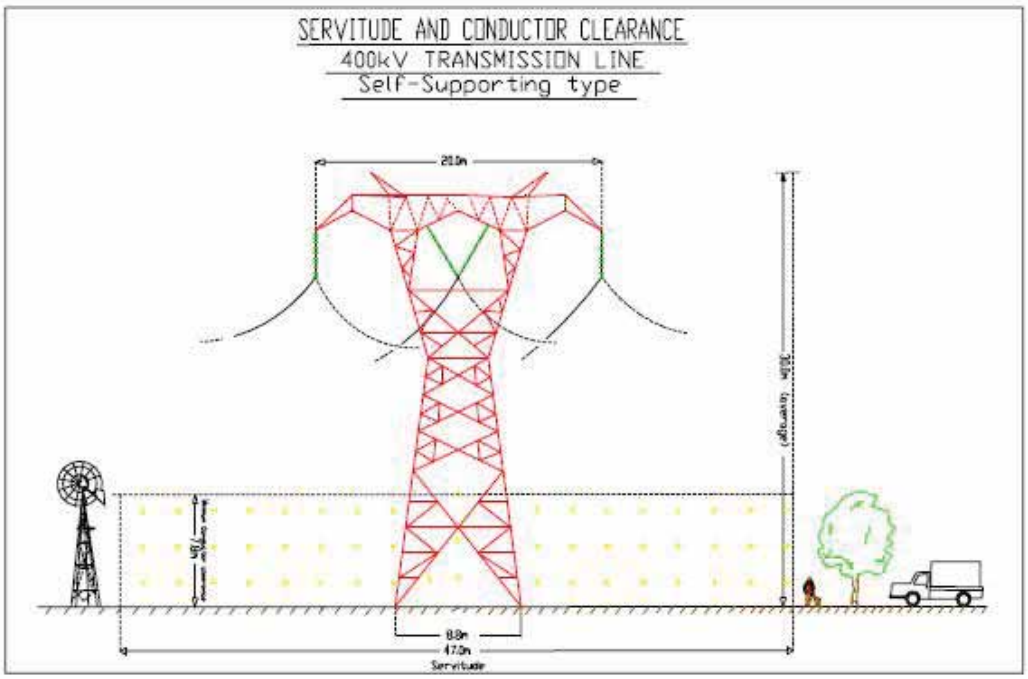

Figure 2.12: Diagrammatic representation of the self-supporting strain/bend tower.

Figure 2.13: Self-supporting double-circuit tower

Figure 2.14: Guyed and Compact Cross-rope suspension tower typically used along the existing Dinaledi-Anderson 400kV transmission power line route

The compact cross-rope suspension tower is typically used along the straight section of the servitude, while the self-supporting angle towers are used where there is a bend in the power line alignment.

Figure 2.15: Monopole structure which can be used in areas where there are space constraints like the Magaliesberg Ridge.

» *Servitude Requirements*

The servitude width for a 400kV transmission power line is 55 m. Transmission power lines running in parallel must have a minimum separation of 55 m. The minimum horizontal clearance to any building, structures, etc not forming part of the Transmission power line must be 3,8 m (Figure 2.15), while the minimum vertical clearance between the conductors and the ground is 8,1 m.

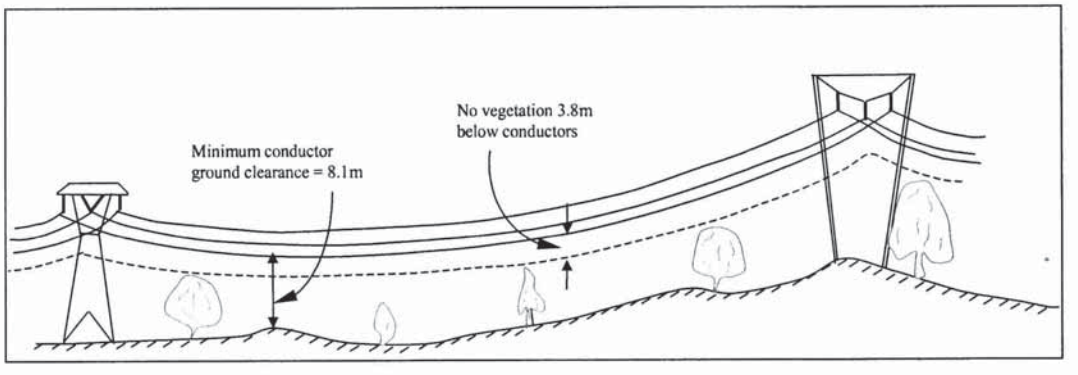

Figure 2.15: Servitude requirements in terms of vegetation clearing under conductors and minimum ground clearance

The minimum distance of a 400kV transmission power line running parallel to proclaimed public roads must be 95 m from the centre of the transmission power line servitude to the centre of the road servitude. Any main road located close to a transmission line tower must have Armco barriers as protection.

The minimum distance between any part of a tree or shrub and any bare phase conductor of a 400kV transmission line must be 3,8 m, allowing for the possible sideways movement and swing of both the above-mentioned.

A maximum 8 m wide strip is to be cleared of all trees and shrubs down the centre of the transmission line servitude for stringing purposes only. Any tree or shrub in other areas which will interfere with the operation and/or reliability of the Transmission line will be trimmed or completely cleared. The clearing of vegetation will take place, with the aid of a surveyor, along approved profiles and in accordance with the approved EMP, and in accordance with the minimum standards to be used for the vegetation clearing for the construction of the proposed transmission power lines as listed in Table 2.2.

Table 2.2: Minimum standards to be used for vegetation clearing for the construction of a new transmission power line

Item	Standard	Follow up
Centre line of the proposed Transmission line	Clear to a maximum (depending on tower type and voltage) of a 4-8m wide strip of all vegetation along the	Re-growth shall be cut within 100 mm of the ground and treated with

Item	Standard	Follow up
	centre line. Vegetation to be cut flush with the ground. Treat stumps with herbicide.	herbicide, as necessary.
Inaccessible valleys (trace line)	Clear a 1 m strip for access by foot only, for the pulling of a pilot wire by hand.	Vegetation not to be disturbed after initial clearing – vegetation to be allowed to re-grow.
Access/service roads	Clear a maximum (depending on tower type) 6 m wide strip for vehicle access within the maximum 8 m width, including de-stumping/cutting stumps to ground level, treating with a herbicide and re-compaction of soil.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Proposed tower position and proposed support/stay wire position	Clear all vegetation within proposed tower position in an area of 20 x 20 m (self-supporting towers) and 40 x 40 m (compact cross-rope suspension towers) around the position, including de-stumping/cutting stumps to ground level, treating with a herbicide and re-compaction of soil. Allow controlled agricultural practices, where feasible.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Indigenous vegetation within servitude area (outside of maximum 8 m strip)	Area outside of the maximum 8 m strip and within the servitude area, selective trimming or cutting down of those identified plants posing a threat to the integrity of the proposed transmission line.	Selective trimming
Alien species within servitude area (outside of maximum 8 m strip)	Area outside of the maximum 8 m strip and within the servitude area, remove all vegetation within servitude area and treat with appropriate herbicide.	Cut and treat with appropriate herbicide.

Once the centre line has been cleared, the contractor's surveyor will peg every tower position and marks the crossing point with existing fences for new gate installation. Where required, once the tower positions have been marked, the vegetation clearing team will return to every tower position and clear vegetation (in accordance with the specification outlined in the Environmental Management Plan (EMP) for assembling and erection purposes.

» *Foundations*

The choice of foundation is influenced by the type of terrain encountered, as well as the underlying geotechnical conditions. Geotechnical requirements for

all tower types are catered for by using various foundation types, which are designed to withstand conditions varying from hard rock to waterlogged marshes. The main types of foundations include piles, pad-and-chimney, and rock anchors. The actual size and type of foundation to be installed will depend on the type of tower to be erected, and the actual sub-soil conditions. Strain towers require more extensive foundations for support than in-line suspension towers, which contribute to the construction expenses.

The construction of foundations is the slowest part of the line construction, and is typically started some time ahead of tower erection. Prior to filling of the foundations and tower erection, excavated foundations are covered or fenced in, in order to safe-guard unsuspecting animals and people from injury. The foundations also represent the biggest unknown in the cost and construction time, since access to the tower sites is required for earth-moving machinery and concrete.

All foundation excavations are back-filled, stabilised through compaction, and rehabilitated at ground level.

» *Insulators and Hardware*

The insulators and hardware are used to connect the conductors to the towers. The main types are glass, porcelain, and composite insulators.

Glass and porcelain have been used for many years, and are the most common. They are, however, heavy and susceptible to breakage by vandals, as well as contamination by pollution. Composite insulators have a glass-fibre core with silicon sheds for insulation. The composite insulators are light-weight and resistant to both vandalism and pollution. They are, however, more expensive than the more common glass insulators.

» *Conductors*

The conductors are made of aluminium with a steel core for strength. Power transfer is determined by the area of aluminium in the conductors. Conductors are used singularly, in pairs, or in bundles of three, four or six. The choice is determined by factors such as audible noise, corona, and electro-magnetic field mitigation.

Many sizes of conductor are available, the choice being based on the initial and life-cycle costs of different combinations of size and bundles, as well as the required load to be transmitted.

2.6. Servitude Negotiation and the EIA Process

Transmission power lines are constructed and operated within a servitude (55 m wide for 400kV lines) that is established along the entire length of the power line. Within this servitude, Eskom Transmission has certain rights and controls that support the safe and effective operation of the power line. The process of achieving the servitude agreement is referred to as the Servitude Negotiation Process, or simply just the negotiation process. The following important points relating to the negotiation process should be noted:

» Servitude negotiation is a private matter between Eskom Transmission and the appropriate landowner.
» The negotiation process involves a number of stages (see below), and culminates in the 'signing' of a servitude. Here Eskom Transmission enters into a legal agreement with the landowner.
» The servitude is registered as a 'right of way', and Eskom do not purchase the servitude from the landowner. Compensation measures are agreed in each case.
» The agreements will detail such aspects as the exact location and extent of the servitude, and access arrangements and maintenance responsibilities, as well as any specific landowner requirements.
» The negotiation process may take place at any time in the planning of a new power line.
» This process must be completed (i.e. the agreement must be signed) with the relevant landowner before construction starts on that property.
» The negotiation process is undertaken directly by Eskom Transmission and is independent of the EIA process. It is important that the aims of the two processes are seen as separate.

The EIA process has become important in the initial planning and route selection of new transmission lines. For this reason, it is usually preferable that the negotiation process begins after the EIA has been completed. At this stage there is greater confidence in the route to be adopted, and it would be supported by environmental authorisation. However, it may be required that the negotiation process begins earlier, and may begin before, or run in parallel with the EIA process. This may be due to urgent timeframes for the commissioning of the new power line, knowledge of local conditions and constraints, etc. Eskom Transmission has a right to engage with any landowner at any time, though they do so at risk if environmental authorisation has not been awarded.

2.6.1. The Negotiation Process

Eskom Transmission is responsible for the negotiation process for all new transmission power lines. It is critical that the process is correctly programmed

and incorporated into the planning of a new line. The negotiation process involves the following steps:

i. Initial meeting with the landowner.
ii. The signing of an 'option' to secure a servitude (this indicates that the owner will accept that the power line will traverse his property, subject to conditions to be finalised in the negotiation of the servitude agreement). An option is valid for one year.
iii. Once the route is confirmed (i.e. options are signed with the upstream and downstream landowners), the servitude agreement will be finalised with the individual landowners. This agreement will set out the conditions for the establishment, rehabilitation and maintenance of the servitude, and will be site-specific (as different landowners may have different requirements). Compensation payments would be made when the servitude is registered at the Deeds Office[8].
iv. Once construction is complete and the land rehabilitated to the landowners satisfaction (and as agreed prior to construction), the landowner signs a 'Final Release' certificate. Until the 'Final Release' certificate has been signed, Eskom Transmission remains liable for the condition of the land.
v. Once the clearance certificate is signed, the responsibility for the power line and servitude is handed over to the regional Eskom Transmission office.

2.7. Project Operation Phase

The expected lifespan of the proposed transmission power line and substation is between 35 and 40 years, depending on the maintenance undertaken on the power line and substation structures.

During the life-span of the transmission power line and substation, on-going maintenance is performed. Power line inspections are undertaken on an average of 1 – 2 times per year, depending on the area. During this maintenance period, the power line is accessed via the access routes, as agreed with affected landowners during the negotiation phase. During maintenance activities on the substation, components may require replacement in order to significantly extend the lifespan of the substation. Maintenance of the power line and substation is required to be undertaken in accordance with the specifications of the

[8] Compensation will be based on present day property valuations for all properties obtained from registered evaluators. Eskom only pays compensation for the strip of land that is affected at 100% of present day property value. In cases where properties are significantly affected, Eskom may consider purchasing the whole property at present day market value. All improvements will be valued. Sentimental value is not considered in any valuations as it is not measurable. Valuations are done according to the Expropriation Act.

Environmental Management Plan (EMP) which forms part of this EIA Report (refer to Appendix M).

The creation of additional employment opportunities during the operational phase of the power line and substation will be limited, and will be restricted to skilled maintenance personnel employed by Eskom.

2.6.1. Servitude Maintenance Responsibilities

The management of a transmission power line servitude is dependent on the details and conditions of the agreement between the landowner and Eskom Transmission, and are therefore site-specific. These may, therefore, vary from one location to another. However, it is a common occurrence that there is a dual responsibility for the maintenance of the servitude:

» Eskom Transmission will be responsible for the tower structures, maintenance of access roads, watercourse crossings, and gates and fences relating to servitude access.
» The landowner will retain responsibility for the maintenance of the land and land use within the servitude (e.g. cropping activities, veld management, etc.).

Exceptions to the above may arise where, for example dual use is made of the access roads and gates or specific land use limitations are set by Eskom Transmission within the servitude which directly affects the landowner (e.g. forestry). Maintenance responsibilities are, ultimately, clearly set out in the servitude agreement.

APPROACH TO UNDERTAKING THE ENVIRONMENTAL IMPACT ASSESSMENT PHASE CHAPTER 3

An Environmental Impact Assessment (EIA) process refers to that process (dictated by the EIA Regulations) which involves the identification of and assessment of direct, indirect and cumulative environmental impacts associated with a proposed project. The EIA process comprises two phases: **Scoping Phase** and **EIA Phase**. The EIA process culminates in the submission of an EIA Report (including a draft environmental management plan (EMP) to the competent authority for decision-making. The EIA process is illustrated below:

The EIA process for the proposed Tshwane Strengthening Project has been undertaken in accordance with the EIA Regulations published in Government Notice 28753 of 21 April 2006, in terms of Section 24(5) of the National Environmental Management Act (NEMA; Act No 107 of 1998). The environmental studies for this proposed project were undertaken in two phases, in accordance with the EIA Regulations.

3.1. Phase 1: Scoping Study

The Scoping Study, which commenced in April 2009, provided I&APs with the opportunity to receive information regarding the proposed project, participate in the process and raise issues of concern.

The Scoping Report aimed at detailing the nature and extent of the proposed Tshwane Strengthening Project, identifying potential issues associated with the proposed project, and defining the extent of studies required within the EIA. This was achieved through an evaluation of the proposed project, involving the project proponent, specialist consultants, and a consultation process with key stakeholders that included both relevant government authorities and interested and affected parties (I&APs). In accordance with the requirements of the EIA Regulations, feasible project-specific alternatives (including the 'do nothing' option) were identified for consideration within the EIA process.

The draft EIA Report compiled was made available at public places for I&AP review and comment from 03 March to 07 April 2010. All the comments, concerns and suggestions received during the Scoping Phase and the draft report review period were included in the final Scoping Report. The Final Scoping Report and Plan of Study for EIA were submitted to the National Department of Environmental Affairs and Tourism (DEA) and the Gauteng Department of Agriculture and Rural Development (GDARD) in September 2009. The Final Scoping Report was accepted by DEA and GDARD, as the competent and commenting authorities in January and February 2010, respectively (refer to Appendix B). In terms of this acceptance, an Environmental Impact Assessment was required to be undertaken for the proposed project.

3.2. Phase 2: Environmental Impact Assessment

Through the Scoping Study, feasible alternatives were identified for further investigation in the EIA Phase of the process. These alternatives are described in detail in Chapter 2 of this report. A number of issues requiring further study for all components of the project (i.e. the substation and power line) were highlighted. A comparative assessment of identified issues associated with the identified feasible alternatives has been undertaken within the EIA phase of the process (refer to Chapter 5 and 6).

The EIA Phase aimed to achieve the following:

» Provide an overall description and assessment of the social and biophysical environments affected by the proposed alternatives put forward as part of the project.
» Assess potentially significant impacts (direct, indirect and cumulative, where required) associated with the proposed Tshwane Strengthening Project.
» Comparatively assess identified feasible alternatives put forward as part of the project.
» Nominate a preferred power line alternative corridor and substation site for consideration by DEA.
» Identify and recommend appropriate mitigation measures for potentially significant environmental impacts.
» Undertake a fully inclusive public involvement process to ensure that I&AP are afforded the opportunity to participate, and that their issues and concerns are recorded.

The EIA addresses potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with all phases of the project including design, construction, operation and decommissioning, and aims to provide the environmental authorities with sufficient information to make an informed decision regarding the proposed project.

3.3. Overview of the EIA Phase

The EIA Phase has been undertaken in accordance with the EIA Regulations published in Government Notice 28753 of 21 April 2006, in terms of NEMA. Key tasks undertaken within the EIA phase included:

» Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels).
» Undertaking a public involvement process throughout the EIA process in accordance with Regulation 56 of Government Notice No R385 of 2006 in order to identify any additional issues and concerns associated with the proposed project.
» Preparation of a Comments and Response Report detailing key issues raised by I&APs as part of the EIA Process (in accordance with Regulation 59 of Government Notice No R385 of 2006).
» Undertaking of independent specialist studies in accordance with Regulation 33 of Government Notice No R385 of 2006.
» Preparation of this Draft EIA Report in accordance with the requirements of the Regulation 32 Government Notice No R385 of 2006.

These tasks are discussed in detail below.

3.3.1. Authority Consultation

As Eskom is a state-owned enterprise (SoE), the National DEA is the competent authority for this application. A record of all authority consultation undertaken prior to the commencement of the EIA Phase was included within the Scoping Report. Consultation with the regulating authorities (i.e. DEA and GDARD) has continued throughout the EIA process. Authority consultation within the EIA process included the following:

» Pre-application consultation regarding the proposed project and the EIA process to be undertaken.
» Submission of applications for authorisation to DEA for the Apollo-Verwoerdburg substation extension and loop-in transmission lines. Copies of these applications were submitted to GDARD. These applications were approved and the reference numbers 12/12/20/1470[9] (Verwoerdburg substation and 2X400kV loop in and out transmission power lines), and 12/12/20/1471 (Kwagga-Phoebus power line) and 12/12/20/1524 (Kwagga-Phoebus substations) were allocated to the project. Authorisation was thus granted to continue with the Scoping Phase of the project.

[9] Subject of a separate EIA report

» Ongoing consultation with the regulating authorities regarding the EIA process and specific requirements in this regard.
» Submission of the Final Scoping Report to DEA and GDARD.
» An authority site inspection and consultation meeting in order to discuss the proposed project, alternatives identified, the public consultation process undertaken and the issues identified for consideration in the EIA process.

The following will also be undertaken as part of this EIA process:

» A consultation meeting with DEA and GDARD in order to discuss the findings and conclusions of the EIA Report.

A record of all authority consultation undertaken prior to the commencement of the EIA Phase was included within the Scoping Report. A record of the consultation in the EIA process is included within Appendix B.

3.3.2. Comparative Assessment of Alternatives

The following project alternatives were investigated in the EIA (refer to Figure 2.6 of this report):

» Power line corridors 1, 2, 3 and recommended deviation (alternative 4) by the biodiversity specialist
» Kwagga and Phoebus substation sites

These alternatives are described in detail in Chapter 2 of this report.

3.3.3. Public Involvement and Consultation

The aim of the public participation process was primarily to ensure that:

» Information containing all relevant facts in respect of the proposed project was made available to potential stakeholders and I&APs.
» Participation by potential I&APs was facilitated in such a manner that all potential stakeholders and I&APs were provided with a reasonable opportunity to comment on the proposed project.
» Comment received from stakeholders and I&APs was recorded and incorporated into the EIA process.

Through on-going consultation with key stakeholders and I&APs, issues raised through the Scoping Phase for inclusion within the EIA study were confirmed. All relevant stakeholder and I&AP information has been recorded within a database of affected parties (refer to Appendix C for a listing of recorded parties and landowner consultation map). While I&APs were encouraged to register their

interest in the project from the onset of the process, the identification and registration of I&APs has been ongoing for the duration of the EIA process and the project database has been updated on an on-going basis. 103 parties have registered their interest in the project to date.

In order to accommodate the varying needs of stakeholders and I&APs, as well as ensure the relevant interactions between stakeholders and the EIA specialist team, the following opportunities were provided for I&APs issues to be recorded and verified through the EIA phase, including:

» Focus group meetings (pre-arranged and stakeholders invited to attend).
» One-on-one consultation meetings and telephonic consultation sessions (consultation with various parties, for example with directly affected landowners, by the project participation consultant as well as specialist consultants).
» Written, faxed or e-mail correspondence.

Table 3.1 provides the records of all meetings held in the EIA phase of the process and these are also included within Appendix D.

Table 3.1: List of meetings held during the EIA process

Meeting	Organisation/stakeholder	Date
Internal Stakeholder Meeting	City of Tshwane Electricity	22 June 2009
Local Authority Meeting	City of Tshwane Open Space Planning Department	21 August 2009
Focus Group Meeting	WESSA and Magaliesberg Association	28 July 2009 and 20 January 2010
Community Meeting	Interested and Affected Parties (Community)	26 July, 08 and 16 August 2009
Public Open Day	I&APs and Stakeholders	20 March 2010
Stakeholder Meeting	CoT Electricity Department	18 & 23 March 2010

3.3.4. Identification and Recording of Issues and Concerns

Issues and comments raised by I&APs over the duration of the EIA process have been synthesised into Comments and Response Reports (refer to Appendix E for the Comments and Response Reports compiled from both the Scoping and EIA Phases). A summary of the key issues raised to date includes:

» Social and socio-economic issues
» Visual issues

- Biodiversity issues
- EIA process comments/issues
- Technical comments/issues
- Issues related to the proposed route alternative corridors
- Servitude comments/concerns
- Compensation comments/concerns
- Existing infrastructure
- Proposed/planned infrastructure/developments
- Eskom distribution related issues
- Communication issues

Where possible, comprehensive responses to issues raised have been included in the Comments and Response Report by the EIA project team as well as Eskom Transmission. Where issues are raised that the EIA team considers beyond the scope and purpose of this EIA process, clear reasoning for this view is provided.

3.3.5. Summary of Frequently Raised Issues

Table 3.2 provides a summary of issues/comments frequently raised through the public participation process regarding the proposed project. Responses regarding the way forward regarding these key issues/comments are also provided.

Table 3.2: Summary of key issues raised through the public participation process

Issue/Concern	Reference in SIA and Comments and Responses Report in Appendix E
I would like to raise an issue with regards to safety for the affected communities. For this reason, we would appreciate if Savannah and Eskom representatives that are here could go and talk to Eskom management and inform them that Eskom should prioritise us as the affected community in terms of opportunities.	*Throughout document*
The consultation with the community about the proposed project in the area is appreciated. This shows that Eskom Transmission has a respect for communities that are impacted by their developments. The community will want to know which part is going to be affected and if there are families that are going to be relocated If some families are relocated we want to know where are they going to be accommodated.	*Section 3.2.2*
The area constantly experiences power supply failure. This means the source of electricity for Ward 39 is very weak. Is this new project going to benefit the community in terms of reducing the	*Section 3.3.2*

rates of power interruption?.	
What is going to happen if the new power line goes through my property? Must I just accept and move out of the way?	*Section 3.2.2*
From the presentation by both Savannah and Eskom, it appears that the servitudes require that affected community structures be moved to make way for power line servitude of 55m. From the experience with Eskom projects, we know that when the construction begins, there is no time from Eskom to care about people that are being moved and their livelihoods like crops etc. What sort of assurance can we get that this project is going to be different.	*Section 3.2.2*
We have brothers and sisters who have the required expertise in electricity and are unemployed. How are we going to benefit from the project from job opportunities perspective?	*Section 3.3.2*
How is Eskom going to relocate people that are in the servitude way.	*Section 3.2.2*
It is expected that this proposed project will benefit the local community in terms of job opportunities.	*Section 3.3.2*
I would like to raise an issue with regards to safety for the affected communities. For this reason, we would appreciate if Savannah and Eskom representatives that are here could go and talk to Eskom management and inform them that Eskom should prioritise us as the affected community in terms of opportunities.	*Section 3.3.2*
The existing power line through our area has pylons and anchors that are in our yards. These structures pose safety hazard and inhibit us from extending our houses.	*Section 3.2.2*
How many jobs are going to be created by this project?	*Section 2.4*
It is appreciated that such a project is proposed for construction in the area and we hope jobs will be created. We want to know what is going to happen to families that are in the preferred route/servitude.	*Section 3.2.2*
We do not understand the project that is presented. You are talking about big pylons. Is this for household use? Is the community still going to experience power failure in our area after the proposed project has been completed? We want to know as to how the additional lines that are proposed going to help us when there is power failure?	*Section 3.3.2*
As the proposed power lines will be crossing settlements we are concerned about safety issues. We want to know what safety	*Section 3.6.2*

hazard is associated with crossing under the power lines especially during raining days or when the lightning strikes.	
The youth of ward 39 is asking Eskom to engage more in social responsibility and create opportunities for the unemployed youth.	*Section 3.3.2*
We do not want to see pylons in our area; Eskom Tx is requested to investigate a route somewhere other than the settled space.	*Section 3.2.2*

3.3.6. Assessment of Issues Identified through the Scoping Process

Based on the findings of the Scoping Study, the following issues were identified as being of low significance, and therefore not requiring further investigation within the EIA:

» Potential impacts on topography
» Potential impacts on transmission infrastructure associated with climate and atmospheric conditions
» Potential impacts associated with geology and soils

Issues which require further investigation within the EIA phase, as well as the specialists involved in the assessment of these impacts are indicated in Table 3.3.

Table 3.3: Specialist studies undertaken within the EIA phase

Specialist Study	Specialist	Appendix
Biodiversity	Riaan Robbeson of Bathusi Environmental Consulting	MSc Plant Ecology, 8 years experience South African Council of Natural Scientific Professions (SACNASP), Ecological Scientist & Botanical Scientist Reg no: 400005/03
Avifauna	Luke Strugnell of Endangered Wildlife Trust	BSc Environmental Management) 2 years experience. South African Council of Natural Scientific Professions Reg No: (SACNASP400181/09)
Visual impact assessment	Lourens Du Plessis of MetroGIS	BA (Geography and Anthropology) 11 years experience in GIS and visual impact assessment
Heritage Impact Assessment	Dr Julius Pretorius	D Phil Archaeology, Member of the Association of Southern African Professional Archaeologists (ASAPA) Member of the South African Archaeological Society, 28 years experience
Agricultural Potential	Mr Garry Paterson of ARC – Institute for Soil, Climate and Water	Over 10 years experience. Pr. Sci.Nat. SACNASP400181/05

Social Impact Assessment	Nonka Byker of MasterQ Research	B Psych, NQF Assessor (Institute for People Development, 2005) Member of the Health Professions Council of South Africa (PRC 0000396) 3 years experience

Specialists investigations included desk-top evaluations of existing information (included that provided by land-owners during the public participation), as well as detailed field surveys of the identified corridors and substation sites. In undertaking field assessment and public participation, contact was made with all affected land owners.

An external review of the EIA process was undertaken by CEN Integrated Environmental Management Unit. CEN Integrated Environmental Management Unit has undertaken external review on similar projects such as the Kyalami Strengthening and Mokopane Integration projects

Specialist studies considered direct and indirect environmental impacts associated with the development of all components of the Tshwane Strengthening Project Phase 1. Issues were assessed in terms of the following criteria:

» The **nature**, a description of what causes the effect, what will be affected and how it will be affected.
» The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate.
» The **duration**, wherein it is indicated whether:
  * the lifetime of the impact will be of a very short duration (0–1 years);
  * the lifetime of the impact will be of a short duration (2-5 years);
  * medium-term (5–15 years);
  * long term (> 15 years) - assigned a score of 4; or
  * permanent - assigned a score of 5.
» The **magnitude**, quantified:
  * small and will have no effect on the environment;
  * minor and will not result in an impact on processes;
  * low and will cause a slight impact on processes;
  * moderate and will result in processes continuing but in a modified way;
  * high (processes are altered to the extent that they temporarily cease); and
  * very high and results in complete destruction of patterns and permanent cessation of processes.
» The **probability of occurrence**, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale as follows:
  * very improbable (probably will not happen);

- improbable (some possibility, but low likelihood);
- probable (distinct possibility);
- highly probable (most likely); and
- definite (impact will occur regardless of any prevention measures).

» The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
» The **status**, which is described as either positive, negative or neutral.
» The degree to which the impact can be reversed (**reversibility**).
» The degree to which the impact may cause **loss of irreplaceable resources**.
» The degree to which the impact can be *mitigated*.

The above criteria were rated using the criteria indicated in the table below.

Magnitude	Reversibility	Duration	Spatial extent	Probability
5 – Very high/ don't know	1-Reversible (regenerates naturally)	5- Permanent	5- International	5- Definite/don't know
4 - High		4- Long term (impact ceases after operational life)	4- National	4- High probability
3 - Moderate	3- Recoverable (needs human input)	3- Medium term (5- 15 years)	3- Regional	3- Medium probability
2 - Low		2- Short term (0-5 years)	2- Local	2- Low probability
1- Minor	5- Irreversible	1 - Immediate	1 – Site only	1-Improbable
0 - None				0 - None

The overall consequence of an impact must be determined by the sum of the individual score for magnitude, reversibility, duration and extent of an impact, multiplied by the probability of the impact occurring.

Significance = Consequence (severity + reversibility + duration + spatial scale) X Probability

The significance is then characterised as follows:

» **More than 60 significance points** indicate **High e**nvironmental significance,
» **Between 30** and **60 significance points** indicate **Moderate** environmental significance,

» **Less than 30 significance points** indicate **Low** environmental significance.

The impacts are ranked according to the significance rating results obtained. The relevant mitigation measures recommended are then considered and the significance of the impacts after mitigation determined. The impacts are then being ranked again according to the significance results after mitigation.

A specialist workshop was held on the 14th of January 2010, with all the specialists from the EIA team in attendance. The conclusions of each of the specialist studies were discussed and overall recommendation made regarding the preferred corridor for consideration by the competent authority (DEA). A summary of the outcomes of the workshop are included in Appendix M.

3.3.6. Assumptions and Limitations

The following assumptions and limitations are applicable to the studies undertaken within this EIA Phase:

» All information provided by Eskom and I&APs to the Environmental Team was correct and valid at the time it was provided.
» Transmission line corridors identified by Eskom, and investigated through the EIA process are technically and economically viable.
» Should the project be authorised by DEA, The final power line route will be determined by Eskom through the negotiation process after the EIA process within the nominated preferred power line corridor.
» Strategic, forward planning deliberations are reflected in the IEP, NIRP and ISEP planning processes and do not form part of this EIA.

3.3.7. Public Review of Draft EIA Report and Feedback Meeting

The DEIR was made available for public review for a 30 day period from **03 March 2010 to 07 April 2010** at the following locations:

KT Motubatse Library	Ladium Library
Danville Community Library	Atteridgeville Library
www.savannahsa.com	

Copies of the draft report were also be made available to the City of Tshwane Metropolitan Municipality. Affected parties and stakeholders also received CDs containing the report, on request.

The availability and duration of the public review process was advertised in Rekord Nord, Rekord Wes, Pretoria News, the Citizen and Daily Sun. In addition,

all registered I&APs were notified of the availability of the report and public meeting by letter (refer to Appendix D).

3.3.8. Final EIA Report

The final stage in the EIA Phase entailed the capturing of responses from I&APs on the Draft EIA Report in order to refine this report in order to assist the decision-making environmental authorities to make a decision regarding the proposed Tshwane Strengthening project Phase 1.

3.4. Regulatory and Legal Context

The South African energy industry is evolving rapidly, with regular changes to legislation and industry role-players. The regulatory hierarchy for an energy transmission project of this nature consists of three tiers of authority who exercise control through both statutory and non-statutory instruments – that is National, Provincial and local levels.

3.4.1. Regulatory Hierarchy

At National Level, the main regulatory agencies are:

» *National Energy Regulator of South Africa (NERSA)*: This body is responsible for regulating all aspects of the electricity sector.
» *Department of Environmental Affairs (DEA)*: This Department is responsible for environmental policy and is the controlling authority in terms of NEMA and the EIA Regulations. DEA is the competent authority for this project, and charged with granting the relevant environmental authorisation.
» *Department of Energy (DE)*: This department is responsible for policy relating to all energy forms. It is the controlling authority in terms of the Electricity Act (Act No 41 of 1987).
» *Department of Transport and Public Works*: This department is responsible for roads and the granting of exemption permits for the conveyance of abnormal loads (as may be associated with the construction phase) on public roads.
» *South African Heritage Resources Agency*: This agency is responsible for any heritage resources and the granting of permits in any projects that have any potential impacts on the heritage resources of South Africa.

At Provincial Level, the main regulatory agency is:

» Gauteng Department of Agriculture and Rural Development (GDARD): This is the provincial authority involved in the EIA process and determines many aspects of Provincial Environmental policy. The department is a commenting authority for this project.