THE PROPOSED CONSTRUCTION OF 132KV OVERHEAD POWER LINES BETWEEN TSWAING SS AND THE PROPOSED RATSIEPANE SS, BETWEEN THE PROPOSED RATSIEPANE SS AND THE PROPOSED NCHAUPE SS AND BETWEEN THE NEW MATHIBESTAD SS AND THE PROPOSED NCHAUPE SS (NORTH WEST PROVINCE)

FINAL BASIC ASSESSMENT REPORT

November 2016

DEA Reference: new application14/12/16/3/3/1/1623

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Date	**November 2016**
Project	THE PROPOSED CONSTRUCTION OF 132KV OVERHEAD POWER LINES BETWEEN **TSWAING** SS AND THE PROPOSED **RATSIEPANE** SS, BETWEEN THE PROPOSED RATSIEPANE SS AND THE PROPOSED **NCHAUPE** SS AND BETWEEN THE **NEW MATHIBESTAD** SS AND THE PROPOSED NCHAUPE SS (NORTH WEST PROVINCE)
Document Title	FINAL Basic Assessment Report
Author	Marinda le Roux
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Approved	Gesan Govender

ABREVIATIONS

BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
EMPr	Environmental Management Programme
EIA	Environmental Impact Assessment
ERA	Electricity Regulation Act (No. 4 of 2006)
GN	Government Notice
Ha	Hectares
HIA	Heritage Impact Assessment
I&AP's	Interested and Affected Parties
MW	Megawatts
NEMA	National Environmental Management Act (No. 107 of 1998) (as amended)
NHRA	National Heritage Resources Act (No. 25 of 1999)
NWA	National Water Act (No 36 of 1998)
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:	
Application Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity being applied for.
2. This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.
14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included in the electronic copy of the report submitted to the competent authority.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	YES X	NO

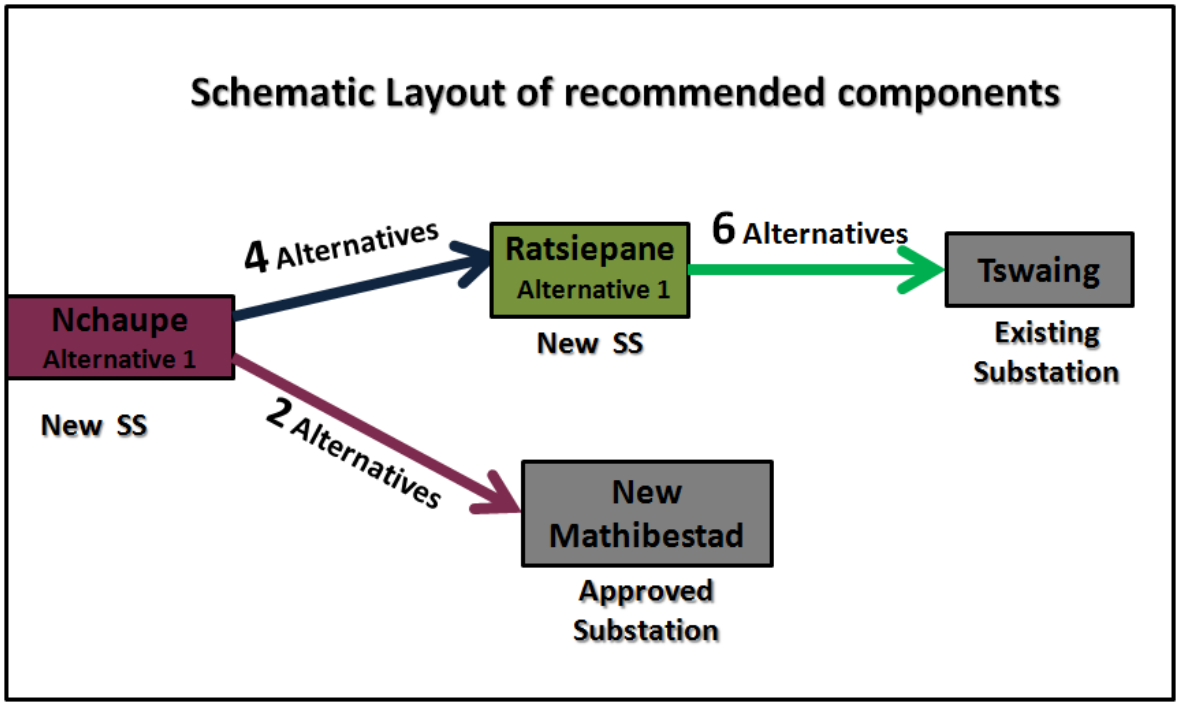
If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

- **PROJECT DESCRIPTION**

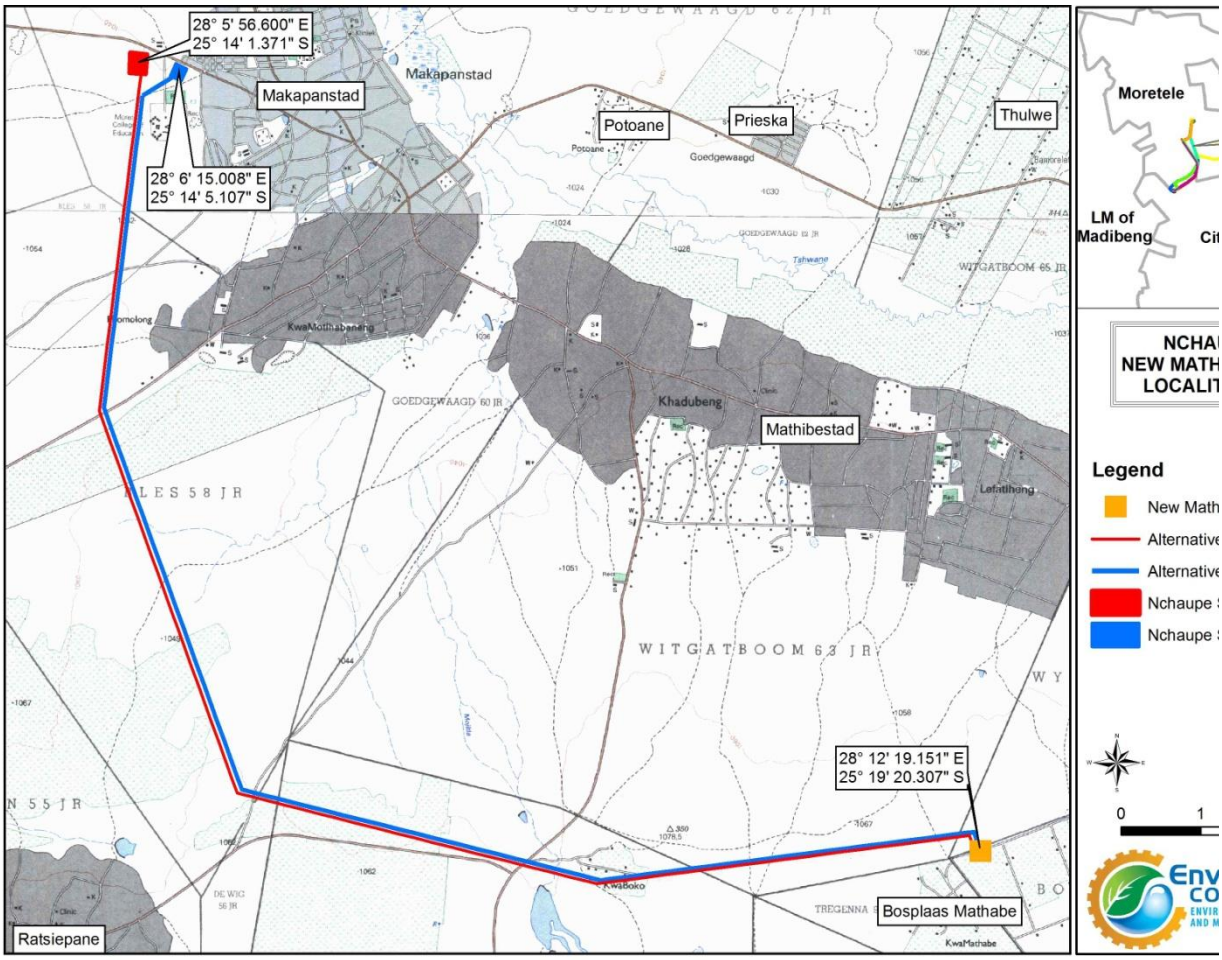
a) Describe the project associated with the listed activities applied for

THE PROPOSED CONSTRUCTION OF 132KV OVERHEAD POWER LINES BETWEEN TSWAING SS AND THE PROPOSED RATSIEPANE SS, BETWEEN THE PROPOSED RATSIEPANE SS AND THE PROPOSED NCHAUPE SS AND BETWEEN THE NEW MATHIBESTAD SS AND THE PROPOSED NCHAUPE SS (NORTH WEST PROVINCE)

The project consists of three sections of 132kV powerlines and their alternatives as well as two new proposed substations, namely (1) the Ratsiepane SS to the east of the Ratsiepane township and (2) the Nchaupe SS to the west of the Makapanstad area, close to the Nchaupe school and north of the Moretele College of Education . The proposed powerlines are located within rural areas characterized by historic communal lands and comprises rural villages. All lines are located in the **Moretele Local Municipality's** jurisdiction. The adjacent Municipalities are the Local Municipality of Madibeng to the west, and the City of Tswhane Metropolitan Municipality to the south. The servitude width for a 132 kV overhead distribution power line is 31m (15.5m on either side of the centre line of the powerline). The sites for the substations will be 100m x 150m in size.

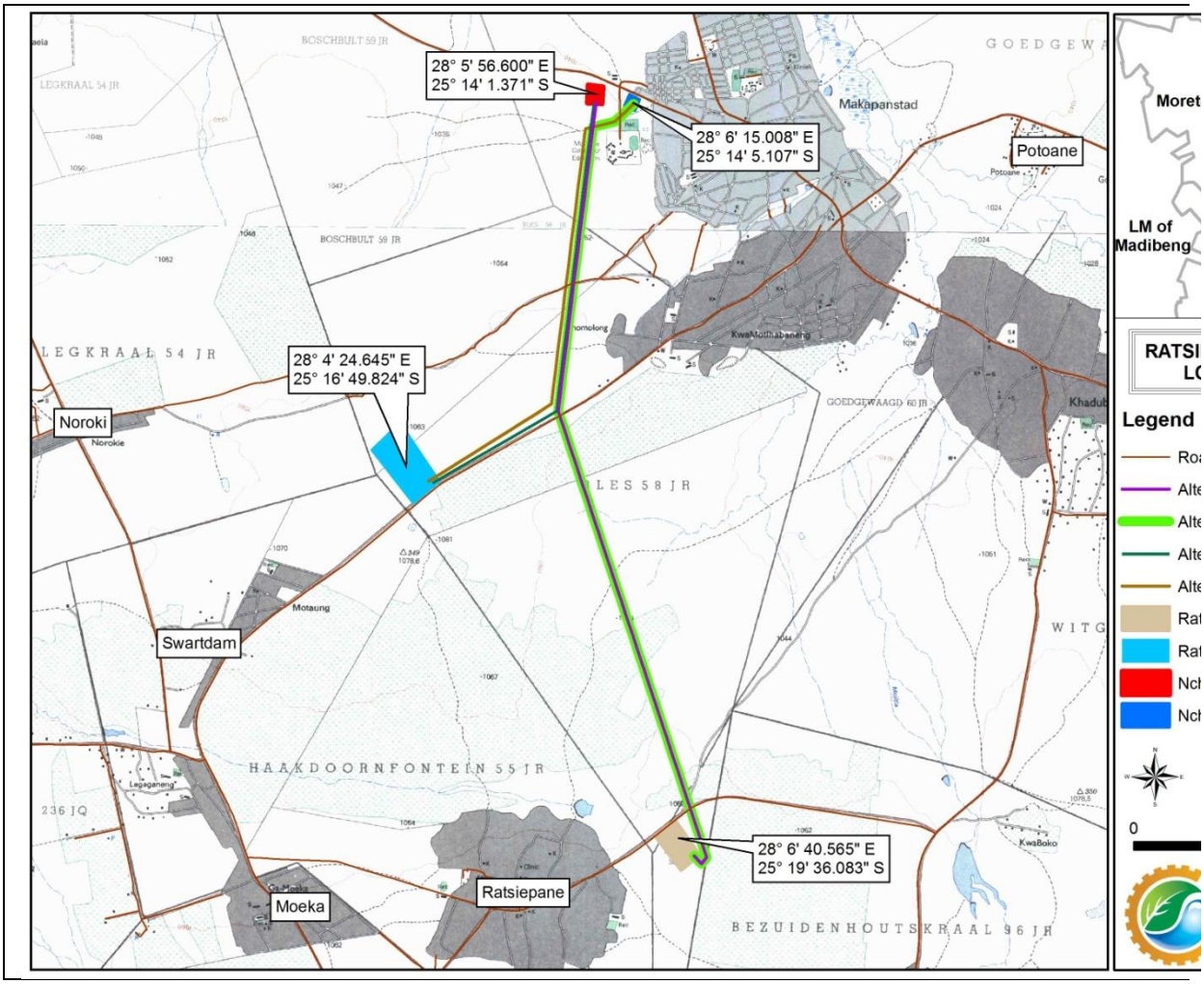


Nchaupe SS– New Mathibestad SS:
This section includes the construction of the new Nchaupe Substation on the farm Goedgewaagd 60IR, west of Makapanstad, as well as a 20 km power line towards the future Mathibestad Substation (approved in another application). Two alternative locations for the Nchaupe Substation have been proposed. Both are west of Makapanstad along the road towards Tladistad.

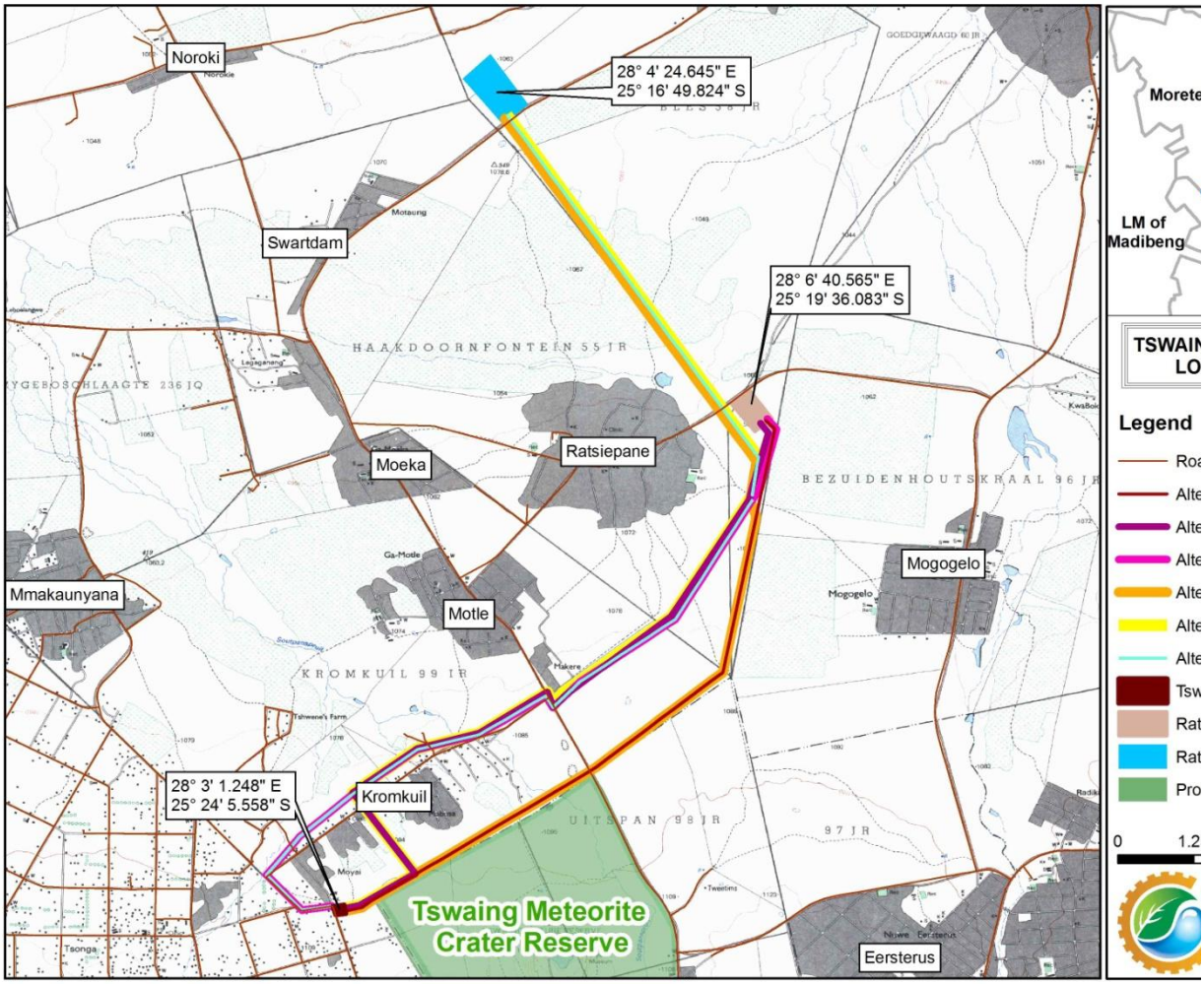


Nchaupe SS – Ratsiepane SS:

This section includes the proposed Ratsiepane Substation and the power line connecting to the proposed Nchaupe Substation. Two locations for the Ratsiepane Substation have been proposed. The first option is east of the settlement of Ratsiepane (west of the farm Bezuidenhoutskraal 96JR) and the second option is along the road between Swartdamstad and Makapanstad (on the farm Bless 58 JR). Four alternative line options are proposed to connect the proposed Nchaupe and Ratsiepane Substations.


28° 5' 56.600" E
25° 14' 1.371" S
28° 6' 15.008" E
25° 14' 5.107" S
28° 4' 24.645" E
25° 16' 49.824" S
28° 6' 40.565" E
25° 19' 36.083" S
Noroki
Swartdam
Moeka
Ratsiepane
Potoane
Makapanstad
LEGKRAAL 54 JR
BOSCHBULT 59 JR
HAAKDOORNFONTEIN 55 JR
BEZUIDENHOUTSKRAAL 96 JR
LM of Madibeng
Legend

Ratsiepane – Tswaing:
This section connects the future Tswaing Substation (approved in an earlier application) to the proposed new Ratsiepane Substation. The Tswaing Substation will be located near the western corner of the Tswaing Meteorite Crater Reserve on the border of Winterveld and Kromkuil. Five alternative routes are proposed towards the two alternative Ratsiepane Substation locations



The preferred routing options were identified during extensive site and routing investigations undertaken by Eskom representatives. Topography, hydrology, land ownership and servitude negotiation, line maintenance, line constructability, access, economic, social and environmental aspects were considered during the viability assessment of the route. Based on this assessment the preferred option was identified as the most viable routing option for the Power lines.

Should the preferred distribution line corridor receive environmental authorization from DEA, and following on from successful negotiations with landowners, the final delineation of the centreline for the distribution line and co-ordinates of each bend in the line will be determined.

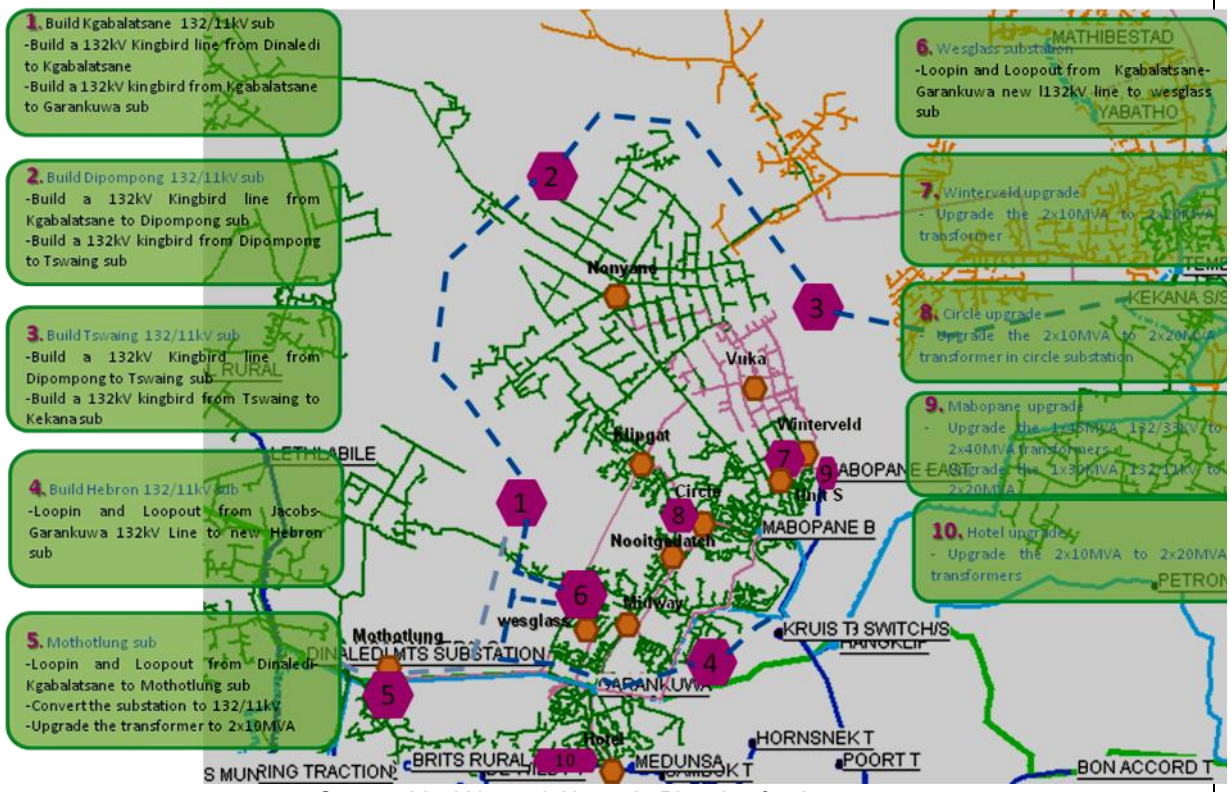
Optimal tower sizes and positions will be identified and verified through comprehensive ground survey of the preferred route and these positions will be reflected, and appropriate management actions incorporated into the continuously and periodically updated Environmental Management Programme (EMP). Trees and large shrubs that will cause clearance issues will be trimmed or cleared, while a narrow footpath for workers will be cleared down the centre of the distribution line servitude for stringing purposes. If any tree or shrub in other areas will interfere with the operation and/or reliability of the distribution line it will be trimmed or completely cleared. In areas where distribution lines cross existing pastures or agricultural lands in use the footprint of the structures will be minimised and full scale clearing of the servitude avoided to allow continued use of the arable land, unless otherwise negotiated with the affected farmer/s. The clearing of vegetation will take place, with the aid of

a surveyor, along approved profiles and in accordance with the approved EMP and Eskom's minimum standards to be used for vegetation clearing for the construction of the proposed new 132 kV distribution line.

Regional Planning

The proposed power lines will connect to the Dinaledi-Dipompong substations and lines and will form part of the Geographic Network Upgrade. The route is situated within the City of Tshwane Metropolitan Municipality (Gauteng Province) as well as within the Madibeng Local Municipality (North West Province).

The Geographical Network Upgrade (Planning) for the region is shown below:



Geographical Network Upgrade Planning for the area

Route Selection Criteria:

- Cost : The most economical route, with the least impact on the community is preferred.
- Existing servitudes
- Environmental Factors (i.e. River crossings, Endangered species, etc.)
- Sustainability
- Land Use and Future Planning
- Accessibility and Maintenance
- The Rights and services of External Stakeholders and Statutory Bodies (National and Provincial Roads Agencies, Telecommunication, Water, Sewer, Storm water services and Street lights).
- Eskom's MV / LV electrical cable in the vicinity. Electrical Clearance must be ensured between all these services.)
- Eskom is governed by: The Public Finance Management Act (Act 1 of 1999 as amended by Act 29 of 1999), making Eskom accountable in the use of Public Funds.

New substations (Ratsiepane and Nchaupe)

Two alternative locations have been proposed for each of the substations. The substation will cover an area of 100mx150m, to be equipped with 2x20MVA transformers. The 132kV incoming line will enter the proposed new substation at the approved safety height and will terminate into a Bus Coupler. Isolators are located in the Bus section. The Main Bus is connected to the Transfer Bus from where the outgoing lines will flow. Other infrastructure at the substation will include:

- Power Generator
- Lighting
- Surge Arrester
- Fencing and entrance gate
- Paving/surfacing (usually gravel), Drainage
- Foundations
- A telecommunication mast
- Signage

An Air Insulated Substation (AIS) is proposed which uses air to insulate the different components of the substation from each other as well as for grounding the charge.

Other components include:

- The lightning or Surge Arrester will assist to dissipate any excess or direct it to the ground.
- Air Break Switches are used to isolate equipment or a circuit within the substation allowing the various equipment or lines of the substation to be maintained without the risk of electrocution.
- Circuit breakers (automatic electrical devices) will protect the electrical circuit should any overload be caused on the line. For distribution substation use, vacuum technology is commonly used for extinguishing the arc caused by an overload inside a vacuum bottle. Other types of substation circuit breakers use oil or gas technology to insulate its components and help interrupt a fault.
- A step-down transformer will be provided to convert high-voltage power into a lower voltage that can be transmitted down distribution lines until it is further converted by smaller transformers to usable voltage.
- A voltage regulator will be installed to maintain the proper voltage and will ensure that the correct electrical output travels across the distribution lines to the consumer.
- The electricity moving through the transformer is sent to the high voltage bus, a junction of many different lines that disburse power in many directions.
- Metal-clad switchgear will be installed as the control centre for the distribution lines that will exit from the substation. This is where electricity can be distributed to certain destinations with and protected with the aid of the cut-out switches, allowing lines to be isolated for required maintenance. The term metal-clad describes the housing which is metal enclosed to protect the sensitive equipment from the outside elements.

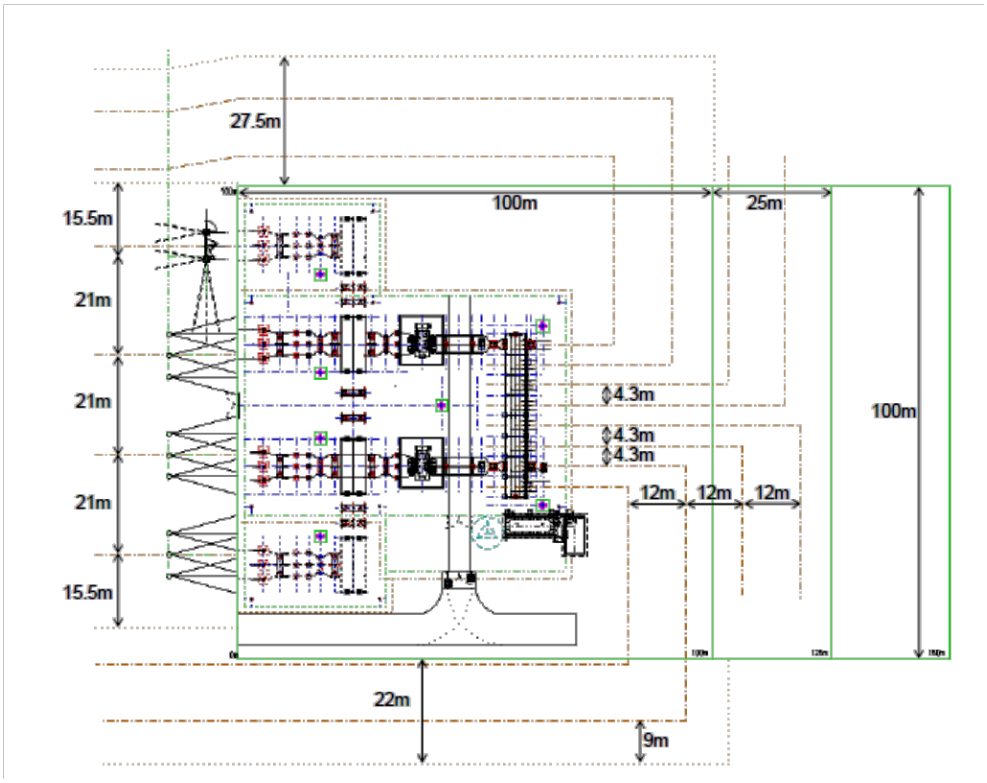
Any and all of these parts in an AIS environment are prone to environmental problems. Continued monitoring and maintenance are an absolute must to deliver reliable energy to consumers in a safe manner.

Layout of typical substation

Construction of 132kV Substation

:

The design of the substations at Ratsiepane and Nchaupe will only be done once the project has been authorised. The layout of typical substation is shown below:



Telecommunications Mast. A communications mast will be required at each of the proposed substation sites. The mast is required to receive communication from surrounding towers. Full functioning of the substation will be reliant on these telecommunications masts, as its exclusion may result in the limited electrification of the surrounding areas.

Job opportunities.

Although the number of staff employed (skilled and unskilled) depends on the contractor, teams are generally made up according to the type of work to be undertaken, the availability of skilled staff in the region and the size of projects. Provision will be made for local people to be employed, and negotiations will be made once the project has been approved and procurement has been settled. Usually consultation with the local structures (Moretele Local Municipality and Tribal Authority in the case of this project) will be done to ensure fair distribution of work in the wards where construction will take place. Unskilled labour is usually trained by the contractors.

Required Services

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.

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. Access Roads. No roads that trigger NEMA Regulations Listed Activities will be required (roads are less than 6m wide)

Concrete Batching
Concrete batching will be required for the foundations of the distribution line towers. The following guidelines are contained in the Eskom specification For The Transmission Line Towers and Line Construction:
The Contractor shall be responsible for negotiating the site of his batching plant (if required) and the conditions under it may be established, with the landowner. The Contractor shall be responsible for the proper management of the batching plant.
Upon completion of works, the ground of the batching plant area shall be rehabilitated and the site cleaned and left as it was found and to the satisfaction of the Supervisor and landowner.
The use of local water for concrete must first be negotiated with the landowner and the appropriate authorities. Such water is to be analysed and accepted by the Project Manager

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 disposed at the registered waste site or 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 where electricity connection is not readily available.

Negotiation Process

Principles of compensation:
An Independent valuer is appointed to determine the comparative market value for each property affected by the new servitude
The consideration amount payable will be based on the area of the servitude
Negotiations with land owners:
After approval by Eskom tender and investment committees, individual negotiations will commence with the affected land owners over whose property the power line traverses.
Registration of servitude:
Registration of the servitudes is done by an Eskom appointed conveyancer.
Payment of consideration occurs on registration of the servitudes.

Stringing
Once towers have been erected, cables will be strung between the towers.

Bird Flight Diverters
If required Bird flight deflectors will be fitted during the construction phase.

Tower Parameters
• Tower spacing: 200 m (Average)
• Tower height: 17.4 m to 21 m
• Minimum ground clearance: 6.7 m

Foundations. The type of terrain encountered, as well as the underlying geotechnical conditions determines the choice of foundation. The actual size and type of foundation to be installed will depend on the soil bearing capacity (actual sub-soil conditions). Strain structures require more extensive foundations for support than in-line suspension structures, which contribute to the cost of the construction of the line. Foundations will be mechanically excavated where access to the site is readily available. The same applies to the pouring of concrete required for the setting of the foundations. In areas where access to the structure position prohibits the use of concrete mixing trucks, uphill pumping or gravity feeding of concrete up to distances of 200 m will be implemented. Prior to erecting the structures and infilling of the foundations, the excavated foundations will be covered/fenced-off in order to safeguard unsuspecting animals and people from injury. All foundations are back-filled, stabilised through compaction, and capped with concrete at ground level.

Insulators. Composite insulators have a glass-fibre core with silicon sheds for insulation and are used to connect the conductors to the towers. Glass and porcelain have been used to connect the conductors for many years, and is the most common. These products are, however, heavy and susceptible to breakage by vandals, as well as contamination by pollution. Composite insulators are lightweight and resistant to both vandalism and pollution. Composite (Long rod type) insulators with silicone based weather shed material will be used.

The servitude width for the proposed 132kV Sub-transmission line is 31 m (15, 5 m on either side of the centre line of the powerline). The minimum vertical clearance to buildings, poles and structures not forming part of the powerline must be 3,8m, while the minimum vertical clearance between the conductors and the ground is 6,7m.

The minimum distance of an 132kV Sub-transmission line running parallel to proclaimed public roads is 95 m from the centre of the Sub-transmission line servitude to the centre of the road servitude.

Clearance specifications (Eskom, 2007).

Clearances	Minimum Clearance Distance (m)
Ground clearance	6.7
Building structures not part of power line	3.8
Above roads in townships, proclaimed roads	7.5
Telkom telephone lines	2.0
Spoornet tracks	10.9

The minimum distance between any part of a tree or shrub and any bare phase conductor of a 132kV Sub-transmission line must be 3,8 m, allowing for the possible sideways movement and swing of both the above-mentioned. On receipt of an approval of the final corridor by the environmental authorities and after negotiations with landowners, the final definition of the centre line for the Sub-transmission line and coordinates of each bend in the line are determined.

Optimal tower sizes and positions will be identified and verified using a ground survey and a minimum of 9 m (4,5 m either side of the centre line of the powerline) wide strip is to be cleared of all trees and shrubs down the centre of the sub-transmission line servitude for stringing purposes only. Any tree or shrub in other areas that will interfere with the operation and/or reliability of the Sub-transmission line must 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 this EMP and Eskom's minimum standards for vegetation clearing for the construction of new power lines.

Construction Process

It is estimated that the construction period for this project will be 18-24 months. Generally, the construction of the powerline is expected to consist of the following sequential phases:

Step 1: Feasibility and identification of line alternatives.
Step 2: Basic Assessment input and environmental permitting.
Step 3: Negotiation of final route with affected landowners.
Step 4: Survey of the proposed route.
Step 5: Selection of structures suited to the terrain and ground conditions.
Step 6: Final design of the distribution line and placement of towers.
Step 7: Issuing of tenders and eventually appointment of contractors for the project.
Step 8: Vegetation clearance and construction of access roads (if required).
Step 9: Pegging of structures.
Step 10: Construction of foundations.
Step 11: Assembly and erection of structures.
Step 12: Stringing of conductors.
Step 13: Rehabilitation of disturbed areas and protection of erosion sensitive areas.
Step 14: Testing and commissioning.
Step 15: Operation and routine maintenance.

OPERATIONAL PHASE

Ongoing Maintenance. During the life span of the power lines, which is approximately 25 years, ongoing maintenance is required to be performed from time to time. Eskom maintenance staff and contractors employed by Eskom will undertake the maintenance works as required.

Vegetation will be maintained by Eskom in the operational phase of the project.
No open space plan is required because “open space zoning” is not relevant for this linear project. The substation site will be designed as per requirements and the nature of the usage will not enable limited open space planning, landscaping apart from maintenance of the surface area (paved or surfaced with gravel) inside the fence around the substation.
ESKOM has its own minimum standards for bush clearing and maintenance of overheard powerline and applicable servitudes. That document forms part of the tender agreements with contractors. The requirements outlined in the standards will be adhered to during the construction of the powerline.
A storm water plan will be included once the detailed design drawings have been completed. The design has not yet been finalised
A Traffic impact assessment is not required. The proposed projects will only have limited increase (o construction vehicles) in traffic during the construction phase.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity 2014 Regulations	Description of project activity
GN 983 of 4 (Activity 27) December 2014 The **clearance of an area of 1 hectares or more**, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity	An area of more than 1 hectares (but less than 20 hectares) will be cleared of indigenous vegetation for the construction of the **Substations at Makapanstad (Nchaupe SS) and Ratsiepane (Ratsiepane SS).** Although the distribution power line qualifies as "the undertaking of a linear activity", the substations at Ratsiepane and Makapanstad (Nchaupe) will be site specific areas of 100m x150m (1,5ha) in size. Only the southern part of Tswaing-Ratsiepane traverse areas classified as 'Ecological Support Areas' and "Protected Areas". The two other routes do not traverse any areas classified in the C-Plan spatial layer. Where the Ratsiepane-Nchaupe lines are proposed, *Ammocharis coranica* were found which is a protected species in the North-West Province. *Aloe greatheadii* occur in patches of areas disturbed by overgrazing. Shrubs and Acacia thorn trees dominate the area. At the Tswaing-Ratsiepane options, vegetation include species of *Cyperacea, Kyllinga, Typha, Persicaria* and *Cynodon.* Acacia thorn trees surround the wetland.
GN 983 of 4 December 2014 (Activity 11) Development of facilities or infrastructure for transmission and **distribution of electricity** (i)with a capacity of more than 33kV but less than 275kV or more outside an urban area	Infrastructure for the distribution of electricity (i) with a capacity of **132kV** will be developed partly outside urban areas, in Moretele LM where mostly Agricultural properties are located.
GN 983 of 4 December 2014 (Activity 19) **The infilling or depositing of any material of more than 5 cubic metres** into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- (i)a watercourse;	There are water courses in the area that will be crossed by the proposed power lines. To erect tower structures, it will be required to fill or deposit material of more than 5 cubic metres into the watercourse, or to excavate, or remove/move soil or sand or rock of more than 5 cubic metres A total of three wetlands and two ephemeral rivers were recorded to cross or occur within 500m of the preferred and alternative lines. The Nchaupe to New Mathibestad line is located southwest of the Tshwane River with tributaries running near the line. The wetlands that cross or come within 500 m of the preferred line are fed by tributaries of the Tshwane River. One wetland occurs in the south-eastern portion of the line and is classified as channelled valley bottom wetland. A drainage line crosses the northern part of the line. No wetlands were recorded on the Ratsiepane-

Listed activity	Description of project activity
	Nchaupe line. One large floodplain wetland was recorded along the southern extent of the Tswaing-Ratsiepane line. The wetland covers approximately 7% (1.2km) of the preferred and alternative lines. A small depression pan was recorded. Multiple dams occur in the floodplain. The floodplain is fed by the Soutpanspruit which flows north towards the Kutswana River. The Nchaupe-New Mathibestad and Ratsiepane-Nchaupe lines cross over significantly fewer wetlands than the Tswaing-Ratsiepane lines.
GN 985 of 4 December 2014 (Activity 3) The **development of masts or towers** of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower- (a) is to be placed on a site not previously used for this purpose; and (b) will exceed 15 metres in height (e) In North West: i. Outside urban areas, in: (aa) A protected area identified in terms of NEMPAA,; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (dd) Sites or areas identified in terms of an International Convention; (ee) Critical biodiversity areas (Type 1 and 2) as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ff) Core areas in biosphere reserves; or (gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or a biosphere reserve, excluding areas where no indigenous vegetation will be cleared; or ii. In urban areas, the following: (aa) Areas designated for conservation use in adopted Spatial Development Frameworks, or zoned for a conservation purpose.	It will be necessary to erect masts at the substations at Makapanstad (Nchaupe SS) and Ratsiepane SS to be used for telecommunication purposes and these masts or towers will be placed on a site not previously used for this purpose; and these towers will exceed 15 metres in height The masts will be located in the North West Province, outside urban areas, in close proximity to the Tswaing Meteorite Crater Reserve: (ee) CBA Critical biodiversity areas (Type 1 and 2) as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; The majority of the proposed project is situated within a **CBA 2**, indicating that these areas are remaining natural patches larger than 5ha of provincially endangered and vulnerable ecosystems (in this case the Springbokvlakte Thornveld), i.e. the amount remaining intact of this vegetation type is less than 60%. Only the two options proposed for the Moretele SS are situated in an area not indicated to be of conservation importance. (gg) Areas within 10 kilometres from national parks or **world heritage sites** or 5 kilometres from any other protected area identified in terms of NEMPAA or a biosphere reserve, excluding areas where no indigenous vegetation will be cleared; The routes between the Ratsiepane Ss options to the Tswaing Ss will come into close proximity to **ESA 1** areas, and is located within 10km of the protected area, Tswaing Meteor Crater Reserve

- **FEASIBLE AND REASONABLE ALTERNATIVES**

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to —

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;

(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (not project) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

a) Site alternatives

Nchaupe Substation Alternative 1 (preferred alternative)		
Description	**Lat (DDMMSS)**	**Long (DDMMSS)**
The Nchaupe Alternative 1 Substation is proposed to the west of Makapanstad and will require an area of 100mx150m. It will be necessary to erect masts at the substation(s) to be used for telecommunication purposes and these masts or towers could need to be placed on a site not previously used for this purpose; and these towers will exceed 15 metres in height.	25°14'1.58"S	28° 5'59.44"E
	25°14'1.83"S	28° 6'4.88"E
	25°14'6.62"S	28° 6'4.80"E
	25°14'6.33"S	28° 5'59.57"E
Nchaupe Substation Alternative 2		
Description	**Lat (DDMMSS)**	**Long (DDMMSS)**
The Nchaupe Substation Alternative 2 site is proposed to the west of Makapanstad, south of the Nchaupe School and will require a area of 100mx150m. It will be necessary to erect masts at the substation(s) to be used for telecommunication purposes and these masts or towers could need to be placed on a site not previously used for this purpose; and these towers will exceed 15 metres in height.	25°14'3.09"S	28° 6'12.22"E
	25°14'7.97"S	28° 6'12.35"E
	25°14'8.07"S	28° 6'17.75"E
	25°14'3.15"S	28° 6'18.16"E

Ratsiepane Substation Alternative 1 (preferred alternative)		
Description	**Lat (DDMMSS)**	**Long (DDMMSS)**
The Ratsiepane Alternative 1 Substation will require a area of 100m x150m. It may be necessary to erect masts at the substation(s) to be used for telecommunication purposes and these towers will exceed 15 metres in height.	25°19'31.39"S	28° 6'40.16"E
	25°19'35.50"S	28° 6'43.12"E
	25°19'34.71"S	28° 6'35.91"E
	25°19'38.04"S	28° 6'39.14"E

Ratsiepane Substation Alternative 2		
Description	**Lat (DDMMSS)**	**Long (DDMMSS)**
Ratsiepane Alternative 1 Substation will require a area of 100m x150m. It will be necessary to erect masts at the substation(s) to be used for telecommunication purposes and these towers will exceed 15 metres in height.	25°16'56.22"S	28° 4'32.32"E
	25°16'59.17"S	28° 4'28.59"E
	25°16'55.72"S	28° 4'24.76"E
	25°16'52.21"S	28° 4'28.30"E

In the case of linear activities: see **Appendix A2** for Coordinates

Alternatives	**Latitude (S):**	**Longitude (E):**
Alternative S1 (preferred)		
• Starting point of the activity	° ' " S	° ' " E
• Middle/Additional point of the activity	° ' " S	° ' " E
• End point of the activity	° ' " S	° ' " E
Alternative S2 (if any)		
• Starting point of the activity	° ' " S	° ' " E
• Middle/Additional point of the activity	° ' " S	° ' " E
• End point of the activity	° ' " S	° ' " E

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment. **See Addendum Appendix A2**

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the lay-out map provided in Appendix A of this form.

Co-ordinates of the corners of the site

Nchaupe Substation Alternative 1 (preferred alternative)		
Description	**Lat (DDMMSS)**	**Long (DDMMSS)**
The Nchaupe Alternative 1 Substation is proposed to the west of Makapanstad and will require an area of 100mx150m. It will be necessary to erect masts at the substation(s) to be used for telecommunication purposes and these masts or towers could need to be placed on a site not previously used for this purpose; and these towers will exceed 15 metres in height.	25°14'1.58"S	28° 5'59.44"E
	25°14'1.83"S	28° 6'4.88"E
	25°14'6.62"S	28° 6'4.80"E
	25°14'6.33"S	28° 5'59.57"E
Nchaupe Substation Alternative 2		
Description	**Lat (DDMMSS)**	**Long (DDMMSS)**
The Nchaupe Substation Alternative 2 site is proposed to the west of Makapanstad, south of the Nchaupe School and will require a area of 100mx150m. It will be necessary to erect masts at the substation(s) to be used for telecommunication purposes and these masts or towers could need to be placed on a site not previously used for this purpose; and these towers will exceed 15 metres in height.	25°14'3.09"S	28° 6'12.22"E
	25°14'7.97"S	28° 6'12.35"E
	25°14'8.07"S	28° 6'17.75"E
	25°14'3.15"S	28° 6'18.16"E

Ratsiepane Substation Alternative 1 (preferred alternative)		
Description	**Lat (DDMMSS)**	**Long (DDMMSS)**
The Ratsiepane Alternative 1 Substation will require a area of 100mx150m. It will be necessary to erect masts at the substation(s) to be used for telecommunication purposes and these towers will exceed 15 metres in height.	25°19'31.39"S	28° 6'40.16"E
	25°19'35.50"S	28° 6'43.12"E
	25°19'34.71"S	28° 6'35.91"E
	25°19'38.04"S	28° 6'39.14"E
Ratsiepane Substation Alternative 2		
Description	**Lat (DDMMSS)**	**Long (DDMMSS)**
Ratsiepane Alternative 1 Substation will require a area of 100mx150m. It will be necessary to erect masts at the substation(s) to be used for telecommunication purposes and these towers will exceed 15 metres in height.	25°16'56.22"S	28° 4'32.32"E
	25°16'59.17"S	28° 4'28.59"E
	25°16'55.72"S	28° 4'24.76"E
	25°16'52.21"S	28° 4'28.30"E

b) Lay-out alternatives

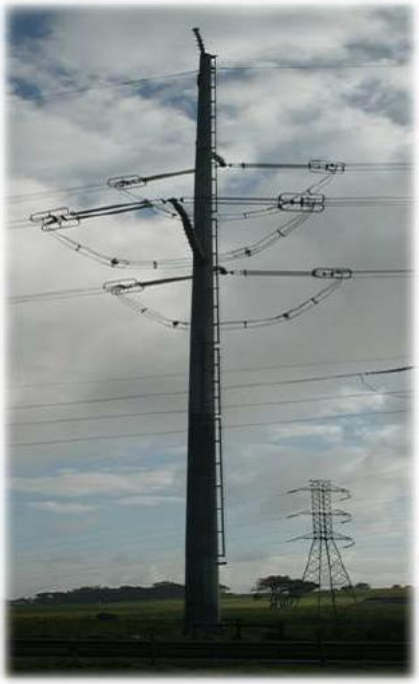
Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives (Powerline)

Steel Monopole Structure vs. Lattice structures
Eskom prefers the proposed steel monopole structure as the technology to be used. A steel monopole structure is considered as the most appropriate technology, and in some cases has been specifically designed for the existing environmental conditions and terrain, as specified by standard ESKOM specifications and best international practice. Monopole structures are considered to be cost effective and preferable in any areas with denser population. When compared to underground cables and other overhead structures, the speed and ease of installation of monopoles is significantly better, the impact on land is less, and the economic decisions associated with easier installations and little post-installation maintenance result in low life-cycle costs. The use of monopole structures also allows much more flexibility with respect to width of right-of-way and height requirements for structures.

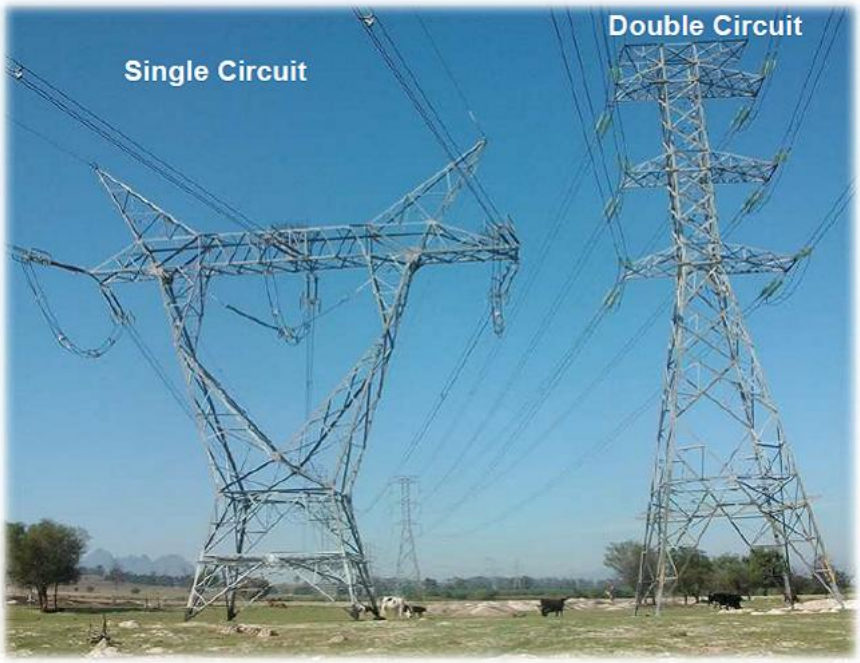
Eskom

Monopole structure (preferred in congested areas)



Eskom

Self-supporting structures



The impact on the land is much less for monopole structures in comparison to other structures. In addition, the time required on the landowner's property is less for steel for monopole structures. The reduced time on the land reduces the impact on the landowner's use of his land and allows him to get back sooner to his normal operations. Lastly, the footprint required for steel monopole structures is much less when compared to other structures. The reduced footprint

can require less right-of way, easier operation on the ground during construction, and allow for more natural uses of land after construction.

Strain structures require more extensive foundations for support than in-line suspension structures, which contribute to the cost of the construction of the line. Foundations will be mechanically excavated where access to the site is readily available. The same applies to the pouring of concrete required for the setting of the foundations. In areas where access to the structure position prohibits the use of concrete mixing trucks, uphill pumping or gravity feeding of concrete up to distances of 200 m will be implemented. Prior to erecting the structures and infilling of the foundations, the excavated foundations will be covered/fenced-off in order to safeguard unsuspecting animals and people from injury. All foundations are back-filled, stabilised through compaction, and capped with concrete at ground level.

These tower structures proposed have been selected to reduce visual impacts, impact on sensitive vegetation areas, wetlands and sensitive riparian habitats. With regards to the issue of lattice vs. monopole, Eskom generally utilises monopole structures as it is aesthetically more pleasing, has a smaller footprint and requires less steel. Monopole structures are not self-supporting hence it needs stays to hold up the strain structures whereas lattice can be self-supporting.

Option Description	Technical Viability	Financial Analysis
• Steel Monopole/3-Pole Structures	• Smaller footprint but requires stays/anchors on the strainers and bend points. • Not imposing in appearance.	R 1,650,890.64 per km
• Steel Lattice Structures	• Larger footprint and self-supporting. • Plagued by member theft. • Imposing in appearance.	R 3,779,814.53 per km
• HV Cable	• Smaller footprint. • River crossings are even more costly. • Not imposing in appearance.	R 10,915,995.00 per km

Overhead lines make up a large part of the interconnected system. They ensure low-loss transmission at 380-kV extra-high voltage, and thus guarantee reliable energy supply. Cables, in contrast, are predominately used in medium- and low-voltage networks, as well as for power distribution in densely built-up areas with high electricity demand. Nevertheless, underground cables have, in many cases,economic, ecological and legal disadvantages which must be carefully taken into consideretaion.

Overhead Powerline vs. Underground Cable

The alternative entails the installation of electric cables underground rather than overhead on poles and tower. The major environmental impacts of overhead lines occur when they are already in operation. They are mainly related to birds colliding with the lines as well as the visible effects on the landscape. Whereas the most harmful part of underground cables, in contrast, is their installation.

Although underground power cables can be can assist the transmission of power across densely populated urban areas Rivers and other natural obstacles; undergrounding is more expensive, since the cost of burying cables at transmission voltages is several times greater than overhead power lines, and the life-cycle cost of an underground power cable is two to four times the cost of an overhead power line.

Typical Trench

Whereas finding and repairing overhead wire breaks can be accomplished in hours, underground repairs can take days or weeks, and for this reason redundant lines are run. Furthermore, underground power cables, due to their proximity to earth, cannot be maintained live, whereas overhead power cables can be. Operations are more difficult since the high reactive power of underground cables produces large charging currents and so makes voltage control more difficult.

The shunt capacitance is greater with underground cables than it is with overhead, and at the same time, the series reactance is lower. That's a consequence of the spatial physics. As a result, the use of underground cables for transmission can result in significant reactive control problems at the transmission level. That in turn means that additional equipment is required to address those reactive control problems, further increasing the effective cost of underground compared with overhead.

Underground cables also cause negative ecological impacts. When burying cables, the soil must be exchanged. Furthermore, not only do the cable routes need to be kept free from deeply rooted plants, they may not be built on for any other purpose. In addition, underground cables radiate heat. This has an effect on soil humidity, which, for example, can lead to drainage or drying out of marshes.

Laying an underground cable will affect the rights of the owners and occupants of the land on which the power line is built and used, to a degree similar to the erection of an overhead line. On principle, easements --rights of use-- are recorded in the land register. The owners receive appropriate compensation. This ensures that the transmission system operator can build the power line and subsequently access it in order to carry out the necessary maintenance and repair works. In the case of underground cable, continual and direct access for maintenance and repairs is only guaranteed when the area above the cable remains free. As a consequence, use of the underground cable route for agricultural purposes is not possible or is subject to restrictions.

Directional Drilling

These projects are Department of Energy funded and as such must be done at lowest possible cost so as to maximise the number of people that can be connected with available funds. Cable theft is a problem in many areas and this would result in frequent outages and very high replacement costs as well outage costs.

River Crossings

In general, underground cables will obviously have major Ecological impacts during their installation than during operation. Key significant activities which would have considerable consequences for the environment include:

- Earthworks/excavation / trenching
- Road construction for access purposes
- Clearing of vegetation for access purposes that will be needed for heavy machinery needed for cable transportation and trenching
- Impacts on fauna and flora species located within and around cable route
- Soil compaction will have negative impacts on both flora, fauna and general ecological environment
- Irreversible damage on the wetland and other water courses
- Potential impacts on unknown features of heritage significance

Although there some are benefits in terms of use of the land after the installation of the underground cables, the negative ecological impacts and the huge cost implications outweigh the other benefits. It is for this reason that the use for underground cables as an alternative option is not recommended or preferred for the purposes of this project.

c) Technology alternatives (Substations, all Alternative SS sites, both areas)

Air Insulated Substation (AIS) vs. Gas Insulated Substation (GIS)
AIS are generally used where there is an overhead network and GIS on cable networks. GIS uses SF6 gasses for insulation which have a higher dielectric strength than air which is the insulation medium in AIS. GIS has a smaller foot print than AIS and is usually enclosed indoor (in a building of some sort) whereas AIS is out in the open. However GIS in the context of this project would not be a good option as it would require that we terminate all the overhead lines onto cables creating a source of theft risk. We would still require a 132kV yard for the

HV/MV transformers and busbar hence the footprint benefits of GIS would not be realised fully. *This alternative is therefore not preferred for the reasons stated above. This would not be an option for the Nchaupe and Ratsiepane Substation*

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

e) No-go alternative

No Go alternative for Nchaupe and Ratsiepane Substation and associated power lines
The No-go option implies that the Project does not proceed, and will thus comprise of Eskom not going ahead with the construction of the proposed power line and substation. Ideally this would be the preferred alternative as the status quo of the environment remains unchanged, however due to the growing demand for energy and activities that will require electricity in the area, this alternative is not feasible. Should Eskom rely on the existing network to supply future demand it is highly likely that present supply will be compromised due to the increased load on the network. Although the no-go alternative has been considered, it is not a practical project alternative in terms of providing stable electricity supply in the area as it implies a continuation of the current situation or the status quo, therefore, it doesn't render any positive outcomes. The project will improve the customer interruptions and also the performance of the supply. By not increasing the supply to the greater area, development will be constrained as the already existing network is operating at near-capacity and will not be able to accommodate the amount of load that will be brought by future developments. A new overhead power line and the substation are required to strengthen the grid supply in the area.

Paragraphs 3 – 13 below should be completed for each alternative.

- **PHYSICAL SIZE OF THE ACTIVITY**

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Nchaupe: Proposed substation location & alternatives	**Size of the activity:**
Nchaupe: Alternative A1[1] **Preferred substation**	100 x 150m2
Nchaupe: Alternative A2	100 x 150m2

Ratsiepane: Proposed substation location & alternatives	**Size of the activity:**
Ratsiepane: Alternative A1[2] **Preferred substation**	100 x 150m2

[1] "Alternative A.." refer to activity, process, technology or other alternatives.
[2] "Alternative A.." refer to activity, process, technology or other alternatives.

Ratsiepane: Alternative A2	100 x 150m2

or, for linear activities:

Substation Alternative Options

Nchaupe Substation options

Vegetation association	Sensitivity	State of vegetation affected	
		Option 1	Option 2
Acacia mellifera shrublands	low	Degraded	Not affected
Old Fields and Earth Disturbances	low	Degraded	Highly degraded
Surrounding area description		Tar road to north, 500 m to nearest buildings	Tar road to north, 150 m to nearest buildings, many tracks across
Ranking		**1 (Preferred)**	**Second option**

Both substation options are equally feasible from a vegetation point of view, however the Nchaupe substation option 1 (western ss) will slightly reduce the distance of vegetation to be disturbed, even if that vegetation is rather degraded at this stage.

Ratsiepane substations

Vegetation association	Sensitivity	State of vegetation affected	
		Option 2	Option 1
Acacia mellifera shrublands	low	Degraded	Not affected
Old Fields and Earth Disturbances	low	Degraded	Not affected
Peltophorum - Carissa shrublands	low	Not affected	Degraded
Surrounding area description		Tar road to south, Swartdam 1.5 km west, otherwise natural veld, only bush encroachment	Gravel road to north, Ratsiepane 700 m to west, natural veld to east
Ranking		**Second option**	**1 (Preferred)**

Both substation localities comprise degraded vegetation. However, option 2 is further from a township than option 1, which could create more of a fragmentation effect on the natural vegetation due to the powerlines. In addition, the use of option 1 would ensure that a large portion of the line servitude will be shared with the servitude of the proposed New Mathibestad-Nhaupe line.

Alternatives for Nchaupe to Ratsiepane lines:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	11.08km
Alternative A2	11.40km
Alternative A3	6.29km
Alternative A4	6.62km

Alternatives for Ratsiepane to Tswaing lines:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	11.20km
Alternative A2 (if any)	12.36km
Alternative A3 (if any)	12.74km
Alternative A4 (if any)	17.23km

Alternative A5 (if any)	18.42km
Alternative A6 (if any)	18.72km

Alternatives for Nchaupe to New Mathibestad lines:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	18.97km
Alternative A2 (if any)	19.18km
Alternative A3	
Alternative A4	

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Nchaupe Substation:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	100m x150m^2 = 1.5 hectares
Alternative A2 (if any)	100m x150m^2 = 1.5hectares

Ratsiepane Substation:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	100m x150m^2 = 1.5hectares
Alternative A2 (if any)	100m x150m^2 = **1.5 hectares**

or, for linear activities:

Alternatives for Nchaupe to Ratsiepane lines:	**AREA of the activity:**
Alternative A1 (preferred activity alternative)	11.08km X 31m =365.8 ha
Alternative A2	11.40km X 31m =353.4 ha
Alternative A3	6.29km X 31m =194.99 ha
Alternative A4	6.62km X 31m =205.22 ha
Alternatives for Ratsiepane to Tswaing lines:	**AREA of the activity:**
Alternative A1 (preferred activity alternative)	11.20km X 31m = 347.2 ha
Alternative A2 (if any)	12.36km X 31m =383.16 ha
Alternative A3 (if any)	12.74km X 31m =394.94 ha
Alternative A4 (if any)	17.23km X 31m =534.13 ha
Alternative A5 (if any)	18.42km X 31m =571.02 ha
Alternative A6 (if any)	18.72km X 31m =580.32 ha

Alternatives for Nchaupe to New Mathibestad lines:	**AREA of the activity:**
Alternative A1 (preferred activity alternative)	18.97km X 31m = **588.07ha**
Alternative A2 (if any)	19.18km X 31m= **594.58ha**
Alternative A3	
Alternative A4	

- **SITE ACCESS**

Does ready access to the sites exist? **Nchaupe SS**	**YES**	NO **X**
If NO, what is the distance over which a new access road will be built		200m

Does ready access to the sites exist? **Ratsiepane SS**	**YES**	NO **X**
If NO, what is the distance over which a new access road will be built		200m

Describe the type of access road planned:

The proposed overhead distribution lines will traverse agricultural and rural areas where there are existing access roads and tracks in close proximity to the site. Permission will be obtained from private land owners to use these routes. Temporary access routes will be used to access the lines where roads are not available during construction. Existing roads will be used to the substation sites, but **a new section of road will be constructed to the substations**. It is practice to locate substations 200m from the existing road, thus the length of direct access to the substation (a dedicated road/entrance gravelled) will be 200m in length.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site. **See Appendix A for maps.**

- **LOCALITY MAP**

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

- **LAYOUT/ROUTE PLAN**

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

- **SENSITIVITY MAP**

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

- **SITE PHOTOGRAPHS**

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

- **FACILITY ILLUSTRATION**

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

- **ACTIVITY MOTIVATION**

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?	YES✓	NO	Please explain
The proposed power distribution line and substation are located on **Government, Tribal and privately owned agricultural land.** Once the proposed overhead line and substation have been constructed, limited impacts are expected. Eskom will acquire servitudes and affected property owners will be permitted to use areas underneath the lines for activities such as informal sports or animal grazing. Other activities, except the construction of buildings and tall structures and growing of trees, may also continue below the lines.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES✓	NO	Please explain
The Gauteng and North West Provinces require strategic, socio-economic and bulk infrastructure investment and includes: transport and logistics (including roads, rail and air), Information and Communication and Technologies, schools, hospitals, clinics, libraries, universities (if applicable), **electricity services (energy),** water reticulation services, sewage and sanitation services, waste management services, and so forth. Thus the provision of electrical infrastructure is in line with SDF.			

(b) Urban edge / Edge of Built environment for the area	YES	NO✓	Please explain

The proposed distribution lines fall outside the urban edge. Electricity distribution infrastructure is required for existing residential areas outside the urban edge. The project will strengthen the electricity distribution network in the Nchaupe area.

The proposed distribution lines fall outside the urban edge. The proposed development does not blend in with the surrounding area's land use because there are no existing power lines within the proposed corridor yet (which will result in visual intrusion in the area). However, electricity distribution infrastructure is required for existing residential areas outside the urban edge. The project will strengthen the electricity distribution network in the area and will link to the future (approved in a previous application) power lines for the area (e.g.Dipompong-Dinaledi).

(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES✓	NO	Please explain

The Moretele Local Municipality acknowledges that the provision of electricity infrastructure is of key importance and prioritises the need to provide universal access to this service. The "**Moretele Local Municipality (2016/2017) Integrated Development Plan (IDP) Review"** document highlights that the area require considerable resources to eliminate the backlogs of electricity provision to ensure that the provision of service keeps pace with the demand to prevent a further accumulation of backlogs. Within the Local Municipality, the smaller villages in the rural areas have the greatest backlog. **Electrification of rural homes, schools, clinics, small businesses is one the main policy considerations currently under discussion**. Household Connections

The Integrated Energy Pan (2013) provides that energy is one of the key elements in production processes. A lack or shortage of energy has a serious effect on the economy and gross domestic growth. Equally households rely on electricity for cooking, heating and other use which indicates the importance of electricity towards improving the quality of life of the citizens. In the IDP document it is stated that *"It should be noted however that the municipality is not authorized to performing on the function. This does not absolve the municipality the responsibility of determining needs and backlogs and planning for electrification of households in the municipal are of jurisdiction".*

As an example, the Municipality has 12 thousand indigent households registered to benefit on basic services. Budget provisions has been set aside to assist communities the following social packages and are included in the budget for 50kWh free basic services for electricity at a cost of R 7,1-million. The image below shows other approved capital projects (High Mast Lighting) that will relate to electricity provision in the municipality:

High Mast lighting

In terms of the allocate powers and functions the municipality is competent to perform the Street lighting function as defined below:

Street Lighting(Local Function)	"Street lighting" means the provision and maintenance of lighting for the illuminating of streets

Approved Capital Projects (Implementation) 2015/2016

Project Description	Ward	Implementation			Total Capital Budget 2015/16
		Start	End	Revised Completion Date	
High Mast Lighting					R 7 000 000.00
Installation of High Mast lights in ward 1	Ward 1				-
Installation of High Mast lights in ward 10	Ward 10	04 May 2015	07 July 2015		7 000 000.00
Installation of High Mast lights in ward 13	Ward 13				-
Installation of High Mast lights in ward 19	Ward 19				-
Installation of High Mast lights in ward 20	Ward 20				-

Increased number of substations is considered as a need to increase the electricity supply within the area. Eskom will invest in the local economy by providing the infrastructure, which in turn will then assist the

municipalities in reaching their objectives. In this way the proposed development is aligned with the municipal objectives and priorities for service delivery and infrastructural development in the area.			
(d) Approved Structure Plan of the Municipality	**YES✓**	NO	Please explain
The proposed project entails electricity infrastructure, which is compatible planning documents of the municipality. According to the **Moretele LED,** the potential to unlock the local economy is huge around the primary and secondary nodal areas. Mathibestad, Makapanstad, Seutelong, Ngobi and Cyferskuil have been identified as the primary nodal areas and the areas around Motla/Swartdam as secondary nodes.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO✓	Please explain
There is no EMF for the area in which the route alternatives are located. The approval of electricity infrastructure will however not compromise the existing environmental management priorities.			
(f) Any other Plans (e.g. Guide Plan)	YES✓	NO	Please explain
The proposed development is aligned with Eskom's Integrated Strategic Electricity Planning (ISEP) process, which is intended to provide strategic projections of supply-side and demand-side options to be implemented in order to meet long-term load forecasts. It provides the framework for Eskom to investigate a wide range of new supply-side and demand-side technologies with a view to optimising investments and returns.			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES✓	NO	Please explain
Moretele is characterised by a mixture of formal and informal housing areas. New housing development will require electrification which can be provided by the proposed powerline development. The Moretele Local Municipality (2016/2017) IDP document highlights that the area require considerable resources to eliminate the backlogs of electricity provision to ensure that the provision of service keeps pace with the demand to prevent a further accumulation of backlogs. Within the Local Municipality, the smaller villages in the rural areas have the greatest backlog. Electrification of rural homes, schools, clinics, small businesses is one the main policy considerations currently under discussion. Household Connections. A lack or shortage of energy has a serious effect on the economy and gross domestic growth. Equally households rely on electricity for cooking, heating and other use which indicates the importance of electricity towards improving the quality of life of the citizens.			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES ✓	NO	Please explain
This project relates to the demand on services and the backlog in rural areas such as the Moretele Municipal jurisdiction. The proposed new substations are planned in order to create capacity for the future expected loads. .			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES✓	NO	Please explain
The proposed project is the construction of the Nchaupe and Ratsiepane Substation and associated overhead distribution power line. It will provide additional electricity capacity to the area.			

6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	NO✓	Please explain
The proposed project is the construction a substation at Nchaupe and associated overhead distribution power line. It will not require any capacity for services such as water and sanitation from relevant Municipalities. It will however provide additional electricity capacity to the area.			
7. Is this project part of a national programme to address an issue of national concern or importance?	YES✓	NO	Please explain
The upgrading of the electricity network and infrastructure especially the substations and transmission and distribution lines is a strategic priority towards addressing the shortage of electricity in South Africa.			
8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES✓	NO	Please explain
Although the proposed development transverse some agricultural smallholdings, the locations of the sites were selected such that it is within or next to the centre of the load demand at Nchaupe.			
9. Is the development the best practicable environmental option for this land/site?	YES✓	NO	Please explain
The current status quo is the best practicable environmental option. The vacant area that is proposed for the location of the Nchaupe Substation is not an economically viable agriculture unit and is not utilized as such at present. The construction of the substation will thus not impact significantly on the current land use. The Proposed power line will mostly follow the alignment of an existing road, which would be the best practical option.			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES✓	NO	Please explain
The potential benefit of the proposed power line and substation to the area lies in the support of the local economy and housing developments through a reliable electricity supply, which will increasingly benefit the provision of services. The provision of electricity will promote local economic development and further investment in the area. Provision of electricity is critical for economic development, related employment and sustainable development in South Africa. In the context of the project improvement of the 132kV supply is critical to the improvement of provision of household electricity.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO✓	Please explain
Other lines have been assessed and approved in other applications and no new precedent will be created. For instance, the Tswaing and New Mathibetad substations formed part of a previous application that has been approved by DEA.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO✓	Please explain
The proposed Nchaupe SS, Ratsiepane SS and associated power lines will not negatively affect any person's rights. The servitude rights for the line will be acquired by Eskom and financial compensation will be paid where applicable.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO✓	Please explain
The project is the proposed construction of overhead electricity distribution lines and two new substations. Although the area features mostly agricultural and rural land use, development has taken place at an excelled pace, transforming the area to a large extent. The urban edge will not be compromised by the project and will in itself not stimulate urban sprawl.			

14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES✓	NO	Please explain

The project will conform to the objectives of the following SIPS:

SIP 6: Integrated Municipal Infrastructure Project
Develop a national capacity to assist the 23 least resourced districts (17 million people) to address all the maintenance backlogs and upgrades required in water, **electricity** and sanitation bulk infrastructure.

SIP 10: **Electricity** Transmission and Distribution for all
Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.

15. What will the benefits be to society in general and to the local communities?	Please explain

The provision of a reliable electricity network and provision of capacity for new users.

16. Any other need and desirability considerations related to the proposed activity?	Please explain

The proposed project will ensure that economic developments and housing developments can be accommodated.

17. How does the project fit into the National Development Plan for 2030?	Please explain

The following NDP sections area relevant: Elements Of A Decent Standard Of Living – provision of Electricity

Women And The Plan
Access to safe drinking water, **electricity** and quality early childhood education, for example, could free women from doing unpaid work and help them seek jobs

Due to a reduction in capital spending from effect, South Africa has missed a generation of capital investment in roads, rail, ports, **electricity**, water, sanitation, public transport and housing. To grow faster and in a more inclusive manner, the country needs a higher level of capital spending.

Economic Infrastructure
The proportion of people with access to the **electricity** grid should rise to at least 90 percent by 2030, with non-grid options available for the rest.
Action 20 of The National Development Plan also considers the Ring-fencing the electricity distribution businesses of the 12 largest municipalities (which account for 80 percent of supply), resolve maintenance and refurbishment backlogs and develop a financing plan, alongside investment in human capital.

Actions
Revise national electrification plan and ensure 90 percent grid access by 2030 (with balance met through off-grid technologies).

Regional Planning
The proposed power lines will connect to the Dinaledi-Dipompong substations and lines and will form part of the Geographic Network Upgrade. The route is situated within the Moretele Local Municipality's jurisdiction (North West Province) but will connect to power stations in other provinces and thus aid in distributing power through the broader region.

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

This report serves as a **Basic Assessment Report** that will investigate all potential impacts (social, economic and environmental) that will result from the development including alternatives, assess and evaluate and further provide a mitigation plan for all identified potential impacts.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.
Ecological and wetland specialists were appointed to investigate potential environmental impacts. Identified environmental impacts were assessed and mitigation measures provided to control and manage these environmental impacts. Interested and Affected parties, land owners and relevant stakeholders were identified and involved throughout the Basic Assessment process and their comments will be addressed and recorded as part of this assessment.

- **APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES**

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Environmental Impact Assessment Regulations *2014 Regulations	The EIA regulations describe the EIA process to be followed including the public participation process, and the listed activities that may have a harmful impact on the environment and must be assessed.	Department of Environmental Affairs	2014
Constitution of the Republic of South Africa, Act 108 of 1996	The Constitution (section 24) makes provision for the protection of the natural environment and heritage resources through the recognition of the rights to a safe and healthy environment	Republic of South Africa	1996
National Environmental Management Act (NEMA), No. 107 of 1998	NEMA is the overarching environmental management legislation. The NEMA Act sets out the principles of Integrated Environmental Management (IEM). NEMA aims to promote sustainable development, with wide-ranging implications for national, provincial, and local government. Section 2 of NEMA, sets out a range of environmental principles that are to be applied by all organs of state when taking decisions that may significantly affect the environment. Section 24, as amended, states that the activities that may significantly affect the environment and require authorisation or permission by law must be investigated and assessed prior to approval.	Department of Environmental Affairs	1998
National Environmental Management: Air Quality Act No 39 of 2004	This Act aims to provide for the management of air quality in South Africa.	Department of Environmental Affairs	2004
National Environmental Management Waste Act No 59 of 2008	Makes provision for sound management of general and hazardous waste in South Africa, through the integration of a sufficient range of complementary waste management options, in line with the waste management hierarchy and internationally accepted principles of best environmental practice. Waste will be generated during the construction phase of the project.	Department of Environmental Affairs	2008

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Biodiversity Act, No. 10 of 2004 of 1989	This Act allows for the protection of species and ecosystems that administration and management of protected areas in warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources and the establishment and functions of the South African National Biodiversity Institute.	Department of Environmental Affairs *An ecological specialist was appointed for this project	1999
National Water Act No 36 of 1998	Provides for the protection of water resources, the use of water resources, waste disposal or alteration of characteristics of watercourses (e.g. rivers, streams, wetlands, etc.) and pollution prevention. A Water Use Licence Application is made to authorise water use activities pertaining to the altering of the bed and banks of a watercourse and diverting the flow of water in a watercourse. This WULA is made as some watercourses have been identified and the **construction of some tower structures within 500m of a watercourse** may result.	Department of Water Affairs *A wetland specialist was appointed for this project	1998
National Heritage Resources Act No. 25 of 1999	The Act aims to promote an integrated system for the identification, assessment and management of the heritage Resources in South Africa. Under section 38. (1) of the NHRA any person who intends to construct a powerline or other linear development exceeding 300m in length must notify the responsible heritage resources agency of its intention.	SAHRA *a heritage specialist was appointed for this project	1999
Occupational Health and Safety Act No. 85 of 1993	The OHSA governs and ensures the protection of employees in the workplace. A number of permanent and contract skilled and semi-skilled workers will be involved in the construction of the different aspects of the project. Their appointment and work periods will be subject to the provisions of the OHSA.	Department of Labour	1963
The Conservation of Agricultural Resources Act No 43 of 1983	To provide for the conservation of the natural agricultural resources of the Republic of South Africa by the preservation of the production potential of land, by the combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants. This act will regulate construction activities to prevent the spreading of invasive species and to ensure successful rehabilitation of the receiving environment.	Department of Agriculture, Forestry and Fisheries	1983
Public Access to Information Act No 2 of 2000	Provides the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights; and to provide for matters connected therewith. Eskom needs to acquire servitude from existing land owners, any individual owner has the right to access to any information	Department of Justice *project information is available to interested and	2000

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	pertaining to the project	affected parties	

- **WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT (Nchaupe and Ratsiepane Substation and Power Line)**

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	NO ✓
If YES, what estimated quantity will be produced per month?		---m^3

How will the construction solid waste be disposed of (describe)?

Construction rubble/ solid waste will be temporarily stored on site in designated waste skips and then removed by an appropriate waste contractor appointed by the main construction contractor to an approved landfill site. This will be managed through the EMPr.

Where will the construction solid waste be disposed of (describe)?

General waste removed from site will be disposed of at the nearest registered landfill (Bosplaas East and Bosplaas West in the Moretele municipal area). Safe disposal certificates will be obtained.

Will the activity produce solid waste during its operational phase?	YES	NO ✓
If YES, what estimated quantity will be produced per month?		m^3

How will the solid waste be disposed of (describe)?

N/A

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

All solid waste will be disposed off at a landfill site (Bosplaas East and Bosplaas West)

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	YES	**NO✓**

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?	YES	**NO ✓**

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	**NO ✓**
If YES, what estimated quantity will be produced per month?		m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	NO ✓

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	NO ✓

If YES, provide the particulars of the facility:

Facility name:	**N/A**		
Contact person:			
Postal address:			
Postal code:			
Telephone:		**Cell:**	
E-mail:		**Fax:**	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

None, as no effluent will be disposed of.

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?	YES	**NO✓**
If YES, is it controlled by any legislation of any sphere of government?	YES	**NO✓**

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If NO, describe the emissions in terms of type and concentration:

Limited emissions will be generated <u>during the construction phase</u> for Nchaupe and Ratsiepane substation and the power line. Emissions generated will be in the form of dust, carbon dioxide and other vehicle emissions generated by diesel powered machinery and trucks during the construction process i.e. tip trucks, TLB's, excavators and dust from the movement of the construction vehicles. These emissions will be composed primarily of CO_2 and will be of a low concentration. However these emissions will have a **short term and non-significant impact** on the immediate surrounding area (mostly agricultural or vacant land) and thus no authorisation will be required for such emissions. Where activities take place near residential land uses, appropriate dust suppression measures must be implemented (e.g. removal of vegetation in a phased manner and using recycled water for spraying dust to reduce the impacts). It is recommended that construction vehicles are regularly serviced and kept in good mechanical condition to minimise possible exhaust emissions.

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms	YES	NO ✓

of the NEM:WA?		

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?	YES ✓	NO
If YES, is it controlled by any legislation of any sphere of government?	YES	NO ✓

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If NO, describe the noise in terms of type and level:

Short term noise impacts are anticipated during the construction phase of the project for Nchaupe and Ratsiepane Substation and the power lines. It is however anticipated that the noise will be localised and contained within the construction site, and furthermore the residential properties are located some distance from the areas of construction, thus not impacted upon significantly. The Nchaupe school and Moretele College of Education are located far enough from the proposed Nchaupe substation site to not be disturbed by noise. All construction equipment must be maintained and kept in good working order to minimise associated noise impacts. If required, adequate noise suppression measures (i.e. screens, etc) must be erected around the point source of construction and/or operational noise pollution to reduce noise to an acceptable level. No noise will be generated during the operational phase of the development.

- **WATER USE**

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal ✓ **Construction period**	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water during operation ✓

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	0 litres	
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	YES✓	NO

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

A Water Use License Application will be submitted to Department of Water Affairs (DWA) after the Basic Assessment Report (this report) has been reviewed and the project granted Environmental Authorisation by DEA.

- **ENERGY EFFICIENCY**

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

The project is the construction of a distribution line and does not use energy. Eskom however has introduced and champions the 49m campaign which aims to reduce National energy usage by 10%, which would be as effective as the construction of a new power station, without the potential carbon emission or cost.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

The project is the construction of a distribution line and does not use energy. Eskom however has introduced and champions the 49m campaign which aims to reduce National energy usage by 10%, which would be as effective as the construction of a new power station, without the potential carbon emission or cost.

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

   Section B Copy No. (e.g. A): **no**

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? **YES✓** | NO

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I (declarations also contained in each report). All specialist reports must be contained in Appendix D.

Province	North West Province
District Municipality	Bojanala Platinum District Municipality
Local Municipality	Moretele Local Municipality
Ward number(s)	9, 11, 12, 22, 23, 24, 25, 26 & 27
Nearest town(s)	Moretele, Makapanstad, Tswaing, Ratsiepane
Farm name(s) and number(s)	**See Appendix E**
Portion number(s)	**See Appendix E**

See Appendix E1 for list																			
1	2		3		4										5				

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records

Although much of the power line route traverses over land "zoned" as agricultural smallholdings, the area has never been a commercial crop producer. Some of the land belongs to the Government or South African Native Trust and mostly used for grazing and cultivation. Some of the holdings in the area are privately owned and used for informal grazing, with small areas being cultivated for household use.

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required?

	YES	**NO X**
Servitudes will be registered		

- **GRADIENT OF THE SITE**

Indicate the general gradient of the site.

Nchaupe Substation Site

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
		X				

Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
		X				

Ratsiepane Substation Site

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
		X				

Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
		X				

Nchaupe Power Line

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
		X				

Alternative S2 (if any):

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
		X				

- **LOCATION IN LANDSCAPE**

Indicate the landform(s) that best describes the site:

2.1 Ridgeline		2.4 Closed valley		2.7 **Undulating plain / low hills**	**X**
2.2 Plateau		2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain		2.6 **Plain**	**x**	2.9 Seafront	
2.10 At sea					

- **GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE**

Is the site(s) located on any of the following?

Nchaupe Substations	**Alternative 1**		**Alternative 2**	
Shallow water table (less than 1.5m deep)	YES	NO✓	YES	NO✓
Dolomite, sinkhole or doline areas	YES	NO✓	YES	NO✓
Seasonally wet soils (often close to water bodies)	YES	NO✓	YES	NO✓

Unstable rocky slopes or steep slopes with loose soil	YES	NO ✓	YES	NO ✓
Dispersive soils (soils that dissolve in water)	YES	NO✓	YES	NO✓
Soils with high clay content (clay fraction more than 40%)	YES	NO ✓	YES	NO ✓
Any other unstable soil or geological feature	YES	NO✓	YES	NO✓
An area sensitive to erosion	YES✓	NO	YES✓	NO

Ratsiepane Substations	**Alternative 1**		**Alternative 2**	
Shallow water table (less than 1.5m deep)	YES	NO✓	YES	NO✓
Dolomite, sinkhole or doline areas	YES	NO✓	YES	NO✓
Seasonally wet soils (often close to water bodies)	YES	NO✓	YES	NO✓
Unstable rocky slopes or steep slopes with loose soil	YES	NO✓	YES	NO ✓
Dispersive soils (soils that dissolve in water)	YES	NO✓	YES	NO✓
Soils with high clay content (clay fraction more than 40%)	YES	NO✓	YES	NO ✓
Any other unstable soil or geological feature	YES	NO✓	YES	NO✓
An area sensitive to erosion	YES✓	NO	YES✓	NO

Nchaupe to Ratsiepane Power lines (2)	**Alternative 1**		**Alternative 2**	
Shallow water table (less than 1.5m deep)	YES	NO✓	YES	NO✓
Dolomite, sinkhole or doline areas	YES	NO✓	YES	NO✓
Seasonally wet soils (often close to water bodies)	YES	NO✓	YES	NO✓
Unstable rocky slopes or steep slopes with loose soil	YES	NO✓	YES	NO ✓
Dispersive soils (soils that dissolve in water)	YES	NO✓	YES	NO✓
Soils with high clay content (clay fraction more than 40%)	YES	NO✓	YES	NO ✓
Any other unstable soil or geological feature	YES	NO✓	YES	NO✓
An area sensitive to erosion	YES✓	NO	YES✓	NO

Nchaupe to New Mathibestad Power lines (2)	**Alternative 1**		**Alternative 2**	
Shallow water table (less than 1.5m deep)	YES	NO✓	YES	NO✓
Dolomite, sinkhole or doline areas	YES	NO✓	YES	NO✓
Seasonally wet soils (often close to water bodies)	YES	NO✓	YES	NO✓
Unstable rocky slopes or steep slopes with loose soil	YES	NO✓	YES	NO ✓
Dispersive soils (soils that dissolve in water)	YES	NO✓	YES	NO✓
Soils with high clay content (clay fraction more than 40%)	YES	NO✓	YES	NO ✓
Any other unstable soil or geological feature	YES	NO✓	YES	NO✓
An area sensitive to erosion	YES✓	NO	YES✓	NO

Ratsiepane to Tshwaing Power lines (1 & 2 of 6)	**Alternative 1**		**Alternative 2**	
Shallow water table (less than 1.5m deep)	YES	NO✓	YES	NO✓
Dolomite, sinkhole or doline areas	YES	NO✓	YES	NO✓
Seasonally wet soils (often close to water bodies)	YES	NO✓	YES	NO✓
Unstable rocky slopes or steep slopes with loose soil	YES	NO✓	YES	NO ✓
Dispersive soils (soils that dissolve in water)	YES	NO✓	YES	NO✓
Soils with high clay content (clay fraction more than 40%)	YES	NO✓	YES	NO ✓
Any other unstable soil or geological feature	YES	NO✓	YES	NO✓
An area sensitive to erosion	YES✓	NO	YES✓	NO
Ratsiepane to Tswaing Power lines (3 & 4 of 6)	**Alternative 3**		**Alternative 4**	
Shallow water table (less than 1.5m deep)	YES	NO✓	YES	NO✓
Dolomite, sinkhole or doline areas	YES	NO✓	YES	NO✓

Seasonally wet soils (often close to water bodies)	YES	NO✓	YES	NO✓
Unstable rocky slopes or steep slopes with loose soil	YES	NO✓	YES	NO ✓
Dispersive soils (soils that dissolve in water)	YES	NO✓	YES	NO✓
Soils with high clay content (clay fraction more than 40%)	YES	NO✓	YES	NO ✓
Any other unstable soil or geological feature	YES	NO✓	YES	NO✓
An area sensitive to erosion	YES✓	NO	YES✓	NO
Ratsiepane to Tswaing Power lines (5 & 6)	**Alternative 5**		**Alternative 6**	
Shallow water table (less than 1.5m deep)	YES	NO✓	YES	NO✓
Dolomite, sinkhole or doline areas	YES	NO✓	YES	NO✓
Seasonally wet soils (often close to water bodies)	YES	NO✓	YES	NO✓
Unstable rocky slopes or steep slopes with loose soil	YES	NO✓	YES	NO ✓
Dispersive soils (soils that dissolve in water)	YES	NO✓	YES	NO✓
Soils with high clay content (clay fraction more than 40%)	YES	NO✓	YES	NO ✓
Any other unstable soil or geological feature	YES	NO✓	YES	NO✓
An area sensitive to erosion	YES✓	NO	YES✓	NO

Specialist studies have been done (see Appendix D for Wetlands assessment & Geotechnical Desk Top Study)

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for GeoScience may also be consulted.

- **GROUNDCOVER**

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Nchaupe Substation Alt 1

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Nchaupe Substation Alt 2

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Ratsiepane Substation Alt 1

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien	Veld dominated by alien species[E]	Gardens

		infestation[E]		
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Ratsiepane Substation Alt 2

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Nchaupe to Ratsiepane Lines

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Tswaing to Ratsiepane Lines

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

Nchaupe to New Mathibestad Lines

Natural veld - good condition[E]	Natural veld with scattered aliens[E]	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

TSWAING TO RATSIEPANE

The **future Tswaing** substation (a previous application) will be located at just outside the north-western corner of the Tswaing Meteorite Crater Reserve . Farms that are located in the area are Uitspan, Haakdoringfontein and Bezuidenhoutskraal . Villages in the area are Kromkuil village, Ratsiepane village. All the routes will cross mainly over rural land which is dispersed with villages. There are several non-perennial stream crossings and number of gravel roads. Only one major spruit (mostly seasonal) namely the Soutpansspruit present along the north-eastern boundary of the Kromkuil village will be crossed. The Kromkuil village is located on a small hill but the topography over the remainder is flat to moderate.

MORETELE-NEW MATHIBESTAD

The **future New Mathibestad** substation (a previous application) will be located to the north of the village of Bosplaas Mathabe. It runs in a westerly direction over the farm Witgatboom and across the farm boundary to the

small village of Kwaboko. It continues west over the gravel road and over the farm boundary onto the northern corner of the farm De Wig. It cross over to the farm Bles and over the gravel road and turns north north-west over another gravel road. Once over this gravel road it turns north around the village of Kwa-Motlhabaneng over a gravel road and a farm boundary to the Nchaupe Alternative 1 substation located west of the village of Makapanstad and to the north of the Moretele College of Education and south of the entrance road to the village.The Alternative 2 route follows the same route as above, up to where it crosses over to the farm Bles and over the gravel road, and north north-west over another gravel road. Once over this gravel road however it turns north around the village of Kwa-Motlhabaneng over a gravel road and a farm boundary around the western boundary of the village of Makapanstad and to the west of the Moretele College of Education. Once passed the College it turns north-east for a very short distance to the Moretele alternative 2 substation proposed south of the entrance road to the village. Both routes will cross mainly over rural land with a few non-perennial stream crossings and number of gravel roads. Only one major river (mostly seasonal) namely the Mojitla river present along the west of Kwa-Boko will be crossed. This small village is located on a slight rise but the topography over the remainder is flat to moderate.

RATSIEPANE-MORETELE

The Ratsiepane substation Alternative 1 is located to the north-east of the Ratsiepane village. The line alternatives are located in the vicinity of the farm Bles and the villages of Swartdam and Kwa-Motlhabaneng. Ratsiepane substation option 2 is located north of the gravel that link the villages of Swartdam and Kwa-Motlhabaneng and will be located to the west of Makapanstad before linking to the proposed Nchaupe Substation (Alternative 1 or 2)

The alternative routes will cross mainly over rural land with a few non-perennial stream crossings and number of gravel roads. No major rivers are present. The topography is flat to moderate.

- **SURFACE WATER**

Indicate the surface water present on and or adjacent to the site and alternative sites?

Nchaupe Substation			
Perennial River	YES	**NO X**	UNSURE
Non-Perennial River (stream crossing)	YES	**NO X**	UNSURE
Permanent Wetland	YES	**NO X**	UNSURE
Seasonal Wetland	YES	**NO X**	UNSURE
Artificial Wetland	YES	**NO X**	UNSURE
Estuarine / Lagoonal wetland	YES	**NO X**	UNSURE

Ratsiepane Substation			
Perennial River	YES	**NO X**	UNSURE
Non-Perennial River (stream crossing)	YES	**NO X**	UNSURE
Permanent Wetland	YES	**NO X**	UNSURE
Seasonal Wetland	YES	**NO X**	UNSURE
Artificial Wetland	YES	**NO X**	UNSURE
Estuarine / Lagoonal wetland	YES	**NO X**	UNSURE

Nchaupe to Ratsiepane Lines			
Perennial River	YES	**NO X**	UNSURE
Non-Perennial River (stream crossing)	**YES ✓**	NO	UNSURE
Permanent Wetland	YES	**NO X**	UNSURE

Seasonal Wetland	YES	**NO X**	UNSURE
Artificial Wetland	YES	**NO X**	UNSURE
Estuarine / Lagoonal wetland	YES	**NO X**	UNSURE

Ratsiepane to Tswaing Lines			
Perennial River	YES	**NO X**	UNSURE
Non-Perennial River (stream crossing)	**YES ✓**	NO	UNSURE
Permanent Wetland	**YES ✓**	NO	UNSURE
Seasonal Wetland	**YES ✓**	**NO**	UNSURE
Artificial Wetland	YES	**NO X**	UNSURE
Estuarine / Lagoonal wetland	YES	**NO X**	UNSURE

Nchaupe to New Mathibestad Lines			
Perennial River	YES	**NO X**	UNSURE
Non-Perennial River (stream crossing)	YES	NO **X**	UNSURE
Permanent Wetland	YES	**NO X**	UNSURE
Seasonal Wetland	**YES ✓**	**NO**	UNSURE
Artificial Wetland	YES	**NO X**	UNSURE
Estuarine / Lagoonal wetland	YES	**NO X**	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

See Wetland specialist study in **Appendix D** for delineation and detail of assessment

Power Line Route	Notes	Preference
Nchaube to New Mathibestad Alternative 1	• Crosses one wetland, a channelled valley bottom • Access road not available for most of the line	**Preferred**
Nchaupe to New Mathibestad Alternative 2	• Crosses one wetland, a channelled valley bottom • Access road not available for most of the line	Second Option
Ratsiepane-Nchaupe Alternative 1	• No wetlands found • Drainage line crossing in northern section • Access road not available for most of the line	**Preferred**
Ratsiepane-Nchaupe Alternative 2	• No wetlands found • Drainage line crossing in northern section • Access road not available for most of the line	Second Option
Ratsiepane-Nchaupe Alternative 3	• No wetlands found • Drainage line crossing in northern section • Access road not available for most of the line	Third Option
Ratsiepane-Nchaupe Alternative 4	• No wetlands found • Drainage line crossing in northern section • Access road not available for most of the line	Fourth Option
Tswaing-Ratsiepane Alternative 1	• Large floodplain crossing the line • Depression pan within 500m of the line	**Preferred**

	• Two streams located within 500m of the line • Soutpanspruit stream crossing south western corner twice • Access road available	
Tswaing-Ratsiepane Alternative 2	• Two wetlands found • Large floodplain crossing the line • Depression pan within 500m of the line • Soutpanspruit stream crossing south western corner twice • Access road available	Fourth ranked option
Tswaing-Ratsiepane Alternative 3	• Large floodplain crossing the line • Depression pan within 500m of the line • Soutpanspruit stream crossing south western corner twice • Access road available	Fifth ranked option
Tswaing-Ratsiepane Alternative 4	• Large floodplain crossing the line • Depression pan within 500m of the line • Access road available	Second ranked option
Tswaing-Ratsiepane Alternative 5	• Large floodplain crossing the line • Depression pan within 500m of the line • Soutpanspruit stream crossing south western corner once • Access road available	Third ranked option
Tswaing-Ratsiepane Alternative 6	• Large floodplain crossing the line • Depression pan within 500m of the line • Soutpanspruit stream crossing south western corner twice • Access road available	sixth ranked option

LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Nchaupe Substation Alt 1 (preferred)		
Natural area X	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station H
Medium density residential	School	Landfill or waste treatment site
High density residential	**Tertiary education facility X**	Plantation
Informal residential A	Church	**Agriculture X**
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant A	Nature conservation area
Medium industrial AN	Train station or shunting yard N	Mountain, koppie or ridge
Heavy industrial AN	Railway line N	Museum
Power station	Major road (4 lanes or more) N	Historical building
Office/consulting room	Airport N	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam A	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

Ratsiepane Substation Alt 1 (preferred)

Natural area X	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station [H]
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential[A]	Church	**Agriculture X**
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant[A]	Nature conservation area
Medium industrial [AN]	Train station or shunting yard [N]	Mountain, koppie or ridge
Heavy industrial [AN]	Railway line [N]	Museum
Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam[A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

Nchaupe to Ratsiepane Power Line Alt 1 (preferred)

Natural area X	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station [H]
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential[A]	Church	**Agriculture X**
Retail commercial & warehousing	Old age home	**River, stream or wetland** X
Light industrial	Sewage treatment plant[A]	Nature conservation area
Medium industrial [AN]	Train station or shunting yard [N]	Mountain, koppie or ridge
Heavy industrial [AN]	Railway line [N]	Museum
Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam[A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

Ratsiepane to Tswaing Power Line Alt 1(Preferred)

Natural area X	Dam or reservoir	Polo fields
Low density residential X	Hospital/medical centre	Filling station [H]
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential[A]	Church	**Agriculture X**
Retail commercial & warehousing	Old age home	**River, stream or wetland X**
Light industrial	Sewage treatment plant[A]	Nature conservation area
Medium industrial [AN]	Train station or shunting yard [N]	Mountain, koppie or ridge
Heavy industrial [AN]	Railway line [N]	Museum
Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area
Military or police	Harbour	**Graveyard X**

base/station/compound		
Spoil heap or slimes dam[A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

Nchaupe to New Mathibestad Line Alt 1 (preferred)

Natural area X	Dam or reservoir	Polo fields
Low density residential X	Hospital/medical centre	Filling station [H]
Medium density residential	School	Landfill or waste treatment site
High density residential	**Tertiary education facility X**	Plantation
Informal residential[A]	Church	**Agriculture X**
Retail commercial & warehousing	Old age home	**River, stream or wetland X**
Light industrial	Sewage treatment plant[A]	Nature conservation area
Medium industrial [AN]	Train station or shunting yard [N]	Mountain, koppie or ridge
Heavy industrial [AN]	Railway line [N]	Museum
Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam[A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "[N] "are ticked, how this aspect will be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "[An]" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "[H]" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan) CBA2	**YES ✓**	**NO**
Core area of a protected area?	YES	**NO X**
Buffer area of a protected area?	YES	**NO X**
Planned expansion area of an existing protected area?	YES	**NO X**
Existing offset area associated with a previous Environmental Authorisation?	YES	**NO X**
Buffer area of the SKA?	YES	**NO X**

If the answer to any of these questions was YES, a map indicating the affected area must be included in **Appendix A** (B).

- **CULTURAL/HISTORICAL FEATURES**

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:	**YES X**	**NO**
	Uncertain	

The following cultural heritage resources were identified in the study area:

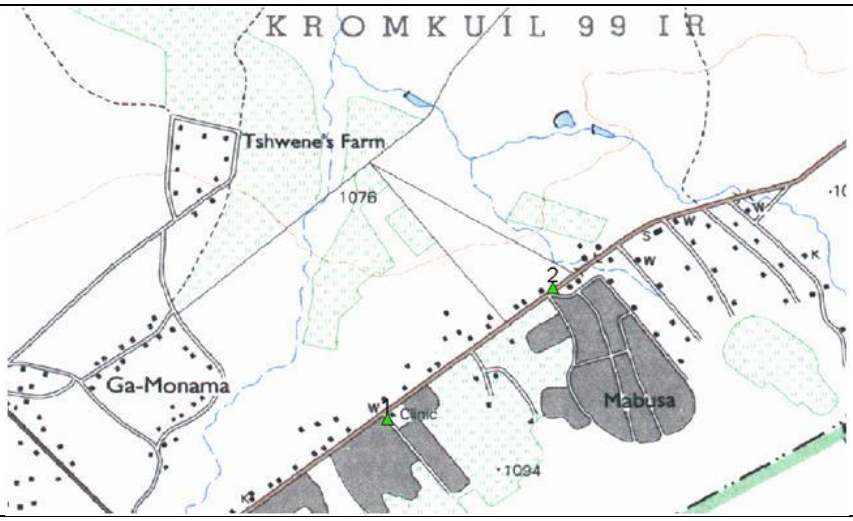
1 New Mathibestad Substation – Nchaupe Substation:
No sites, features or objects dating to the Stone Age were identified in the study area.
No sites, features or objects dating to the Iron Age were identified in the study area.
No sites, features or objects dating to the historic period were identified in the study area.

2 Tswaing Substation – Ratsiepane Substation:
No sites, features or objects dating to the Stone Age were identified in the study area.
No sites, features or objects dating to the Iron Age were identified in the study area.
The following sites dating to the historic period were identified in the study area.

The preferred alternatives were aligned as such to avoid these resources.

Location	No. 1 No. 2	Kromkuil 99JR	S 25.38841, E 28.05157 S 25.38114, E 28.06078
Description			
Two informal community cemeteries, each containing approximately 100 graves. The one is located on the southern side of the road and the other on the northern side. Most of the graves are identified by means of formal headstones. Both burial places are currently fenced off.			
Significance of site/feature	High on a local level – Grade III		

See Heritage Study in Appendix D5



3.Ratsiepane – Nchaupe Substations
No sites, features or objects dating to the Stone Age were identified in the study area.
No sites, features or objects dating to the Iron Age were identified in the study area.
No sites, features or objects dating to the historic period were identified in the study area.

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

A specialist heritages study was conducted for this project (report attached).
From a heritage point of view the proposed development can continue. Should any resources be uncovered during construction, certain mitigation measures are recommended.

Will any building or structure older than 60 years be affected in any way?	YES	**NO X**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	**NO X**

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

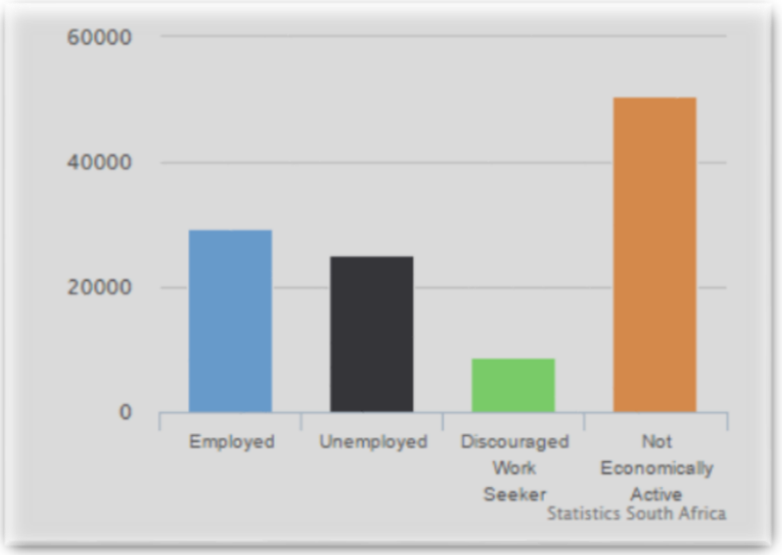
- **SOCIO-ECONOMIC CHARACTER**

a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

The labour force or economically active population2 comprises of 54.05% of Moretele's residents. Of those indicated as economically active, who can be considered the actual and potential labour force, 45,9% in Moretele are unemployed compared to the average national unemployment rate of 25%.



Economic profile of local municipality:

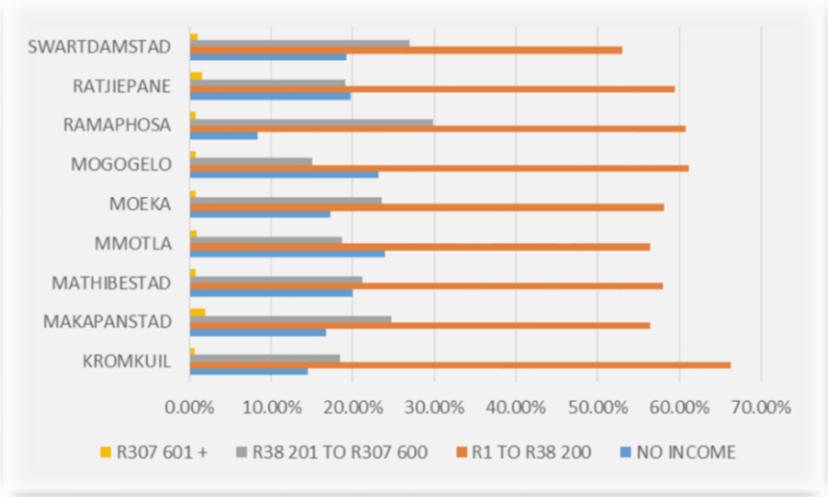
The Moretele Local Municipality has a total population of 186 947, highly rural with 88% of the population residing in traditional areas, about 7,4% residing in urban areas and about 3% residing on smallholdings. With a total area of 1369km^2, the average population density for 2011, was 136 people/km^2

The Moretele Local Municipality had the second lowest average annual growth rate of 0.17% relative to the other within Bojanala District Municipality. The average annual growth rate for Moretele local municipality from 2001 to 2011 was 0.3%, which is lower than the average annual growth rate of 1.62% estimated for the Bojanala District Municipality. Approximately 30% of the total population in the study area resides in Mathibestad and only 3% resides in Ramaphosa.

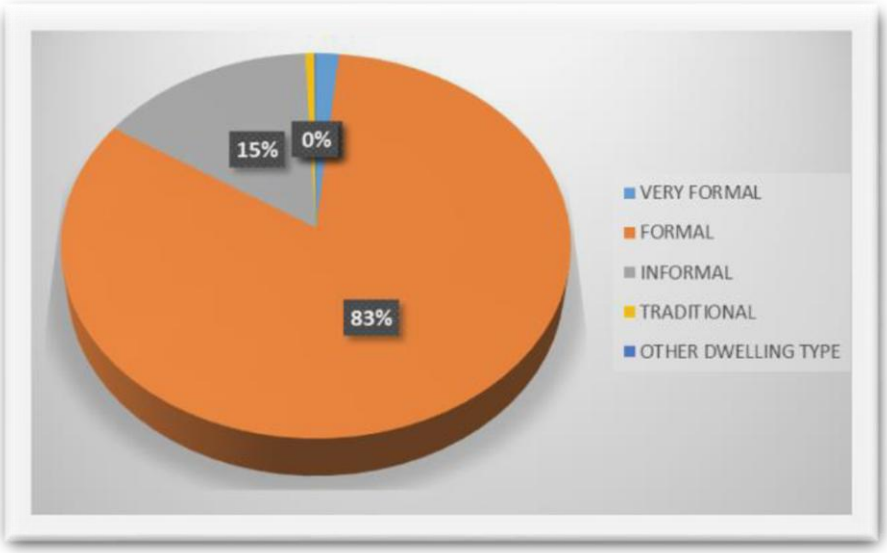
More than half of the population (51%) of Moretele Local Municipality is female. At age 85 and older, there were more than twice as many women as men. People under 15 years of age made up over a quarter of the population (30,9%), people aged between 15 and 64 constitute more than half of the population (60,9%) and people aged 65 and older made up 8,2% of the population.

The average household size of the towns and villages in the study area is 3,7 persons. The most commonly spoken or dominating language is Setwana (51,6%).

In 2013, there were 605 000 people living in poverty3, using the upper poverty line definition, across Bojanala District Municipality. It was estimated that in 2011 that more than 50% of all the households in the study area in Moretele, were living on R38,000 or less per annum. Moretele Local municipality has the highest percentage of people living in poverty, using the upper poverty line definition, with a total of 58.3%.



Moretele Local Municipality had a total number of 934 (1.6% of total households) very formal dwelling units, a total of 48 200 (82.67% of total households) and 8780 (15.06% of total households) informal dwelling units.



HOUSEHOLDS WITH SERVICES, STUDY AREA, 2011

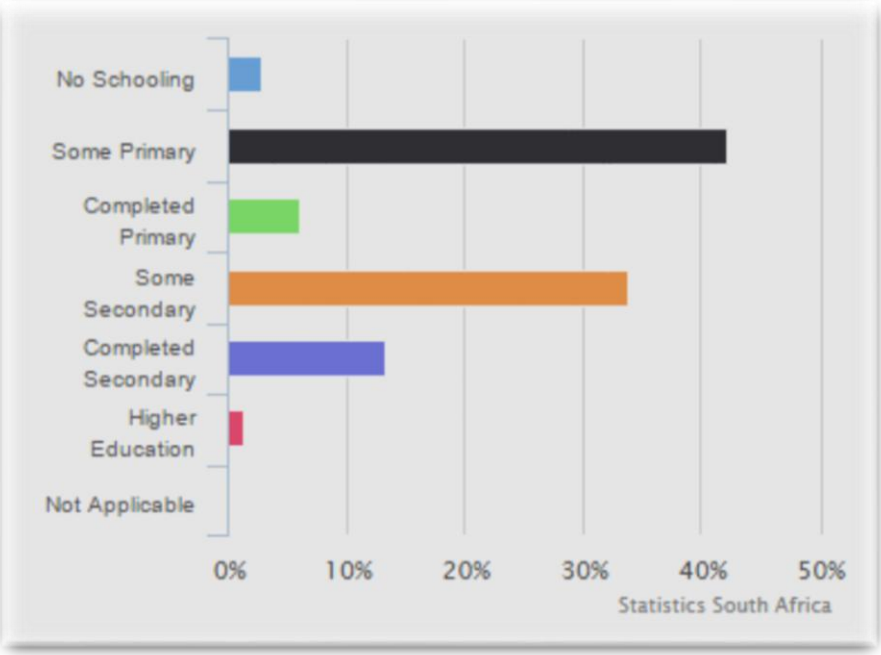
TOWNSHIP/VILLAGE	FLUSHED TOILET CONNECTED TO SEWERAGE	PIPED WATER INSIDE DWELLLING	ELECTRICITY FOR LIGHTING	WEEKLY REFUSE REMOVAL
KROMKUIL	37.60%	15.90%	97.20%	0.50%
MAKAPANSTAD	2.50%	3.40%	92.60%	1.00%
MATHIBESTAD	1.70%	4.70%	97.60%	0.60%
MMOTLA	3.40%	18.50%	97.30%	0.70%
MOEKA	1.30%	1.50%	94.10%	2.10%
MOGOGELO	1.60%	10.10%	94.40%	1.00%
RAMAPHOSA	0.70%	0.90%	96.20%	0.10%
RATJIEPANE	0.30%	2.80%	96.80%	0.20%
SWARTDAMSTAD	1.40%	1.40%	83.30%	0.50%

As shown in the table above, nearly all households do have electricity services (for lighting) but the other services are seriously lacking.

According to Moretele LED, the potential to unlock the local economy is huge around the primary and secondary nodal areas. Mathibestad, Makapanstad, Seutelong, Ngobi and Cyferskuil have been identified as the primary nodal areas and the areas around Motla/Swartdam as secondary nodes.

Level of education:

Only 1, 4% persons had access to higher education, while 42, 3% had attended some primary education with about 13,3% who had attended/ completed secondary education. The level of education as indicated in the figure points to lower levels of skills and economic opportunities which in the main points to high levels of unemployment



b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	Aproximately R200million
Moretele_New 2 × 20MVA 132/22kV Tswaing – Ratsiepane 15km 132kV line	*R 93 006 325.00*
Ratsiepane_New 2 × 20MVA 132/22kV Ratsiepane –Moretele 12km 132kV line	*R 103 600 710.00*
What is the expected yearly income that will be generated by or as a result of the activity?	No income will be generated from the infrastructure
Will the activity contribute to service infrastructure?	YES✓ / NO
Is the activity a public amenity?	YES✓ / NO
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	5 people per sub station from the surrounding community
What is the expected value of the employment opportunities during the development and construction phase?	5 X 9 months x 24 days per month x R120 per day. per sub site

What percentage of this will accrue to previously disadvantaged individuals? **All of the value above as the contractor will bring 5 of their own staff for the construction duration of 9 months**	100%
How many permanent new employment opportunities will be created during the operational phase of the activity?	None
What is the expected current value of the employment opportunities during the first 10 years?	R0
What percentage of this will accrue to previously disadvantaged individuals?	R0

- **BIODIVERSITY**

*Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (CD) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as **Appendix D** to this report.*

A vegetation assessment (Appendix D3), wetland delineation and functional study (Appendix D1), Wetlands Rehabilitation and Monitoring Report (Appendix D2), Fauna & Avifauna (Appendix D4), Visual impact assessment (Appendix D8), desktop Geotechnical (appendix D7), Social (Appendix D6) and Heritage Impact Assessment (Appendix D5) were conducted as part of the BA with maps and reports are attached to this Report, see Appendix D.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category				**If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan**
Critical Biodiversity Area (CBA) X	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	All lines traverse a mosaic of CBA2 and ESA areas, also sections of remaining vegetation of a Listed Vulnerable Vegetation Type. However all major vegetation associations identified during the survey showed significantly high levels of past and recent disturbances and varying levels of resulting degradation. See Appendix D3

The terrestrial area to be affected by the substations and the several options of the proposed routes for the powerlines to interconnect the substations are all environmentally degraded. Sheet erosion is evident and grass is heavily grazed down to root level. As a result, the terrestrial portion of the site receives a "Medium-low" Conservation Sensitivity status as defined in the Vertebrate Specialist Study.

Since the wetland system enjoys statutory protection, we flag it as having a 'Medium-High Conservation Sensitivity', two notches above the 'Medium-low Conservation Sensitivity' for the scrubland on site. The Soutpanspruit has been dammed and to a lesser degree channelled to pass under the road. Natural and newly-formed riparian zones are also heavily grazed.

Species richness: Has already declined over time as a result of various forms of civilization pressures. It is not expected that the new development will further cause a decline in species richness even though the servitude will change the floral composition to allow for a construction road and later a service track.
Threatened species: No threatened species are expected to be fatally impacted by the proposed development.
Sensitive areas: The conservation condition of the stream and wetlands of the Soutpanspruit across the two southern clusters of power lines will remain natural were it not for heavy grazing.
Habitat(s) quality and extent: Preservation of natural habitats is relatively low across the entire project site. Only the degraded wetlands have the potential to make some contribution to conservation of natural habitat.
Impact on species richness and conservation: Once the development has been completed its impact will be benign, in spite of service tracks.
Connectivity: Connectivity should not be further compromised, especially if the wetland area could be treated with sensitivity.
Management recommendations: See Section 10 of the Vertebrate Specialist Report in Appendix D: 'Environmental Risks, Their Assessment and Proposed Mitigations'.

b) Indicate and describe the habitat condition on site

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	15%	No areas in truly natural state were identified
Near Natural (includes areas with low to moderate level of alien invasive plants)	20%	Some areas of natural vegetation occur in the project area Grazing has lead to degradation in some areas.
Degraded (includes areas heavily invaded by alien plants)	15%	Some of the area has been transformed by housing development, roads and grazing pastures and trees have been harvested for fire wood
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	50%	Areas of original vegetation has remained but large portions were transformed by farming activities and residential development

c) Complete the table to indicate:
(i) the type of vegetation, including its ecosystem status, present on the site; and
(ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and un-channelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable X							
	Least Threatened	**YES X**	NO	UNSURE	YES	**NO X**	YES	**NO X**

Terrestrial Ecosystems	Aquatic Ecosystems
All lines traverse a mosaic of CBA2 and ESA areas, also sections of remaining vegetation of a Listed Vulnerable Vegetation Type. However all major vegetation associations identified during the survey showed significantly high levels of past and recent disturbances and varying levels of resulting degradation	**See below:**
Nchaube to New Mathibestad Alternative 1	• Crosses one wetland, a channelled valley bottom • Access road not available for most of the line
Nchaupe to New Mathibestad Alternative 2	• Crosses one wetland, a channelled valley bottom • Access road not available for most of the line
Ratsiepane-Nchaupe Alternative 1	• No wetlands found • Drainage line crossing in northern section • Access road not available for most of the line
Ratsiepane-Nchaupe Alternative 2	• No wetlands found • Drainage line crossing in northern section • Access road not available for most of the line
Ratsiepane-Nchaupe Alternative 3	• No wetlands found • Drainage line crossing in northern section • Access road not available for most of the line
Ratsiepane-Nchaupe Alternative 4	• No wetlands found • Drainage line crossing in northern section • Access road not available for most of the line
Tswaing-Ratsiepane Alternative 1	• Large floodplain crossing the line • Depression pan within 500m of the line • Two streams located within 500m of the line • Soutpanspruit stream crossing south western corner twice • Access road available
Tswaing-Ratsiepane Alternative 2	• Two wetlands found • Large floodplain crossing the line • Depression pan within 500m of the line • Soutpanspruit stream crossing south western corner twice • Access road available
Tswaing-Ratsiepane Alternative 3	• Large floodplain crossing the line • Depression pan within 500m of the line • Soutpanspruit stream crossing south western corner twice • Access road available
Tswaing-Ratsiepane Alternative 4	• Large floodplain crossing the line • Depression pan within 500m of the line • Access road available
Tswaing-Ratsiepane Alternative 5	• Large floodplain crossing the line • Depression pan within 500m of the line • Soutpanspruit stream crossing south western corner once • Access road available
Tswaing-Ratsiepane Alternative 6	• Large floodplain crossing the line • Depression pan within 500m of the line • Soutpanspruit stream crossing south western corner twice • Access road available

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

Also see Appendix D1 and D3 for Specialist Studies (Wetlands and Vegetation)

The majority of powerlines and proposed substation are located on areas which consist of a mosaic of CBA2 and ESA areas, which also sections of remaining vegetation of a Listed Vulnerable Vegetation Type. However all major vegetation associations identified during the survey showed significantly high levels of past and recent disturbances and varying levels of resulting degradation.

Along all routes are occurrence of protected trees and geophytes. Although the presence of any red- or orange-listed plant could not be confirmed, the floodplains and moist depressions could potentially have one or more of these species. Due to the high general disturbance levels of the vegetation associations, it is quite important that no added pressure be put on protected areas due to fragmentation- and edge effect of any servitudes adjacent or within about 500 m of the Tswaing nature reserve.

Also, the traversing of the Floodplain and Moist Depression areas should be restricted to the shortest distances across or least sensitive areas of these habitats, whilst pylon positions should never be placed within 32 m of the edge of any drainage line or artificial dam so as to avoid disturbance to the riparian vegetation.

The majority of the proposed project is situated within a CBA 2, indicating that these areas are remaining natural patches larger than 5ha of provincially endangered and vulnerable ecosystems (in this case the Springbokvlakte Thornveld), i.e. the amount remaining intact of this vegetation type is less than 60%. Any further transformation of these vegetation types should be limited to existing transformed or heavily degraded areas. Only the two options proposed for the Nchaupe Ss are situated in an area not indicated to be of conservation importance. The routes between the Ratsiepane Ss options to the Tswaing Ss will come into close proximity to ESA 1 areas, as well as the protected area, Tswaing Meteor Crater Reserve

Image showing land cover near Kromkuil

Seven vegetation associations could be identified:

1. *Acacia mellifera* shrublands
   - Sensitivity low
2. *Cynodon dactylon* Floodplains
   - Sensitivity medium-high
3. Old Fields and Past Earth Disturbances
   - Sensitivity low

4. *Peltophorum - Carissa* shrublands Sensitivity low 5. *Peltophorum - Combretum imberbe* high shrublands Sensitivity medium-high 6. *Rhynchosia nitens* moist depressions Sensitivity medium-low 7. *Ziziphus mucronata* Riparian Belts Sensitivity medium-high
The entire study area falls into historic communal lands, and comprises a mosaic of small townships and informal settlements, areas where cultivation has been practised in the past and left fallow and areas utilised for communal grazing. All natural veld and fallow lands have been found to be highly overgrazed. Overgrazing is both recent (due to the prevailing drought conditions) as well as historic – the latter recognised by the high degree of bush encroachment and/or absence of climax grass species. Further, numerous instances were found where larger trees and shrubs are cut down for the harvesting of firewood, topsoils have been excavated and stripped to almost 1 m depth as well as sites where illegal dumping of various rubble is taking place.
A total of three wetlands and two ephemeral rivers were recorded to cross or occur within 500m of the preferred and alternative lines. The wetlands crossing the proposed powerline infrastructure were delineated using visible vegetation gradients and soil indicators to determine the extent of the wetland systems. The Moretele line is located southwest of the Tshwane River with tributaries running near the line. The wetlands that cross or come within 500 m of the preferred line are fed by tributaries of the Tshwane River. One wetland occurs in the south-eastern portion of the line and is classified as channelled valley bottom wetland. A drainage line crosses the northern part of the line. No wetlands were recorded on the Ratsiepane-Moretele line. One large floodplain wetland was recorded along the southern extent of the Tswaing-Ratsiepane line. The wetland covers approximately 7% (1.2km) of the preferred and alternative lines. A small depression pan was recorded. Multiple dams occur in the floodplain. The floodplain is fed by the Soutpanspruit which flows north towards the Kutswana River. The Moretele and Ratsiepane-Moretele lines cross over significantly less wetlands than the Tswaing-Ratsiepane lines. From a wetland point of view any of the proposed substations can be considered as no wetlands were recorded in the area or within 500 meters of the proposed substations
The PES Scores for **wetland 1 is a D** and is characterised as **largely modified**. A large change in ecosystem processes and loss of natural habitat and biota has occurred. Much of the river is eroded, dams have been built in the wetland and the area is used for grazing of cattle. **Wetland 2 scored a C** and is characterised as **moderately modified**. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact. Although the wetland is used for grazing of cattle, much of the wetland is still in a good condition with hydrophytic vegetation and natural dams. Erosion of the river upstream is present and there is evidence of weirs which have collapsed. The northern section of the wetland is diverted by concrete channels. **Wetland 3 scored a C** and is characterised as **moderately modified**. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact. The pan is impacted by vehicle crossings and dumping. The **stream crossings scored a D** and are characterised as **largely modified**. A large change in ecosystem processes and loss of natural habitat and biota has occurred. The EIS scores of the majority of the wetlands (1 and 3) were between 1 and 2. These wetlands are considered to be ecologically important and sensitive on a provincial or local scale. The biodiversity of these wetlands is not usually sensitive to flow and habitat modifications. They play a small role in moderating the quantity and quality of water in major rivers. **Wetland 2** scored higher with a score between 2 and 3**.** Wetlands in this class are considered to be ecologically important and sensitive. The biodiversity of these wetlands may be sensitive to flow and habitat modifications. They play a role in moderating the quantity and quality of water of major rivers. The southern part of Tswaing-Ratsiepane traverse areas classified as 'Ecological Support Areas' and "Protected Areas". The two other routes do not traverse any areas classified in the C-Plan spatial layer. The proposed lines are located across two Quaternary Catchment areas namely Quaternary Catchment A23F and A23A. Consequently, wetlands in this area are sensitive to changes in regional hydrology, particularly where their catchment becomes transformed and the water available to sustain them becomes redirected. A number of tributaries of large river systems also traverse the proposed lines. These are the Tshwane River and Kutswana River. The Soutpanspruit crosses the Tswaing-Ratsiepane line.

SECTION C: PUBLIC PARTICIPATION

- **ADVERTISEMENT AND NOTICE**

Publication name	Daily Sun	
Date published	26 October 2015	
Site notice position	**Latitude**	**Longitude**
Tswaing Area	25°24'3.42"S	28° 2'57.04"E
Ratsiepane Area	25°19'25.82"S	28° 6'42.09"E
Makapanstad Area (Nchaupe)	25°13'58.33"	28° 6'8.17"E
Ga-Motle Area	25°22'12.61"S	28° 4'52.68"E
Area	25° 14' 5" S	28° 6' 15" E
New Mathibestad	25°19'32.95"S	28° 8'47.91"E
Date placed	**26 October 2015**	

Include proof of the placement of the relevant advertisements and notices – See PPP Specialist Report, and Appendix E1.

- **DETERMINATION OF APPROPRIATE MEASURES**

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

INTRODUCTION

Public participation is the involvement of all parties who potentially have an interest in a development or project, or may be affected by it. The principal objective of public participation in an Environmental Impact Assessment (EIA) process, in particular this BA process, is to inform and enrich decision-making.

Chapter 6 Regulation 39 - 44 of R 982 (4 December, 2014) under the NEMA, guides the public Participation process that is required for an Environmental Impact Assessment (EIA) Process, either a Basic Assessment process or Scoping and Environmental Impact Reporting.

APPROACH AND METHODOLOGY

The public participation process for the proposed project has been designed to satisfy the requirements laid down in the above mentioned legislation and guidelines. An overview of the Basic Assessment technical and public participation processes is provided below.

The 2014 Regulations allows for the commencement of the Public Participation Process, prior to submission of the Application Form and Draft BAR to the relevant authority. However upon presentation of the Draft BAR a further 30 day comment period by registered interested and affected parties is required.

After the study area map was received from ESKOM the Community Liaison Officer (CLO) of Envirolution contacted the Moretele Local Municipality to establish communication channels that must be followed when arranging meetings with Ward Councillors for the affected wards.
The PA of the Speaker advised that a meeting with the identified ward councillors must be arranged through the office of the speaker. The CLO then submitted a letter of introduction and background information to the office of the speaker on the 28th October 2015 and a short meeting was subsequently held with the speaker

The CLO met with the speaker and Clr. Leah Sekhawule (councillor responsible for Technical Services). The

speaker and the councillor advised that Eskom should come and address the councilors from the potentially affected wards and should can be done before the Draft BAR is released Present at the meeting wa Mr Bongane Sithole (MLM) Molefe Rankhumise (Office of the Speaker) Leseja Magongwa (Speaker) and Mr Phillip Rankapule (Councillor for Ward 12).

The CLO then posted poster at different points which were identified as frequented by many people in the area. The speaker requested one of the ward councilors to drive around with the CLO and assist in placing posters at the right place

OBJECTIVES OF PUBLIC PARTICPATION IN A BASIC ASSESSMENT

The objectives of public participation in a Basic Assessment are to provide sufficient and accessible information to I&APs in order to:

- Assist the EAP to identify issues of concern, and providing suggestions to I&AP's for enhanced benefits and alternatives to the project
- For I&AP's to contribute their local knowledge and experience
- Verify that their issues have been considered either by the Specialist Studies or the assessment conducted the EAP and the proponent.
- Comment on the findings of the Basic Assessment, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.
- The key objective of public participation is to ensure transparency throughout the process and to promote informed decision making.

IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

The identification of stakeholders was done by a deeds search as well as ground truthing of the affected landowners. Identification is still ongoing and is refined throughout the process. As the on the ground understanding of affected stakeholders improves through interaction with various stakeholders in the area the I&AP database is updated. The stakeholders' details are captured on record, and mailings to stakeholders kept, thus providing a record of communications which is an important requirement by the authorities for public participation. In addition, comments and contributions received from stakeholders are recorded, linking each comment to the name of the person who made that comment.

According to the NEMA EIA Regulations under Section 24(5) of NEMA, a register of I&APs
(Regulation 42 of GNR 982) must be kept by the public participation practitioner. Such a register has been compiled and is being kept updated with the details of involved I&AP's throughout the process please refer to Appendix E 1 (E1.1 Stakeholders) and (E1.2 Land Owners and I&AP's) for a copy of the I&AP database.

NOTICE TO INTERESTED AND AFFECTED PARTIES

According to Regulation 24(J) of the Act, notice of the application or proposed application must be given by:

1. Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of the site where the activity to which the application or proposed application relates is or is to be undertaken. Photographic compliance proof of erecting of Notice Boards along the route of the proposed power line is contained in Appendix E (2.1.1), (E2.1.2) and (E2.1.3). Notice boards were erected on the 26 October 2015 with a record of the co-ordinates of the position of placement.
2. Written notification was given to landowners Appendix E (E2.2.1), adjacent landowners, affected parties (E2.2.2), proof of delivery (E2.2.3) as well as stakeholders (E2.2.4) and proof of delivery to stakeholders (E2.2.5).

Additionally emails were sent to all stakeholders, landowners and identified I&AP's to notify them of the proposed project.

PUBLIC PARTICPATION MEETINGS

- Public Participation Meetings were arranged and held as follows:
- Moretele Municipality 26 October 2015 (briefing session with PA of the Speaker)
- Moretele Municipality 14 April 2016 (information session PA of Speaker, Councillors)
- Moretele communities (3 venues at wards) 14 April 2016 (presentation, Q&A sessions)

- Tribal Authority Office Makapanstad 11 May 2016 (introduction to Nkosi, Q&A sessions)
- Tribal Authority Community Hall Makapanstad 2016 (presentation, Q&A sessions)

The full list of attendees is contained in the signed Attendance Register of the Appendix (E4.1.(1), (2), (3) and (4)
Minutes of the meeting were kept as well as questions and responses. All issues were attended to with feedback being given in the form of dispersion of the minutes per email to the registered attendees as well as a copy of the minutes in the Draft Bar which will be open for comment for a further 30 days from submission of the Application form to the relevant authorities.
Presentations by Eskom and the Consultants are contained in the relevant sections of the minutes.

During the Land and Rights Negotiations that follow the EA, roads issues regarding cross sections of the servitudes containing planned roads and the route of the power line will be negotiated as per standard procedures.

COMMENTS OF INTERESTED AND AFFECTED PARTIES
Comments from interested and affected parties were received via emails as well as attendees of the PP Meeting. Comments and responses are contained in the Comments and Response Report (Appendix E3)

There is overall support for the project due to the understanding of the need for distribution of electricity to the rural areas especially in the region of Moretele. The majority of I&APs are interested in the project because of the job opportunities that the project may bring

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

- Tribal Authority at Makapanstad (meeting held on 11 May 2016)
- Moretele College of Education
- Nchaupe Secondary School (e-mail sent on 6 June 2016)
- Bedwang Police Station (e-mail sent on 6 June 2016)
- Moretele communities (Kromkuil, Makapanstad, Tswaing)
- SKA (notified per e-mail on 6 June 2016)

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

- **ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES**

Summary of main issues raised by I&APs	Summary of response from EAP
The Nkosi was not satisfied with the choice of name for the Moretele substation that is located to the West of Makapanstad. The name would be confusing	It was agreed that the substation would be named Nchaupe.
The land identified for the Nchaupe substation (closest to the Moretele College of Education) was earmarked for a possible police court.	The Police Service at Bedwang was informed of the project (6 June 2016 'bedwang.sc@saps.gov.za').
The Kgosi raised the issue that the Agri-Hub for North West Province is planned in Moretele region and that	The information could not be confirmed or elaborated on at this stage. Information and maps were sent to

Summary of main issues raised by I&APs	Summary of response from EAP
the site that the Nchaupe substation is proposed may be the same that they have earmarked.	the Department of Rural Development and Land Reform (6 June 2016). Feedback was received from Moses Mokaila who has forwarded the message to the person responsible for the planning of NW AgriHub. Cc: jennifer@agbiz.co.za; Dinake Thobejane; 'Gabonewe Ramorula'; tmoripe@nwpg.gov.za; Poppy Mongae
When would the project commence and how long will it take?	The project will only commence after EA has been given by DEA, the land negotiations have been completed and the tender processes have been concluded. Materials need to be brought to site planning must still be done. The project is not expected to commence in 2018. It will take approximately 18 months to complete the substations and lines.
Agriculture Issues: Live stock now grazes in some areas, and crops are planted. .	The area has originally been used for agricultural and rural residential purposes. The project will require servitudes where trees and shrubs will be cleared (alien vegetation has invaded most of the area) which will still allow grazing underneath the power lines. No orchards or commercial agricultural lands exist in the project area, as per Eskom practice the footprint of the structures will be minimised and full scale clearing of the servitude avoided to allow continued use of the arable land, unless otherwise negotiated with the affected farmer/s where distribution lines cross existing agricultural lands that are actively in use. The clearing of vegetation will take place, with the aid of a surveyor, along approved profiles and in accordance with the approved EMP and minimum standards to be used for vegetation clearing for the construction of the proposed new distribution lines (Eskom, 2000). Only trees and large shrubs that could cause clearance issues will be trimmed or cleared, while a narrow footpath for workers will be cleared down the centre of the distribution line servitude for stringing purposes. If any tree or shrub in other areas will interfere with the operation and/or reliability of the distribution line it will be trimmed or completely cleared.
Work opportunities	After approval of the project at DEA, land negotiations will be done and the route finalised. Then job seekers and suppliers can take part in the Tender Process to obtain work. Suitable candidates from the local community will obtain work, in cooperation with the Moretele Municipality and Tribal Authority. Keep in mind that some portions of the installation require particular technical skills that will have to be done by qualified workers.
Will the community get power?	The project will improve access to electricity in the

Summary of main issues raised by I&APs	Summary of response from EAP
	area.
The Nkosi would like to move the location of the substation closer to the college?	Eskom said that at least 200m distance is required from a large road. It is not advisable to use the road to the college for large trucks as this will create a problem with access to the college.
What will the total cost be?	Approximately R1million is spent for each kilometre of line. E.g. for the line of 40km an amount of R40million is expected but this does not include land costs.
How many people will be employed?	Unskilled labour will come from the area, but Eskom uses contractors who must have their own skilled people. The procurement officer will engage with people of the community. Also note that contractors must be registered on the Eskom data base first.
Is this project not a foregone conclusion? We thought that this was still in planning phase but now it is already stated that the sites have been proposed. This is the first meeting with the Chief and now you want to meet the community today. This complicates the relationship between the Nkosi and Eskom, who should have discussed the matter of land long before the sites were proposed. The tradition and protocol are that the chief must say where infrastructure can be allowed on the land and not the other way around. The problem is now that the community thinks that the Nkosi has already approved the project and will now expect to get jobs today. The Nkosi needs to agree first, otherwise the long term impacts will be that Nkosi will no longer have the traditional role and power in future if he is bypassed.	We follow the process of PPP to engage the Traditional Leaders, stakeholders and the community. The project is still at draft phase. Eskom planners have identified the need for electricity and proposed servitudes after which we have to apply for EA. Bongi: The "entry level" for interaction was the Council, but traditional leaders were not excluded from discussions. Councillors have guided the EAAP in terms of where meetings should be held for respective communities and they also mentioned that we should see the Nkosi during the PPP process.
Nkosi: There is also the issue of Agriparks and the proposed new Courts for the Justice/Police Service. These projects have been proposed in the same location as the substation sites. *Note from EAP: The Agri-Park Programme forms part of Government's undertaking to review all land reform policies as enunciated in the 2011 Green Paper on Land Reform and the support that needs to be provided*	Proposals are not final yet, but it must be viable in terms of technical, financial and environmental situation. Information and contact details were sourced for the Police Station of Makapanstad and for the Department of Rural Development and land reform of the North West Province, and information was sent to these institutions. Comments and feedback were requested.

- **COMMENTS AND RESPONSE REPORT**

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as **Appendix E3**.

- **AUTHORITY PARTICIPATION**

Authorities and organs of state identified as key stakeholders:

Moretele Local Muncipality
Tribal Authority
Department of Water and Sanitation (WULA will be submitted as per the NWAct)

Department of Rural Development and Land Reform (North West Province)

Include proof that the Authorities and Organs of State received written notification of the proposed activities as Appendix E4.

In the case of **renewable** energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

- **CONSULTATION WITH OTHER STAKEHOLDERS**

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as Appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in **Appendix E6**.

SECTION D: IMPACT ASSESSMENT

IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Impact Assessment and Rating Methodology
The full impact assessment methodology is attached as Appendix F.

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

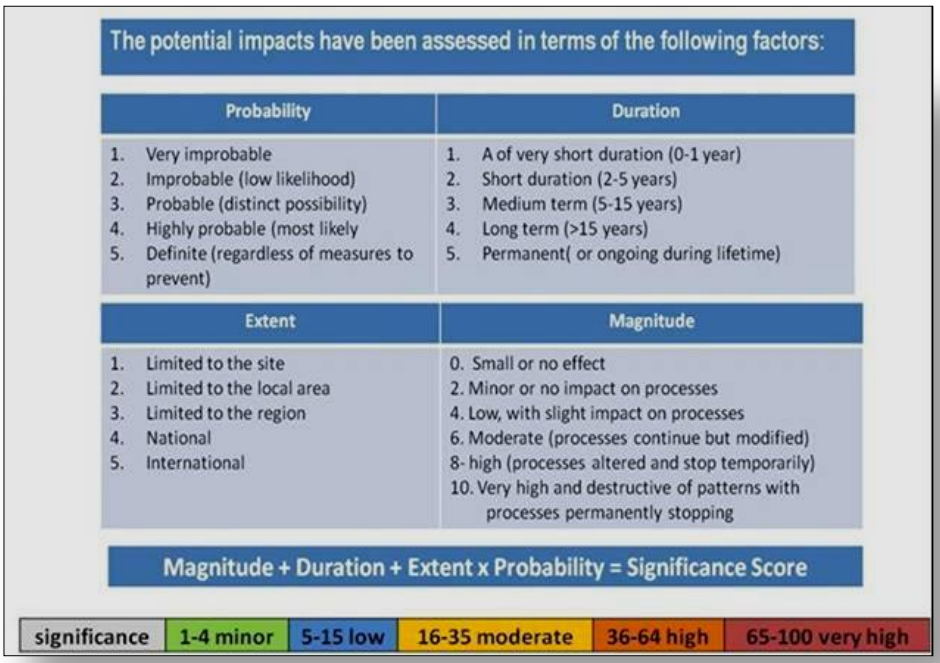
In line with the requirements, the impacts have been evaluated as summarised below (full methodology in Appendix F)

- The **significance** shall be determined through a synthesis of the characteristics described and can be assessed as low, medium or high. The **significance** is calculated by combining the criteria in the following formula:

S = Significance weighting	*M = Magnitude*
E = Extent	*P = Probability*
D = Duration	***S=(E+D+M)P***

The **significance weightings** for each potential impact are as follows:
< 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
> 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

The above is illustrated in the image that follows:



Assessment of impacts are summarised in the following table format. The rating values as per the above criteria are included. **In some instances the impact was found to be similar for all alternatives, but a distinction was made between impacts that are pertinent for a particular Alternative**. The No Go Option was included in the assessment.

Construction Phase

Destruction of natural habitat

Nature: Due to the nature of construction for such a development heavy motor vehicle usage will destroy more natural habitat. Heavy motor vehicle usage over the study site will expose the soils on the site to erosion and compaction.

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Destruction of natural habitat	Along the chosen route.	Site	During construction	High	Definite	High	High	High

Mitigating Measures:

- Upon the conclusion of the construction phase a rehabilitation endeavour should be implemented under the direction of a SACNASP certified ecologist. The nature and intensity of such a rehabilitation exercise will be determined by the damage.

Destruction of sensitive vertebrate habitat

Nature: Construction will damage existing habitat. This leads to certain species becoming rarer within the local context, unless the riverine corridor of connectivity is retained.

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Destruction of wetland species	Wetlands zone	Local	Permanent	High	Definite	High	Medium	High

Mitigating Measures

- No construction should be allowed within sensitive habitat, such as in or near the stream and wetland zone. If possible pylons are to be spaced to span the sensitive zones.
- Sensitive habitat should be cordoned off to prevent access while construction takes place.

Loss of ecosystem function

Nature: Construction poses the risk of interfering with ecosystem function, such as reduction in water quality and dispersal, soil pollution or underground water contamination.

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Damage to ecosystem function	Whole site	Local	Construction phase	Medium	Definite	High	Low	High

Mitigating Measures

- Appoint an Ecological Control Officer and consult on a regular (monthly) basis.
- Cordon off sensitive habitat (wetlands) to restrict movement of construction vehicles and construction personnel.

Loss of the ecological function of wetland

Nature: Construction may alter the landscape and without due care may influence the drainage processes on the site. This will influence, in turn, the drainage line and its role in connectivity along the watercourses.

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Wetlands and watercourse	Entire wetland system	Local	Construction phase	Medium	Low	Medium	Low	High

Mitigating Measures

- Development close to the drainage line is not supported. Pylons to be spaced outside the buffer zones.
- Runoff and spillages are to be contained.

Exposure to erosion

Nature: Erosion may result from temporary access roads and earth works on substation sites. Care should be taken to prevent surface soil to wash into wetland.

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Exposure of	Whole	Local	Short term	High	Probable	Medium	Low	High

the site to erosion.	site							

Mitigating Measures

- Use a sequential construction strategy i.e. phasing the construction on the site and rehabilitating immediately after each phase.
- Do not leaving bare soil surfaces exposed to erosion for lengthy periods.
- Implement sound storm water management measures
- If possible time construction to take place outside of the rainy season, thus reducing opportunities for erosion from rainfall events.

Poaching of wildlife in the vicinity

Nature: In theory the site is vulnerable to hunting/trapping by construction workers.

Impact	**Site**	**Extent**	**Duration**	**Intensity**	**Probability of occurrence/risk**	**Significance**		**Confidence**
						WOMM	**WMM**	
Poaching of wildlife on the site	Whole site	Site	Short	Medium	Probable	Medium	Low	High

Mitigating Measures

- Education of the construction staff about the value of wildlife and environmental sensitivity.
- Restrict access to the suitable and sensitive habitats of faunal species.
- The contractor/contractors must ensure that no animals are disturbed, trapped, hunted or killed during the construction phase. Conservation-orientated clauses should be built into contracts for construction personnel, complete with penalty clauses for non-compliance.

Reversibility of impacts

Impact	**Site**	**Extent**	**Duration**	**Intensity**	**Probability of occurrence/risk**	**Significance**		**Confidence**
						WOMM	**WMM**	
Rehabilitation	Whole site	Site	Permanent	Low	Definite	Medium	Low	High

Mitigating Measures

A powerline is essentially a permanent development with continual maintenance thereafter. Access roads made for pylon and Substation construction may become redundant and should be rehabilitated.

Operational Phase

Reduction of natural migratory and faunal dispersal routes.

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Barrier across of grass- and wetland	Whole site	Site	Permanent	Gradual	Definite	High	Medium	High

Mitigating Measures

1. Ensure maintenance of spruit and riparian zones with 32-m buffer as primary dispersal corridor.
2. Ensure any crossing opportunities (culverts, pipes, bridges) are designed to also facilitate small animal movements.

10.3.2 Possible increase in exotic vegetation

Exotic vegetation may be introduced to the environment via disturbance of the service tract verges or landscaping around the substations.

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Possible increase in exotic vegetation.	Site	Site	Permanent	Medium	Probable	High	Medium	High

Mitigating Measures

- Implement a policy within the development that only indigenous plant species be used in the landscaping of the site.
- Natural open spaces (especially riparian + buffer zones) should be left in their undeveloped state for as long as possible, and any existing or new exotic vegetation that is present on the site should be removed and eradicated.
- Remove all exotic, invasive vegetation and implement a monitoring and eradication plan to keep the site free from invasive plants.

Displacement of indigenous faunal species

Nature: It is unlikely that the Moretele development will displace any more vertebrate species during the construction and operational phases.

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Reduction of indigenous faunal species	Site and surroundings	Local	Permanent	Low	Low	Medium	Low	High

Mitigating Measures

- Maintenance of corridors (see 10.3.1 above) should minimise losses and assist with any subsequent recolonization of the site.

Increased amounts of surface water runoff

Nature: The increased amounts of surface water runoff from hard surfaces within the development may increase the chance of erosion and/or flash floods. With a single rainfall event many litres of water are released. These waters are usually absorbed by the displaced grasslands and other vegetation.

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Increased amounts of surface water runoff	Site and surroundings	Local	Permanent	Medium	Probable	Medium	Low	High

Mitigating Measures

- Implement an ecologically sound storm water management plan, including where necessary retention ponds and artificial water sponges (wetlands).

Disturbances of fauna in sensitive vegetation

Nature: Vehicle activity within the development could disturb faunal species that depend on any natural, sensitive vegetation (stream and wetland system).

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Disturbance of vertebrates in sensitive vegetation	Wetlands and stream	Site and areas of physical influence	Permanent	Medium	Probable	Medium	Low	Medium

Mitigating Measures

- A management plan to prevent maintenance workers from disturbing or harassing any animal.
- Implement a monitoring programme to regularly assess the presence of faunal species within the sensitive vegetation, including road verges within servitudes, in particular the grassland and drainage habitats.

Lighting

Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Disturbance of nocturnal animals	Whole site	Site	Permanent	High	Definite	Medium	Low	High

Mitigating Measures

- Vehicle headlight effects seem unavoidable, unless screened to shield their extent.
- Any outside lighting such as at substations, should be designed to minimize impacts on fauna. All outside lighting should be directed away from sensitive surrounding areas. Fluorescent and mercury vapour lighting should be avoided and sodium vapour (yellow) lights should be used wherever possible.

Removal of exotic species, declared weeds and invader plants							
Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance	Confidence
						WOMM / WMM	
Nil	Nil	Nil	Nil	Nil	Nil	Nil / Nil	

Mitigating Measures

Very few exotic species, weeds or invaders were observed on site, but their control should fall under that of alien species.

Management of waste products.								
Impact	Site	Extent	Duration	Intensity	Probability of occurrence/risk	Significance		Confidence
						WOMM	WMM	
Fuel, oil or load spills	Whole site	Site	Duration of operation phase	High	Low	Medium	Low	High

Mitigating Measures

- Given the nature of the development, special caution should be used to manage any risks arising from unexpected spills of potential toxic chemicals and prevent them from reaching surrounding habitats.

Nchaupe Substation options - Vegetation

Nchaupe Substation options Vegetation			
Vegetation association	Sensitivity	State of vegetation affected	
		Option 1	Option 2
Acacia mellifera shrublands	low	Degraded	Not affected
Old Fields and Earth Disturbances	low	Degraded	Highly degraded
Surrounding area description		Tar road to north, 500 m to nearest buildings	Tar road to north, 150 m to nearest buildings, many tracks across
Ranking		**1 (Preferred)**	**Second option**

Both substation options are equally feasible from a vegetation point of view, however the Nchaupe substation option 1 (western ss) will slightly reduce the distance of vegetation to be disturbed, even if that vegetation is rather degraded at this stage.

Nchaupe Substation options- Heritage

Nchaupe Substation Alternative 1 and Alternative 2		
Loss & disturbance of Heritage due to clearing of the footprint area		
Nature: The various features are subject to damage. Not always easy to identify and therefore makes it difficult to avoid. Variety of interconnected elements makes up the whole. Impact on part therefore implies an impact on the whole.		
Significance	**50**	**35**
Can impacts be mitigated?	Yes	

OPERATIONAL PHASE – No impact
Mitigation: All of these sites should be avoided as far as possible. Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. In exceptional cases mitigation can be implemented after required procedures have been followed. ***Cumulative impacts:*** Expected to be low
Residual Risks: Low risk anticipated provided that the mitigation measures are implemented correctly

Nchaupe substations - Visual

	Substations	
1	Alternative 1	Alternative 1 is the preferred option for the following reasons: 7. It is located in an area that is rather densely vegetated and the screening capacity of the landscape provides a high degree of VAC; 8. Viewer incidence is expected to be very low; 9. Considering the cumulative impact of the substation and power lines, this site will experience the least impact.
2	Alternative 2	Alternative 2 is less preferred as it is situated on a terrain that is more exposed due to a lack of dense and higher growing vegetation. Viewer incidence is also expected to be higher due to its proximity to the tar road between Swartdamstad and Makapanstad.

Ratsiepane substations - Vegetation

Vegetation association	Sensitivity	State of vegetation affected	
		Option 2	Option 1
Acacia mellifera shrublands	low	Degraded	**Not affected**
Old Fields and Earth Disturbances	low	Degraded	**Not affected**
Peltophorum - Carissa shrublands	low	Not affected	**Degraded**
Surrounding area description		Tar road to south, Swartdam 1.5 km west, otherwise natural veld, only bush encroachment	**Gravel road to north, Ratsiepane 700 m to west, natural veld to east**
Ranking		**Second option**	**1 (Preferred)**

Both substation localities comprise degraded vegetation. However, option 2 is further from a township than option 1, which could create more of a fragmentation effect on the natural vegetation due to the powerlines. In addition, the use of option 1 would ensure that a large portion of the line servitude will be shared with the servitude of the proposed New Mathibestad-Nhaupe line.

Ratsiepane substations - Heritage

Ratsiepane Substation Alternative 1 and Alternative 2		
Loss & disturbance of Heritage due to clearing of the footprint area		
Nature: The various features are subject to damage. Not always easy to identify and therefore makes it difficult to avoid. Variety of interconnected elements makes up the whole. Impact on part therefore implies an impact on the whole.		
CONSTRUCTION PHASE		
Rating of Impacts	**Without mitigation**	**With mitigation**
Significance	**50**	**35**
Can impacts be mitigated?	Yes	
OPERATIONAL PHASE		

Mitigation: All of these sites should be avoided as far as possible. Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. In exceptional cases mitigation can be implemented after required procedures have been followed. ***Cumulative impacts:*** Expected to be low
Residual Risks: Low risk anticipated provided that the mitigation measures are implemented correctly

Ratsiepane substations – Visual (Operational Phase)

Operational phase – Ratsiepane Substation Alternative 1						
Without mitigation	OB: Local LC: Local	OB: Long term LC: Long term	OB: Low LC: Medium	OB: Probable LC: Probable	OB: Low LC: Medium	High
With mitigation	OB: Local LC: Local	OB: Medium term LC: Medium term	OB: Low LC: Low	OB: Improbable LC: Probable	OB: Low LC: Low	High
Operational phase – Ratsiepane Substation Alternative 2						
Without mitigation	OB: Local LC: Local	OB: Long term LC: Long term	OB: Low LC: Medium	OB: Probable LC: Probable	OB: Low LC: Medium	High
With mitigation	OB: Local LC: Local	OB: Medium term LC: Medium term	OB: Low LC: Low	OB: Improbable LC: Probable	OB: Low LC: Low	High

POWERLINE ALTERNATIVES

132 kV line between the proposed Nchaupe and New Mathibestad Substations VEGETATION

Both alternatives follow the same route up to the last few hundred meters. The vegetation affected by both routes is thus exactly the same, being:

Vegetation association	Sensitivity	Approximate Distance of vegetation affected	
		Alternative 1 ± 19 km	Alternative 2 ± 19.2 km
Acacia mellifera shrublands	low	**5.1 km**	4.9 km
Old Fields and Earth Disturbances	low	**9.4 km**	9.8 km
Peltophorum - Carissa shrublands	low	**3.3 km**	3.3 km
Peltophorum - Combretum imberbe high shrublands	medium-high	**1.1 km**	1.1 km
Ziziphus mucronata Riparian Belts	medium-high	**0.1 km**	0.1 km
Wetlands and/or drainage lines	High	**2 crossings**	2 crossings
Ranking (1= preferred and 2 – least preferred)		**1 Preferred** (slightly shorter option)	**2nd option**

Alternatives:

Alternative 1: **Preferred**	From New Mathibestad to Nchaupe Substation option 1
Alternative 2:	From New Mathibestad Substation to Nchaupe Substation option 2

Cumulative impacts considerations:
Both route options are equally feasible from a vegetation point of view, and no route alterations will meaningfully reduce cumulative impacts on the natural environment. However, cumulative impacts can be reduced if portions of the proposed servitude are aligned to portions of the servitude of Ratsiepane Substation to Nchaupe Substation.

132 kV line between Ratsiepane and Tswaing Substations HERITAGE

Ratsiepane to Tswaing Lines		
Loss & disturbance of heritage due to clearing of the footprint area		
Nature: The various features are subject to damage. Not always easy to identify and therefore makes it difficult to avoid. Variety of interconnected elements makes up the whole. Impact on part therefore implies an impact on the whole.		
NO GO Option	A No Go Option will prevent loss or disturbance of heritage artefacts or graves	
CONSTRUCTION PHASE		
Rating of Impacts	**Without mitigation**	**With mitigation**
Significance	50	35
Can impacts be mitigated?	Yes	
OPERATIONAL PHASE		
Mitigation: All of these sites should be avoided as far as possible. Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. In exceptional cases mitigation can be implemented after required procedures have been followed. ***Cumulative impacts:*** Expected to be low		
Residual Risks: Low risk anticipated provided that the mitigation measures are implemented correctly		

132 kV line between the proposed Nchaupe and Ratsiepane Substations VEGETATION

The vegetation affected by the Alternative 1 and 2 and Alternative 3 and 4 are much the same as below:

Vegetation association	**Sensitivity**	**Approximate Distance of vegetation affected**			
		Alternative 1 ± 11 km	**Alternative 2 ± 11.4 km**	**Alternative 3 ± 6.3 km**	**Alternative 4 ± 6.6 km**
Acacia mellifera shrublands	low	**2.8 km**	2.8 km	5.4 km	5.4 km
Old Fields and Earth Disturbances	low	**6.7 km**	7.1 km	0.9 km	1.2 km
Peltophorum - Carissa shrublands	low	**1.5 km**	1.5 km	0	0
Ranking (1= preferred and 4 – least preferred		**1 Preferred**	**2**	**3**	**4**

Alternatives:

Alternative 1: Preferred:	Connects Moretele Substation option 1 to Ratsiepane Substation option 1 (closer to Ratsiepane)
Alternative 2:	Connects NchaupeSubstation option 2 to Ratsiepane Substation option 1 (closer to Ratsiepane
Alternative 3:	Connects Nchaupe Substation option 1 to Ratsiepane Substation option 2 (closer to Swartwater)
Alternative 4:	Connects Nchaupe Substation option 2 to Ratsiepane Substation option 2 (closer to Swartwater)

Cumulative impacts considerations:
Just looking at the lines in isolation would make Alternative 3 the preferred option. **However,** as the Ratsiepane Substation option 2 is further from a township than the option 1 Ratsiepane Substation, this connection (as well as line alternative 4) would create more of a fragmentation effect on the natural vegetation.

From an ecological point of view it would be better to use line alternatives 1 (or 2) and Ratsiepane Substation option 1, as a large portion of the line servitude will be shared with the servitude of the proposed Nchaupe to New Mathibestad line.

132 kV line between the proposed Nchaupe and Ratsiepane Substations HERITAGE

Nchaupe to Ratsiepane Lines		
Loss & disturbance of heritage due to clearing of the footprint area		
Nature: The various features are subject to damage. Not always easy to identify and therefore makes it difficult to avoid. Variety of interconnected elements makes up the whole. Impact on part therefore implies an impact on the whole.		
NO GO Option	A No Go Option will prevent loss or disturbance of heritage artefacts or graves	
CONSTRUCTION PHASE		
Rating of Impacts	**Without mitigation**	**With mitigation**
Significance	**50**	**35**
Can impacts be mitigated?	Yes	
OPERATIONAL PHASE		
Mitigation: All of these sites should be avoided as far as possible. Mitigation should take the form of isolating known sites and declare them as no-go zones with sufficient large buffer zones around them for protection. In exceptional cases mitigation can be implemented after required procedures have been followed. ***Cumulative impacts:*** Expected to be low		
Residual Risks: Low risk anticipated provided that the mitigation measures are implemented correctly		

132 kV line between Nchaupe and Ratsiepane VISUAL

Rating	Power line routes	Notes (Reasoning behind rating)
1	Alternative 1	Alternative 1 is the most preferred option. The determining factors are: 3. The origin point near Makapanstad is located further west from the populated areas and will therefore have less of an impact on the residents of that region. It is approximately 500m west from the outskirts of Makapanstad and although it is still within the Zone of Maximum Visual Exposure (ZMVE), the Visual Absorption Capacity (VAC) of the study area greatly reduces the intensity of the visual impact; 4. The remainder of the power line traverses the communal farmland that is disturbed to varying degrees, but still provides a good VAC. Viewer incidence is expected to be minimal and the impact on the impact on the landscape character is considered medium.
3	Alternative 2	Alternative 2 is marginally less preferred than Alternative 3. Its origin point is closer to the populated areas of Makapanstad which increases the impact intensity and viewer incidence at that point. The remainder of the power line traverses the communal farmland that is disturbed to varying degrees, but still provides a good VAC. Viewer incidence is expected to be minimal and the impact on the impact on the landscape character is considered medium
2	Alternative 3	Alternative 3 is marginally less preferred than Alternative 2. Their origin points are at the same location near Makapanstad and therefore the same argument applies. It is also a short route, but approximately 2 km of the route is parallel to the road between Swartdamstad and Makapanstad. This increases viewer incidence greatly as this is considered a major transport route, although motorists are considered viewers of a low sensitivity.
4	Alternative 4	Alternative 4 is the least preferred as its origin point and the section along the road between Swartdamstad and Makapanstad increases viewer incidence greatly.

132 kV line between Ratsiepane and Tswaing Substations VEGETATION

Vegetation affected by power line routes is as follows:

Vegetation association	Sensitivity	Approximate Distance of vegetation affected					
		Alt 1 ± 11.2 km	**Alt 2 ± 13.5 km**	**Alt 3 ± 12.7 km**	**Alt 4 ± 17.2 km**	**Alt 5 ± 18.2 km**	**Alt 6 ± 22.8 km**
Acacia mellifera shrublands	low	0 km	2.1 km	**2.2 km**	0.3 km	2.1 km	2.4 km
Cynodon dactylon Floodplains	medium-high	1 km	0.72 km	**0.5 km**	1 km	0.5 km	0.5 km
Old Fields and Earth Disturbances	low	1.2 km	4.1km	**4.5 km**	6.2 km	4.1 km	9.5 km
Peltophorum - Carissa shrublands	low	5.5 km	4.9km	**4.9 km**	6.4 km	4.9 km	5.6 km
Peltophorum - Combretum imberbe high shrublands	medium-high	3.1 km 1.6 *	0.92km 0.64*	**0**	3.1 km 1.6 *	0.9 km 0.3 *	0
Rhynchosia nitens moist depressions	medium-low	0.3 km	0.8km	**0.8 km**	0.3 km	0.8 km	0.8 km
Wetlands and/or drainage lines	High	2 crossings	2 crossings	**2 crossings**	2 crossings	2 crossings	2 crossings
Ranking (1= preferred and 5 and 6 – least preferred)		**5 No-go option**	**3**	**1 Preferred**	**6 No-go option**	**4**	**2**

* Adjacent to Tswaing Nature Reserve with high trees where section could be seen as highly sensitive due to higher impacts expected

Alternatives:

Alternative 1:	From Ratsiepane Substation option 1 (closer to Ratsiepane) to Tswaing Substation running partially adjacent to the Tswaing Nature Reserve (ecologically unfavourable due to protected trees)
Alternative 2:	From Ratsiepane option 1 to Tswaing, going through Kromkuil, partially running adjacent to Tswaing Nature Reserve to reach Tswaing substation, which is not ideal.
Alternative 3: **Preferred**:	From Ratsiepane Substation option 1 (closer to Ratsiepane) to Tswaing Substation running north and then west of Kromkuil
Alternative 4:	From Ratsiepane Substation option 2 (closer to Swartwater) to Tswaing Substation running partially adjacent to the Tswaing Nature Reserve (ecologically unfavourable)
Alternative 5:	From Ratsiepane Substation option 2 (closer to Swartwater) to Tswaing Substation, running through Kromkuil to align partially along the Tswaing Nature Reserve which is not ideal.
Alternative 6:	From Ratsiepane Substation option 2 (closer to Swartwater) to Tswaing Substation running north and the west of Kromkuil. However, Ratsiepane ss option 1 is preferred.

Cumulative impacts considerations:

The line options should be aligned to existing servitudes or the most disturbed areas. Due to increased edge effects, alignments close to protected areas must at all cost be avoided, hence alternatives 1 and 4 would not be ideal in term of vegetation, and alternative 2 and 5 only considered if the portion of the line parallel to Tswaing can be aligned further away from the Tswaing Nature Reserve. However, of Alternative 2 and 5, alternative 2 is more ideal as it originates at the Ratsiepane substation 1 which is the preferred locality for the substation (see 5.6.1.2 above).

Also, according to the specialist, the traversing of the Floodplain and Moist Depression areas should be restricted to the shortest distances across or least sensitive areas of these habitats, which would be achieved with selecting line Alternative 3.

Further, as the Ratsiepane Substation option 1 is closer to Ratsiepane, and the connecting servitudes from there to Moretele Substation are ecologically more favourable, Alternative 3 would definitely lead to the least cumulative effect of the development of all three projects. Alternative 1 could be considered if the protected trees could be avoided in total, or if relocation thereof would be possible.

132 kV line between Ratsiepane and Tswaing VISUAL (Construction Phase)

Rating	Power line routes	Notes (Reasoning behind rating)
1	Alternative 1	Alternative 1 is the most preferred option. The determining factors are: 5. It is one of the shortest routes of all the provided alternatives which reduce its potential for significant impacts; 6. It traverses an area that is very sparsely populated and for the most part it remains outside the critical ZMVE zone of 500m from settlements such as Ratsiepane and Kromkuil; 7. The landscape provides a high VAC, especially along the northern boundary of the Tswaing Reserve; 8. The alternative is located along the northern boundary of the Tswaing Reserve which is a tourist attraction, but the main tourist attraction point is nearly 2 km from the alignment, placing it well outside the ZMVE.
3	Alternative 2	Alternative 2 and 3 are equal in their impact severity. These alternatives are less preferred than Alternative 4 due to the proximity to settlements such as Motle and Kromkuil. They are within the ZMVE for great parts of their alignments. The landscape is also disturbed along these sections, exposing the alignments to the surrounding communities.
3	Alternative 3	
2	Alternative 4	Alternative 4 is less preferred than Alternative 1 due to its increased length and proximity to the settlement of Ratsiepane. It is marginally more preferred than the other alternatives due the section between Tswaing Substation and Ratsiepane SS Option 1 being well screened by vegetation and a very low viewer incidence occurring along this section.
4	Alternative 5	Alternative 5 and 6 are equal in their impact severity. These alternatives are less preferred than Alternatives 2 and 3 due to the increased length and the proximity to the settlement of Ratsiepane, thereby increasing viewer incidence.
4	Alternative 6	

132 kV line between Ratsiepane and Tswaing VISUAL (Operational Phase)

Nature of Impact	Extent of Impact	Duration of Impact	Intensity of Impact	Probability of Impact	Significance of Impact	Level of Confidence
Operational phase – Power line Alternative 1						
Without mitigation	OB: Local LC: Regional	OB: Long term LC: Long term	OB: Low LC: High	OB: Highly probable LC: Highly probable	OB: Low LC: High	High
With mitigation	OB: Local LC: Regional	OB: Long term LC: Medium term	OB: Low LC: Medium	OB: Probable LC: Probable	OB: Low LC: Medium	High
Operational phase – Power line Alternative 2						
Without mitigation	OB: Local LC: Regional	OB: Long term LC: Long term	OB: Medium LC: Medium	OB: Highly Probable LC: Highly probable	OB: Medium LC: Medium	High
With mitigation	OB: Local LC: Regional	OB: v term LC: Long term	OB: Low LC: Low	OB: Probable LC: Probable	OB: Low LC: Low	High
Operational phase – Power line Alternative 3						
Without mitigation	OB: Local LC: Regional	OB: Long term LC: Long term	OB: Medium LC: Medium	OB: Highly Probable LC: Highly probable	OB: Medium LC: Medium	High
With mitigation	OB: Local LC: Regional	OB: Long term LC: Long term	OB: Low LC: Low	OB: Probable LC: Probable	OB: Low LC: Low	High
Operational phase – Power line Alternative 4						
Without mitigation	OB: Local LC: Regional	OB: Long term LC: Long term	OB: Low LC: High	OB: Highly probable LC: Highly probable	OB: Low LC: High	High
With mitigation	OB: Local LC: Regional	OB: Long term LC: Medium term	OB: Low LC: Medium	OB: Probable LC: Probable	OB: Low LC: Medium	High
Operational phase – Power line Alternative 5						
Without mitigation	OB: Local LC: Regional	OB: Long term LC: Long term	OB: Medium LC: Medium	OB: Highly Probable LC: Highly probable	OB: Medium LC: Medium	High
With mitigation	OB: Local LC: Regional	OB: Long term LC: Long term	OB: Low LC: Low	OB: Probable LC: Probable	OB: Low LC: Low	High
Operational phase – Power line Alternative 6						
Without mitigation	OB: Local LC: Regional	OB: Long term LC: Long term	OB: Medium LC: Medium	OB: Highly Probable LC: Highly probable	OB: Medium LC: Medium	High
With mitigation	OB: Local LC: Regional	OB: Long term LC: Long term	OB: Low LC: Low	OB: Probable LC: Probable	OB: Low LC: Low	High

The VIA has found that the Alt 1 substation site is preferred because it is located in an area that is more densely vegetated, which would increase the screening capacity. Viewer incidence is to be lower than for Alternative 2 which is located closer to the road between Swartdamstad and Makapanstad.

132 kV lines GEOTECHNICAL

The project is complex due to three components and various alternatives. This was a desktop study and thus the assessment has not been done in a similar manner as the other specialist studies – assessment tables could not be populated due to the nature and scope of the investigation. However, the table below provides a summary of the project from a geotechnical perspective.

Component (Lines)	Ranking (1 – 6)	Comments
Tswaing-Ratsiepane Alternative 1	1	Most direct and shortest route. One stream crossing. Avoid cultivated fields. One road crossing.
Tswaing-Ratsiepane Alternative 2	3	Longer route and pass between villages. Two stream crossings and over cultivated fields.
Tswaing-Ratsiepane Alternative 3	2	Longer route than above. Go around village. Two stream crossings and over cultivated fields.
Tswaing-Ratsiepane Alternative 4	5	Long route. Cross over few streams and low-lying potentially water logged areas. Two road crossings. Over cultivated fields.
Tswaing-Ratsiepane Alternative 5	4	Pass between villages. Cross over few streams and low-lying potentially water logged areas. Two road crossings. Over cultivated fields.
Tswaing-Ratsiepane Alternative 6	6	Longest route, but go around village. Cross over few streams and low-lying potentially water logged areas. Two road crossings. Over cultivated fields.
Moretele-New Mathibestad Alternative 1	1	Shortest route. Cross through village. Two stream crossings and potential water logged area in wet season. Four road crossings and over cultivated fields.
Moretele-New Mathibestad Alternative 2	2	Slightly longer route. Cross through village. Two stream crossings and potential water logged area in wet season. Four road crossings and over cultivated fields.
Ratsiepane-Moretele Alternative 1	1	Second longest route. Several stream and road crossings, cross over potential water logged areas in wet season. Over cultivated fields.
Ratsiepane-Moretele Alternative 2	2	Longest route. Several stream and road crossings, cross over potential water logged areas in wet season. Over cultivated fields.
Ratsiepane-Moretele Alternative 3	1	Shortest route. One road crossing. No stream crossings.
Ratsiepane-Moretele Alternative 4	2	Slightly longer than above. One road crossing. No stream crossings.

It is recommended that a detail geotechnical investigation be conducted along the power line routes as well as substation sites in order to verify this desk study and to provide site specific appropriate founding solutions. The recurrence interval of mining induced seismic events should be determined and taken into consideration for the design of pylons and the substation.

CONCLUSION

The specialist investigations have shown certain impacts that are more likely to have a negative effect on the receiving environment for the different alternatives of the project.

The most important aspect that was identified would be a negative impact on wetlands and vegetation, since all lines traverse Critical Biodiversity Areas (CBA2) and Environmental Sensitivity Areas, with some sections of remaining vegetation of a Listed Vulnerable Vegetation Type. However all major vegetation associations identified during the survey showed significantly high levels of past and recent disturbances and varying levels of resulting degradation. Regarding the Social impacts, the visual impact of those line alternatives that are located closes to the settlements or that cross or follow existing roads would be more than if lines are further away. In term of ease of access (and eliminating the need for new access roads being required), however it would be more practical to place power lines and substations in close proximity to existing roads and/or power lines.

Along all routes are occurrence of protected trees and geophytes. Although the presence of any red- or orange-listed plants could not be confirmed, the floodplains and moist depressions could potentially have one or more of these species. Due to the high general disturbance levels of the vegetation in the general study area, it is quite important that no added pressure be put on protected areas. Natural areas should be avoided, such as areas adjacent or within about 500 m of the Tswaing Nature Reserve. Also, the traversing of the floodplain and low lying wet areas should be restricted to the shortest distances across or least sensitive areas of these habitats. Also, pylon positions should where possible not be placed within 32 m of the edge of any drainage line or artificial dam so as to avoid disturbance to the riparian vegetation.

Overall, although the three projects are handled individually, the cumulative effect of the three developments as well as existing servitudes must be taken into consideration with the selection of the preferred options for Substation localities as well as new line servitudes, aiming to have substations in areas closest to existing developments/infrastructure, and combining servitude areas (even if the total servitude will then be wider) where ever feasible.

In line with the aforementioned, the substation locations (where there is an option) listed in the tables have been selected as preferred options from a vegetation and terrestrial habitat point of view:

Summary of preferred substation options

Substation	Preferred option
Nchaupe Substation	option 1 (farthest from Makapanstad)
Ratsiepane Substation	option 1 (closest to Ratsiepane)

Based on specialist findings, the power line options below have been selected as preferred alternatives:

Summary of preferred powerline route alternatives

Powerline route	Preferred route
Nchaupe to New Mathibestad:	Alternative 1: From proposed Nchaupe Substation option 1 to New Mathibestad
Nchaupe to Ratsiepane	Alternative 1: Connects Nchaupe Substation option 1 to Ratsiepane Substation option 1 (closer to Ratsiepane)
Nchaupe to Tswaing	Alternative 1: Connects Nchaupe Substation option 1 (closer to Ratsiepane) to Tswaing Substation along the border of the Tswaing Meteorological Reserve

The above alignment selections should create the least significant impact on the ecosystem (functionality or species conservation status), the social environment, where heritage is concerned (these options avoid the graves at Kromkuil) and would have the least impact in a visual and safety sense since these avoid settlements.

In conclusion, the proposed development(s) could proceed provided that the mitigation measures a set out in this report are diligently implemented to limit the potential impacts on vegetation during construction and operation of the developments.

- **ENVIRONMENTAL IMPACT STATEMENT**

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

COMPONENT SUBSTATIONS	RANKING	DISADVANTAGES	ADVANTAGES
Nchaupe Alt 1	1	• No Geotechnical faults were identified for either site • The social impact would be the same for both alternative sites.	• least impact on ecological systems • No heritage artefacts or sites were found. • Lower visual impact.
Nchaupe Alternative 2	2	• Higher visual impact than Alt 1. • Higher impact on ecology	• No heritage artefacts or sites were found.
Ratsiepane Alt 1	1	•	• Alternative 1 route is preferable for the power line, which does link to this substation
Ratsiepane Alt 2	2	• Alternative 1 power line route is preferable, which does not link to this substation	•

From the above, it is motivated that the following power line routes are recommended:

- **Nchaupe Alt 1 Substation location**
- **Ratsiepane Alt 1 Substation location**

COMPONENT (LINES)	RANKING	DISADVANTAGES	ADVANTAGES
Tswaing-Ratsiepane Alternative 1 (Preferred)	**1**	• Avoids cultivated fields. • Only one road crossing. • partially adjacent to the Tswaing Nature Reserve	• Most direct and **shortest** route. • Least visual impact • Only one stream crossing. • Goes to preferred Ratsiepane Substation (Alt 1)
Tswaing-Ratsiepane Alternative 2	**3**	• Longer route than Alt 1 • Passes between villages. • Two stream crossings • Crosses over cultivated fields.	• Shorter than Alt 3, 4, 6 and Alt 5
Tswaing-Ratsiepane Alternative 3	**2**	• Longer route than above. • Two stream crossings • Crosses cultivated fields.	• This line avoids the village to lower the visual impact and reduce risks of disturbance • Line links up to the Ratsiepane Alt 1 SS (preferred) • Shorter route than Alt6, Alt 4 & Alt 5

Tswaing-Ratsiepane Alternative 4	**5**	• Long route. and links up to the Alt 2 SS (not preferred) • Crosses over streams and low-lying potentially water logged areas. • Two road crossings. • Traverses cultivated fields. • partially adjacent to the Tswaing Nature Reserve	• Links up to Alt 1 (preferred) substation
Tswaing-Ratsiepane Alternative 5	**4**	• Cross over various streams and low-lying potentially water logged areas. • Two road crossings. • Passes between villages, thus a relatively high visual impact • Over cultivated fields.	
Tswaing-Ratsiepane Alternative 6	**6**	• Longest route • Line links up to the Alt 2 SS (not preferred) • Cross over various streams and low-lying potentially water logged areas. • Two road crossings. • Over cultivated fields.	• This line goes around the villages and has a lower visual impact than Alt 5.
Nchaupe-New Mathibestad Alternative 1	**1**	• Crosses through village. • Two stream crossings and potential water logged area in wet season. • Four road crossings • Traverses cultivated fields.	• Shortest route. • Goes to preferred Nchaupe substation
Nchaupe-New Mathibestad Alternative2	**2**	• Slightly longer route. • Cross through village. • Two stream crossings and potential water logged area in wet season. • Four road crossings • Traverses cultivated fields.	-
Ratsiepane-Nchaupe Alternative **1**	**1**	• Several stream and road crossings, • Crosses over potential water logged areas in wet season • Over cultivated fields.. • Protected tree species have been identified along the Tswaing Meteorite Crater Reserve : *Boscia albitrunca* (Shepherd's Tree), *Combretum imberbe* (Leadwood), *Sclerocarya birrea* (Marula)	• Shorter route than Alt 2 and Alt 4 • This line links up to the Alt 1 SS (preferred) • Least impact on avifaunal and wetlands • Least visual impact (farthest away from the settlements)
Ratsiepane-Nchaupe Alternative **2**	**4**	• Longest route, link up to the Alt 2 SS (not preferred) • Several stream and road crossings, cross over potential	-

		water logged areas in wet season. • Over cultivated fields.	
Ratsiepane-Nchaupe Alternative **3**	**2**	• One road crossing • Higher visual impact than Alternative 1, because of its location between the settlements at Ratsiepane.	• Shortest • This line links up to the Alt 1 SS (preferred) • No stream crossings.
Ratsiepane-Nchaupe Alternative **4**	**3**	• Slightly longer than above & link up to the Alt 2 SS (not preferred) • One road crossing.	• No stream crossings.

From the above, the following power line routes are recommended:

- **Nchaupe-New Mathibestad Alternative 1 (Preferred)**

- **Ratsiepane-Nchaupe Alternative 1 (Preferred)**

- **Tswaing-Ratsiepane Alternative 1 (Preferred)**

Please note that although the vegetation report stipulates that Alt3 power line option between the Tswaing and Ratsiepane substations would be more favourable than Alt 1 route, this was said mainly due to the location adjacent to the Tswaing Meteorite Crater Reserve, where damage to vegetation would be a significant negative impact. The specialist report stated that the line would be "*Adjacent to Tswaing Nature Reserve with high trees where section could be seen as highly sensitive due to higher impacts expected*". A number of **protected trees** as listed in the National Forests Act / NFA (Act No. 84 of 1998) have been observed within the study area *(*Shepherd's Tree, Leadwood, Marula), most of these within the **100 m** corridor of the line alternatives adjacent to the Tswaing Nature Reserve. These trees may not to be removed, damaged, or destroyed without a **permit authorisation from the relevant authorities**. Should permits not be possible, Alternative 3 would be the recommended option for approval by DEA in place of Alternative 1. According to the other specialists however, the **collective significance of impacts would be less for Alt1**, in particular since the area has been over grazed for most of the route and because the Alt 3 route will have a higher visual impact between the two villages at Kromkuil**. For this reason it is recommended that Alternative 1 is approved by DEA, under the specific condition that protected trees must be avoided as far as possible. Eskom will have to design the alignment of the power line in this section very carefully, and take the necessary precautions to demarcate the trees and apply for permits where necessary.**

No-go alternative for the Nchaupe-Ratsiepane-Tswaing power lines, and the two substations

The No-Go alternative has the same implications and impacts for all 3 components of the Nchaupe-Ratsiepane-Tswaing project in Moretele. By not constructing the Nchaupe-Ratsiepane-Tswaing power line (and associated Substations), Eskom Distribution cannot ensure firm supply of the area. The no-go option alternative is therefore not a feasible option to consider as this would have significant negative impacts on the economy and living environment of the region, as no actual economic growth can occur, where future planned townships and business developments will cause overloading on the existing transmission network/system, which will result in constant power cuts. This option is therefore ruled out because it would neither supply the projected demand for electricity nor optimise the existing infrastructure.

Although the impacts identified, would not occur if the project did not go ahead, the socio economic benefit of the proposed project should not be disregarded. The No-Go alternative has thus been eliminated due to the fact that the identified environmental impacts can be suitably mitigated and that by not building the project, the socio-economic benefits and rural development initiative would be lost.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	**YES✓**	NO

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

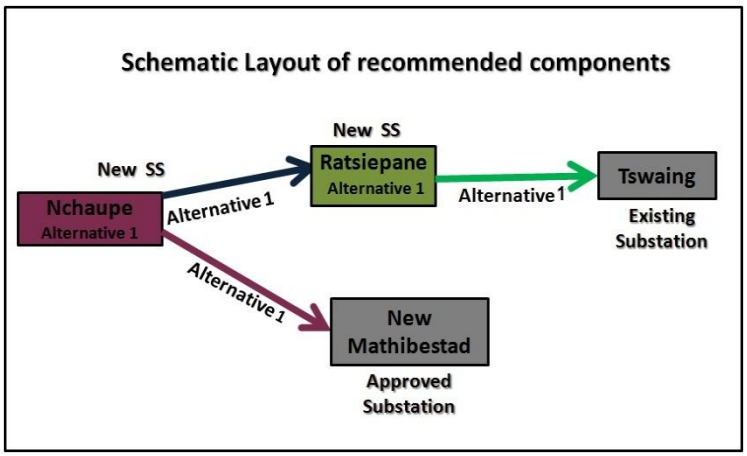
This Draft BAR has provided a comprehensive assessment of the potential environmental impacts associated with the proposed power line and substation project for Nchaupe. These impacts have been identified by the EIA team (including specialists) and I&APs. The key findings of the BA are discussed in this Report. In general, the proposed development will have an impact of low significance provided that there is effective application of the mitigation measures proposed in this BAR and the EMPr.

The majority of impacts can be mitigated and the negative impacts can be reduced to lower significance through appropriate design and mitigation measures. No impacts of unacceptably high significance are foreseen once proper mitigation measures have been implemented.

The findings of the specialists as summarised in Section 2 (Environmental Impact Statement) of this report indicate no significant fatal flaws and thus, with the application of effective mitigation measures, the proposed project is regarded to be feasible and sustainable.

Accordingly and based on the specialist assessment and various environmental assessment of the conditions, it is therefore a recommendation of this Basic Assessment that the following proposed activities and its associated infrastructure be granted a positive authorisation.

Proposed Nchaupe Substation (Alt 1 - the preferred option)
Proposed Ratsiepane Substation (Alt 1 the preferred option)
Proposed Alternative 1 Nchaupe SS to Ratsiepane SS Power Line (the preferred option in the BA)
Proposed Alternative 1 Ratsiepane SS to Tswaing SS Power Line (the visual, heritage and socialspecialists' recommendation)
Proposed Alternative 1 Nchaupe SS to New Mathibestad SS Power Line (the preferred option)



These above mentioned 3 powerline routes and 2 substation locations have emerged as the preferred options

from an environmental perspective. It is further recommended that the environmental authorities authorise the development subject to the following conditions:

- The draft EMPr and conditions thereto must be adhered to - the EMPr be made a binding document for the contractors and managers on site. (See Appendix G for the EMPr).
- Before construction, a walk–down of the power line route must be done to determine if the individual pole (pylon) structures will have an impact on any sites, features or objects of cultural heritage significance;
- Ecological (Flora and Fauna) and Heritage Resource Specialists must conduct a site visit (i.e. 'walk-down') prior to commencement of the construction phase , i.e. tower/pylon placement phase, to ensure that no flora and fauna species as well as heritage and/or cultural resources are compromised and propose relevant mitigation measures thereof;
- Any specific comments on this Draft BA report will be included in the Final BA Report. Eskom must follow a positive authorisation of this BAR by doing the necessary applications, namely **tree permits at the Department of Agriculture, Forest and Fisheries** should they consider the removal of some of the protected species within the project area.
- No towers and access roads must be placed in any surface water resources, i.e. rivers, wetlands, etc. An authorisation from the Department of Water and Sanitation (DWS) must be obtained prior to construction if this is unavoidable. **The applicant must apply for a Water use Licence from the Department of Water and Sanitation (DWS)** in areas where water resources are impacted (streams and wetland crossing of the tributaries of the Soutpanspruit) before commencement of const**ruction in those areas;** The rivers/streams supporting the Soutpanspruit that are located around the project area must be regarded as "No-Go" areas for the proposed power line and substation, monopoles, access tracks and related activities. The 1: 100 year floodline and a 32m line from the centre of any water course, whichever is the greatest will be regarded as "No-Go" areas. Should the applicant decide to place any structure within the wetland areas or its buffer zone or within the flood lines, a Water Use License is required from DWS according to the Water Act.
- Rehabilitation should be completed swiftly.
- The location of construction camps must be carefully considered and sensitive areas be avoided.
- For the 2 substations, a due diligence contamination assessment must be done and the following parameters must be tested: PCBs, VOCs, and SVOCs
- A suitability qualified Environmental Officer (EO) must be appointed and be present on site at all times through different phases of the project to ensure compliance with the conditions of the Environmental Authorisation and the Final Environmental Management Programme

Is an EMPr attached?	YES ✓	**NO**

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Marinda le Roux (EAPSA)

_____

NAME OF EAP

_____ _____

SIGNATURE OF EAP DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)

Appendix E: Public Participation

- Appendix E 1: Notification of project
  - E1.1 Stakeholder proof of notification
    - E1.1.1 Photo Plate 1
    - E1.1.2 Photo Plate 2
    - E1.1.3 Photo Plate 3
  - E1.2 Land Owners & IAP proof of notification
- Appendix E 2:
  - E 2.1
  - E2.2
- Appendix E 3: Comments and Response Report (CRR)
- Appendix E 4:List of Organs of State
- Appendix E5: List of IAPs
- Appendix E6: Minutes and Correspondence

Appendix F: Impact Assessment & Detail of Methodology

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information