

**ENVIRONMENTAL IMPACT ASSESSMENT FOR THE  
PROPOSED MATIMBA-WITKOP NO. 2 400 kV TRANSMISSION  
LINE, NORTHERN PROVINCE**

**SPECIALIST STUDY – LAND USE IMPLICATIONS**

**APPENDIX F**

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## **ANNEXURE 1: LAND USE MAPS**

## **1. INTRODUCTION**

### **1.1. Scope and Terms of Reference**

The investigation into the possible land use consequences of the project included the following:

- The identification of land parcels affected by the proposed route alignments (both primary and secondary) and the compilation of an appropriate electronic database for this purpose.
- Determining the responsible local authority in whose area of jurisdiction such land parcels are located and consulting with departmental officials.
- Determining the status of these land parcels (i.e. zoning, sub-divisionable configurations)
- A technical appraisal of the potential impacts from a land use perspective

Based on the proposed alignment of the Transmission line servitude and related facilities which form part of the project, the following investigations were undertaken:

- A search on the most recent compilations on record with the Surveyor General (effective date: end February 2002);
- A comparison with the records of the Registrar of Deeds to determine:
  - \* Registered owners of affected land portions
  - \* Correct property descriptions and title deed information
  - \* Identification of existing legal encumbrances (servitudes, long lease diagrams and accurate cadastral size of land portions involved)
- Determination of existing land use rights attaching to each land portion (zoning rights, consent rights and related statutory development controls).
- Determination of status of Land Development Objectives (LDOs) and Integrated Development Plans (IDPs) affecting the relevant land portions and categorisation of spatial framework implications.
- Compilation of an electronic database of affected landowners (and occupiers were relevant).
- Sourcing of any bond information and details of affected financial institutions.

- Assessment of future road planning affecting the route alignment (municipal, provincial and national).
- Assessment of any applications for change in land use and/or subdivision under consideration by the responsible authorities along the proposed route alignment.

Input into the Environmental Impact Assessment from a land use perspective includes the following:

- Investigating and reporting on potential impacts on land use configurations and local planning in the affected areas.
- An exposé on baseline conditions prevailing along the preferred and alternative corridor alignments and a technical description and assessment of the perceived impact from a land use perspective.
- Suggested mitigation measures to alleviate or reduce the effects of negative impacts or, alternatively, to enhance positive impacts. This includes references to the required changes in statutory planning policies (such as approved integrated development plans and land development objectives) which affect the relevant land parcels along the corridor alignment.

## **1.2. Structure of this Report**

The Scope of Work and Terms of Reference need to be considered against existing legislative and institutional frameworks in respect of land use planning and land use rights. In this regard information on current district and local authority structures forms an integral part of the report. The content of this report may, therefore, be summarised as follows:

- District municipal structures and areas of jurisdiction;
- Local municipal structures applicable to the area;
- Current planning policy documents and guidelines;
- Land use rights/zoning and implications thereof;
- Land use regimes and implications thereof;
- Process to obtain required land use rights;
- The expected impact of the development on surrounding land uses; and
- Proposed mitigating measures.

## **2. DISTRICT MUNICIPAL STRUCTURE**

The area under consideration is located in the area of jurisdiction of two district municipalities, namely:

- the Capricorn District Municipality (DC 35); and
- the Waterberg District Municipality (DC 36).

These district municipalities are two of six district municipalities in the Northern Province. The other district municipalities within Northern Province are as follows:

- Vhembe District Municipality (Messina area)
- Mopane District Municipality (Phalaborwa area)
- Bohlabela District Municipality (Kruger National Park area)
- Sekhukhu District Municipality (Groblersdal area)

It is important to note that some of the planning policies and town planning schemes of the previous district councils are applicable to areas within the above-mentioned district municipalities. No consolidated town planning instruments have been developed for the new municipal structures. The municipal structure in the Northern Province is illustrated on *Map 2*.

### **2.1. Locational Context**

The Capricorn District Municipality (DC 35) is located in the centre of the Northern Province and is surrounded by the other five district municipalities. Waterberg District Municipality borders Capricorn District Municipality to the west. The Waterberg District Municipality is the most western district municipality of the Northern Province, and is bordered by Botswana on the western boundary and the Rustenburg District Municipality (North West Province) on the southern boundary. The locational context of the proposed corridors to accommodate the Transmission line is illustrated on *Map 3*.



### **3. LOCAL MUNICIPAL STRUCTURES**

#### **3.1. District Municipalities**

##### ***3.1.1. Capricorn District Municipality***

The composition of the Capricorn District Municipality consists of five local municipalities namely:

- Blouberg Local Municipality (Swartwater area)
- Molemole Local Municipality (Dendron area)
- Lepelle-Nkumpi Local Municipality (Lebowakgomo area)
- Aganang Local Municipality (Bakone area)
- Polokwane Local Municipality (Pietersburg area)

Although the proposed route alignment affects a limited number of properties located within the area of jurisdiction of the Aganang Local Municipality, it is confirmed that most of the properties affected by the proposed corridor in the Capricorn District Municipal area fall within the area of jurisdiction of Polokwane Local Municipality. It is, therefore, anticipated that the Polokwane Local Municipality will experience the most significant potential impacts of the proposed Transmission line in the Capricorn District Municipal area.

##### ***3.1.2. Waterberg District Municipality***

The composition of the Waterberg District Municipality consists of six local municipalities namely:

- Mookgopong Local Municipality (Naboomspruit area)
- Bela-Bela Local Municipality (Warm Baths area)
- Thabazimbi Local Municipality (Thabazimbi area)
- Modimolle Local Municipality (Nylstroom area)
- Mogalakwena Local Municipality (Potgietersrus area)
- Lephalale Local Municipality (Ellisras area)

The Mogalakwena Local Municipality and the Lephalale Local Municipality are the only two local municipalities that may experience potential impacts as a result of the proposed

Transmission line. It is anticipated that the Mogalakwena Local Municipality may experience the most significant potential impact of the proposed Transmission line, since the largest portion of the proposed Transmission line infrastructure falls within the area of jurisdiction of this local municipality.

The local authorities that may experience potential impacts related to the proposed Transmission line are:

- Lephhalale Local Municipality
- Mogalakwena Local Municipality
- Aganang Local Municipality
- Polokwane Local Municipality

### **3.2. Areas affected by Town Planning Schemes**

#### ***3.2.1. Lephhalale Local Municipality***

The Lephhalale Local Municipality was established during 2001 and is an authorised local authority in terms of the provisions of the Town Planning and Townships Ordinance, 1986 (Ordinance 15 of 1986) and is therefore in a position to take decisions in respect of applications for amended or new land use rights within its area of jurisdiction.

Applications for changes in land use rights in urban areas (proclaimed townships) are dealt with in terms of the Ellisras/Marapong Town Planning Scheme, 1996. Except for the Marapong Township, all the properties identified for this project (in the area of jurisdiction of the Lephhalale Local Municipality) fall outside the area that is governed by the Ellisras/Marapong Town Planning Scheme.

#### ***3.2.2. Mogalakwena Local Municipality***

The Mogalakwena Local Municipality was established in 2001 and is an authorised local authority in terms of the provisions of the Town Planning and Townships Ordinance, 1986 (Ordinance 15 of 1986) and is, therefore, in a position to take decisions in respect of applications for amended or new land use rights within its area of jurisdiction.

Applications for changes in land use rights in urban areas (proclaimed townships) are dealt with in terms of the Potgietersrus Town Planning Scheme, 1997. All the properties identified for this project within the area of jurisdiction of the Megalakwa Local Municipality fall outside the area that is regulated in terms of the above-mentioned scheme.

### ***3.2.3. Aganang Local Municipality***

Aganang has not been officially constituted as an independent local authority and no municipal structure has, as yet, been put in place. The area is not subject to a town planning scheme, and land use applications are received and processed by Northern Province Provincial Authority.

### ***3.2.4. Polokwane Local Municipality***

The Polokwane Local Municipality was established during 2001, is an authorised local authority in terms of the provisions of the Town Planning and Townships Ordinance, 1986 (Ordinance 15 of 1986) and is therefore in a position to take final decisions in respect of applications for amended or new land use rights within its area of jurisdiction.

Applications for changes in land use rights in urban areas (proclaimed townships) are dealt with in terms of the Pietersburg/Sesego Town Planning Scheme, 1999. Applications for changes in land use rights in rural areas are dealt with in terms of the Peri-Urban Areas Town Planning Scheme, 1975. The Peri-Urban Areas Town Planning Scheme, is therefore, applicable to all farm portions which do not fall within the Pietersburg/Sesego Scheme boundaries. The development of properties identified for the purpose of this investigation, in the area of jurisdiction of the Polokwane Local Municipality, is therefore regulated in terms of the Peri-Urban Areas Town Planning Scheme, 1975.

The areas of influence of the statutory town planning schemes are schematically illustrated on *Map 4*.

## **4. PLANNING POLICY AND GUIDELINE DOCUMENTS**

### **4.1. Integrated Development Plans at District Level**

Integrated Development Planning is a process through which municipalities prepare strategic development plans for a 5 year period. The IDP is a strategic planning instrument that aims to

guide and inform all planning, budgeting, management and decision making in a municipality. Integrated Development Plans are prepared in terms of the Municipal Structures Act, 1998.

#### ***4.1.1. Waterberg District Municipality***

The Integrated Development Planning Process for the Waterberg District Municipality area had not been finalised when this report was completed. A Spatial Development framework for the Northern Province was made available by the Provincial Department of Housing and Local Government. Although this Spatial Framework had not been approved at the date of this report, the information was used for the purpose of this report, as this framework represents the latest, updated information of all the district and local municipal areas affected by this project.

#### ***4.1.2. Capricorn District Municipality***

The Integrated Development Planning Process for the Capricorn District had also not been finalised when this report was completed, and an approved IDP, at district level was, therefore, not available.

The information contained in the Provincial Spatial Development Framework regarding the Capricorn District was, therefore, also used for the purposes of this report.

### **4.2. Integrated Development Planning at Local Level**

#### ***4.2.1. Lephhalale Local Municipality***

The Lephhalale Local Municipality had finalised the Local Municipality Integrated Development Planning Process as at the date of this report. This IDP (Lephhalale Local Municipality Integrated Development Plan) was largely used for the purposes of this report, with specific reference to the portion of the proposed Transmission line that falls within the area of jurisdiction of the Lephhalale Local Municipality.

#### ***4.2.2. Mogalakwena Local Municipality***

The Mogalakwena Local Municipality had not finalised the Local Municipality Integrated Development Planning process as at the date of this report. Information regarding the local

municipality Integrated Development Plan was therefore not available and the Provincial Spatial Development Framework was, therefore, used for the Mogalakwena Local Municipality area.

#### ***4.2.3. Aganang Local Municipality***

The Aganang Local Municipality had also not finalised the local municipality Integrated Development Planning Process as at the date of this report and the above-mentioned provincial Spatial Development Framework was, therefore, also used for the area of jurisdiction of the Aganang Local Municipality.

#### ***4.2.4. Polokwane Local Municipality***

The Integrated Development Planning Process for the Polokwane Local Municipality had not been finalised at the date of this report. This IDP had been prepared by the local authority and no consultants were used to assist in this process. Information with regards to the Local Municipality Integrated Development Plan was not available for the purposes of this report and therefore the Provincial Spatial Development Framework was also used for the area of jurisdiction of the Polokwane Local Municipality.

The IDPs and Spatial Development Frameworks of the various local authorities mentioned above are supposed to inform the Provincial Spatial Development Framework and therefore the information of the Provincial Spatial development Framework can be regarded as the most updated information for the areas involved.

The planning documents consulted during the investigation include:

- the Lephalale Local Municipality Integrated Development Plan dated April 2002;
- the Pietersburg/Polokwane Integrated Development Plan/Land Development Objectives dated July 1998;
- the Limpopo Province Spatial Development Framework dated May 2002.

Although some of the above-mentioned documents had not been officially approved as at the date of this report, such documents were deemed to provide sufficient information in respect of planning proposals and policies for the purpose of the investigation. The local authority

officials confirmed that no substantial changes were foreseen before official approval by the relevant authorities.

### **4.3. Northern Province Spatial Development Framework, 2002**

#### **4.3.1. *Spatial framework***

Applications for changes in land use rights in rural areas for all the local municipal areas involved in this project are evaluated on provincial level. The above-mentioned Provincial Spatial Development Framework is used as an instrument to guide and inform all planning, management and decision-making at provincial level in the area under consideration. This Spatial Development Framework contains the latest updated information regarding each local municipality within the Northern Province. The local municipality IDP and Spatial development Frameworks will, upon finalisation and approval, inform this Provincial Spatial Development Framework.

The Spatial Development Framework identified various land use categories including:

- agricultural areas,
- conservation areas,
- so-called exemption farms,
- biospheres; and
- development clusters

A distinction is made between provincial, district and local level, as indicated on the extracts on *Maps 5 to 8*. From these maps it is clear that some conservation areas, potential agricultural areas, hunting lodges (exemption farms), development clusters and the Waterberg Biospheres will most probably be affected by the proposed corridor alignments.

#### **4.3.2. *Guiding Principles***

The Limpopo Provincial Spatial development Framework provides the spatial background to guide development and development initiatives in the Northern Province. It is strategic in nature and serves to guide and direct the decision-making process rather than to govern and regulate land use development. However, where IDPs and LDOs have been officially approved by the appropriate authorities, the relevant legislation provides that no land use

related decisions of any authority may be implemented where such decisions are deemed to be inconsistent with the provisions of the IDPs or LDOs. It is, therefore, important to assess the proposed development of the Transmission line against the background of what is proposed by the IDP and the provincial Spatial Development Framework.

The Spatial Development Framework divides the area into seven functional precincts/categories - each based on a very distinct function the area fulfils in the context of the each authority area. The areas can be summarised as follows:

- Mineral potential areas
- Coal fields
- Potential agriculture areas
- Nature Conservation areas
- Hunting lodges (exemption farms)
- Biospheres
- Development Clusters

Development clusters are further categorised as follows:

- Provincial growth point
- District growth point
- Municipal growth point
- Population concentration points
- Local services point

The above-mentioned functional areas are illustrated on the extracts from the Provincial Spatial Development Framework on *Maps 5 to 8*. The proposed Transmission line corridors traverse the above-mentioned functional areas at certain points along the proposed route alignment.

Although the areas affected by the 400 kV Transmission line infrastructure are not specifically earmarked for the purpose of electrical infrastructure in the above mentioned framework, it is confirmed that infrastructure is usually not indicated on plans of such strategic nature. The scale and nature of a Spatial Development Framework (at provincial level) precludes the possibility of indicating detailed infrastructure as part of the broader land use categorisation.

It may, therefore, be concluded that the proposed 400 kV Transmission line infrastructure can, in terms of the LDO/IDP development framework proposals at provincial level, be deemed to be generally consistent with the provisions governing land use.

#### **4.4. Waterberg District Integrated Development Plan**

There was no approved Integrated Development Plan on district level for the Waterberg District at the date of this report. The Integrated Development Planning Process for the Waterberg District was still in an early stage. The same conclusions as to the anticipated consistency of the Transmission line infrastructure with future strategic planning directives apply in this instance.

#### **4.5. Capricorn District Integrated Development Plan**

The Integrated Development Planning Process for the Capricorn District had also not been completed at the date of this report and therefore information in this regard was not available. The Provincial Spatial Development Framework was also used for recommendations on a district level for the Capricorn District area.

#### **4.6. Lephhalale Local Municipality Integrated Development Plan, 2002**

The Lephhalale Local Municipality IDP focuses in more detail on the area within the jurisdiction of the Lephhalale Local Municipality, which may be affected by the proposed project.

The above-mentioned IDP identified two Growth Points within the Lephhalale area namely:

- the Mokerong area; and
- the Ellisras/Onverwacht area.

The IDP and the Spatial Development Framework focuses largely on these two areas, since they are regarded as the major growth points in the Lephhalale jurisdiction.

The Mokerong area is not influenced by the proposed Transmission line. *Map 9* illustrates the Spatial Development Framework for the Ellisras/Onverwacht area and indicates Development Nodes and Mineral Areas for the Ellisras/Onverwacht area, as identified in the Lephhalale IDP.



In this area the existing and proposed Transmission line passes through a proclaimed township area (i.e. Marapong) which proves to be problematic. During discussions with the relevant officials at the Lephalale Local Municipality, it was confirmed that the layouts of existing and proposed developments in the Marapong area restrict the servitude width to the current width of the existing Transmission line servitude. The possibility of widening the existing servitude to accommodate the future infrastructure does not appear to be practicable.

Apart from the restriction mentioned above, the proposed Transmission line corridors do not appear to be substantially influenced by any of the land use planning proposals contained in the draft Integrated Development Plan for the local municipal area. Some of the land precincts which are traversed by the proposed corridor alignments are, however, of special significance, because they form part of the Waterberg Biosphere. Several Exemptions Farms (tourist related) are also located along the routing of the proposed Transmission line within the area of jurisdiction of the Lephalale Local Municipality. If the necessary precautionary measures are taken to mitigate the situations mentioned above, the proposed development of the Transmission line cannot be deemed to be inconsistent with the Spatial Development Frameworks of the draft IDP for the area.

There would appear to be no fatal flaws in this regard and it is confirmed that these conclusions were verified by the local authority officials responsible for the compilation of the IDP and the Spatial Development Frameworks.

#### **4.7. Mogalakwena Local Municipality Integrated Development Plan**

The Integrated Development Planning process of the Mogalakwena Local Municipality was still at an early stage as at the date of this report and, therefore, no information regarding future development proposals was available for investigation. The Provincial Spatial Development Framework, as described under section 4.3 of this report, was therefore used as the guideline for this area.

#### **4.8. Aganang Local Municipality Integrated Development Plan**

The Integrated Development Planning Process of the Aganang Local Municipality was also not finalised as at the date of this report and the same circumstances apply as described above.

#### **4.9. Polokwane Local Municipality Integrated Development Plan**

The Integrated Development Planning Process for the Polokwane Local Municipality was in an early stage at the date of this report and the Pietersburg/Polokwane Integrated Development Plan/Land Development Objectives dated July 1998 was used for the purposes of this report. This IDP was compiled before the latest municipal demarcation and it, therefore, covered a smaller area than the existing Polokwane Local Municipal area. This 1998 IDP/LDOs does not address the properties in the Polokwane area which may be affected by the proposed project.

The Provincial Spatial Development Framework was, therefore, also used as a guideline for the purposes of this report for that portion of the proposed Transmission line corridors within the area of jurisdiction of the Polokwane Local Municipality.

### **5. LAND USE RIGHTS AND ZONING IMPLICATIONS**

#### **5.1. Town Planning Schemes**

Land use rights along the corridors under consideration are currently regulated in terms of four different Town Planning Schemes. Except for Aganang, each affected local municipality has a town planning scheme which applies to properties in proclaimed townships (urban areas), and the Peri-Urban Areas Town Planning Scheme, 1975 is generally used for the regulation of land use rights on properties outside proclaimed townships (rural areas) in the areas of jurisdiction of all four local municipalities.

#### **5.2. Affected Urban and Rural Areas**

##### **5.2.1. Lephhalale Local Municipality**

With reference to *Map 10*, the following townships may be affected by the proposed corridors in the area of jurisdiction of the Lephhalale Local Municipality:

- Setateng
- Marapong

Marapong is a proclaimed township and is, therefore, governed in terms of the Ellisras/Marapong Town Planning Scheme, whilst Setateng(unproclaimed) falls outside the

area that is governed in terms of this scheme. The properties that may be affected in the proclaimed township are generally zoned for “*Residential*” purposes in terms of the Ellisras/Marapong Town Planning Scheme, 1996 and may, therefore, be used for the erection of single dwelling houses.

Except for the proclaimed residential properties, all other properties along the routing of the proposed Transmission line, are zoned “*Undetermined*” in terms of the Peri-Urban Areas Town Planning Scheme 1975. Properties zoned “*Undetermined*” may be used for the erection of single dwelling houses and limited agricultural buildings.

### **5.2.2. Mogalakwena Local Municipality**

With reference to *Map 11* the following townships may be affected by the proposed corridors within the area of jurisdiction of the Mogalakwena Local Municipality:

- Vlakfontein B
- Ga-mokwena
- Goedehoop
- Ga-malapila
- Ga-monene
- Ga-molopa
- Magamagatala
- Diretsaneng
- Mesuka
- Ga-mathekga
- Nong
- Ga-rapadi
- Ga-monare
- Vianen
- Marken

Of the above-mentioned townships, only Marken is a proclaimed township and land use management and regulations in Marken are governed by the Potgietersrus Town Planning Scheme, 1997.

The remaining townships had not been proclaimed as at date of this report. These settlements, together with all farm portions along the proposed Transmission line corridors, are regulated in terms of the Peri-Urban Areas Town Planning Scheme, 1975. The properties that may be affected in the proclaimed township are generally zoned for “*Residential*” purposes in terms of the Potgietersrus Town Planning Scheme, and may therefore be used for the erection of single dwelling houses.

Except for the proclaimed residential properties, all other properties along the routing of the proposed corridors, are zoned “*Undetermined*” in terms of the Peri-Urban Areas Town Planning Scheme, 1975. Properties zoned “*Undetermined*” may be used for the erection of single dwelling houses and limited agricultural buildings.

It is important to note that some of the properties along the corridor routing, that are zoned “*Undetermined*”, may have some additional land use rights which were procured by means of consent use applications. Information regarding such rights was not available from the various local authorities or the provincial department.

### **5.2.3. *Aganang Local Municipality***

With reference to *Map 12* the following townships may be affected by the proposed corridors within the area of jurisdiction of the Aganang Local Municipality:

- Ga-mathlapa
- Segoaahlang

None the above-mentioned townships, are proclaimed. Land use management and regulations in these townships are, therefore, administered in terms of the Peri-Urban Areas Town Planning Scheme, 1975.

All the identified properties along the routing within the area of the Aganang Local Municipality are zoned “*Undetermined*” in terms of the Peri-Urban Areas Town Planning Scheme, 1975. The properties zoned for “*Undetermined*” may be used for erection of dwelling houses and agricultural buildings.

#### **5.2.4. Polokwane Local Municipality**

The corridor routing in the area of jurisdiction of the Polokwane Local Municipality affects farm portions only as no townships exist along the proposed routing in this area. (refer to *Map 13*). All the properties along the proposed Transmission line corridors are, therefore, zoned “*Undetermined*” in terms of the Peri-Urban Areas Town Planning Scheme, 1975. Properties zoned “*Undetermined*” may be used for the erection of dwelling houses and agricultural buildings

### **5.3. Implications of zoning restrictions**

Although the zoning restrictions on properties identified in this study (“*agriculture and residential*”) do not specifically address the development of powerlines, it is important to note that powerlines are seen as an important part of the required infrastructure of any development area. The same principle applies to roads, railway lines and water reservoirs.

As indicated on *Maps 5 to 8*, the proposed Transmission line corridors may pass over land which is not specifically zoned for such purposes. The Transmission line corridors can, however, generally be accommodated on such land use precincts notwithstanding the seemingly incompatible zoning restrictions. Based on confirmation received from officials from the various local authorities, it would be a requirement on the part of Eskom to register appropriate servitudes over the affected land parcels without the requirement to amend the land use zoning within the ambit of the corridor servitudes.

It would, therefore, appear that the current zoning restrictions along the proposed route alignments do not hold any substantial consequences for the proposed project. Likewise, the introduction of new Transmission line servitude over land zoned for other purposes (*Residential or Agricultural*) would not necessarily have an impact on the zoning restrictions on adjacent land as the local authority does not require any amendment of the Town Planning Scheme where it is proposed to install infrastructure such as powerlines. Although the new servitude will, in certain instances, have the effect of “*dividing land*” along the route alignment, the development thereof will not, per say, result in a changed land use zoning configuration along such route alignments.

## 6. LAND USE REGIMES AND IMPLICATIONS

### 6.1. Informal Settlements

For the purposes of this report it is important to address statutory land use rights, and *de facto* land uses as separate matters, as the implications of the proposed Transmission line on the above will differ. It is important to note that existing land uses on some of the affected properties are not consistent with the statutory land use rights applicable to such properties. One of the reasons for this phenomenon is that some settlements (formal and informal) developed spontaneously on certain parcels of land belonging to the State, without any applications for changes in land use rights being submitted to the relevant authorities. This resulted in many of the existing settlements not being proclaimed as “*formal townships*” and the land portions on which these settlements are located are still zoned as “*Agricultural*”. The various local authorities are currently in the process of rectifying some of these inconsistencies on a prioritised basis, and during discussions with the relevant officials at the above mentioned authority it was confirmed that some of these “*townships*” will soon be proclaimed. The informal settlements along the alternative corridors (un-proclaimed) include(Refer to Maps 10, 11 and 12):

- Setateng
- Vlakfontein B
- Ga-mokwena
- Goedehoop
- Ga-malapila
- Ga-monene
- Ga-molopa
- Magagamatala
- Diretsaneng
- Mesuka
- Ga-mathekga
- Nong
- Ga-rapadi
- Ga-monare
- Vianen
- Ga-matlapa
- Segoahleng

## **6.2. Illegal Use of Land**

During a site inspections it was discovered that some land uses along the proposed Transmission line corridors, which differ from the statutory land use rights, are regarded as “*illegal land uses*”. Although these land uses are regarded as “*illegal*”, it is important to investigate the implications of the proposed Transmission line thereon, as some of these illegal land users (occupants), for example squatters, have been residing on certain land portions for a number of years and occupiers may therefore have legitimate claims of “*ownership*”. Should such claims succeed, the settlements are likely to be formalised (proclaimed).

*Maps 5 to 8* are extracts from the Provincial Spatial Development Framework and illustrate the land use regimes in the different local authority areas along the proposed Transmission line corridors.

## **6.3. Land Use Categories along the Proposed Transmission Line Corridors**

With reference to *Maps 5 to 8*, the land uses along the alternative corridors of the proposed 400 kV Transmission line can be categorised as follows:

- Towns and settlements (formal)
- Informal settlements (not proclaimed)
- Agriculture areas (community and commercial farming)
- Nature conservation areas and biospheres
- Exemptions farms (hunting lodges)
- Mineral potential areas
- Development clusters

Apart from the above-mentioned land use categories, certain infrastructure occurs along the proposed Transmission line corridors, and also affects land use configurations. These infrastructure-related uses include:

- Provincial and local roads;
- Railway lines;
- Existing powerlines;
- Basic engineering services (water, sanitation,)

The existing land use regimes, as indicated on *Maps 5 to 8*, extracted from the Northern Province Spatial Development Framework, and implications thereof are described below.

#### **6.4. Towns and settlements (formal)**

Proclaimed towns and settlements that may be influenced by the proposed Transmission line are as follows (*Refer to Maps 10 and 11*):

- Marapong
- Marken

Marapong is located to the west of Ellisras, and to the east of the Matimba Powerstation. The proposed route alignment (parallel to the existing line) influences this township directly, since the widening of the existing servitude will take up several erven that are proclaimed and zoned for residential purposes. This will also influence the future extensions of Marapong towards the south and the east.

Marken is located approximately 85 km east of Ellisras, and corridor 2 traverses the southern extensions of Marken.

It is evident from the above that the only proclaimed towns and settlements located close to the proposed corridors are extensions of Marken and Marapong. It would appear that the corridor alignments influence the above-mentioned townships directly as the servitude potentially directly affects erven within the townships.

#### **6.5. Informal Settlements (un-proclaimed)**

The informal settlements that may be affected by proposed corridor 1 are as follows:

- Vlakfontein B
- Ga-mokwena
- Goedehoop
- Ga-malapila
- Ga-monene
- Ga-molopa
- Magagamatala



- Ga-matlapa
- Segoahleng

Proposed corridor 1 passes over the north-eastern extensions of Magagamatala, whereafter it turns in a south-eastern direction and passes over the eastern portions of Ga-molopa and Ga-monene. At Magagamatala, the existing 400 kV Transmission line is very close to the township and the proposed new Transmission line will have to be accommodated to the north of the existing line at this point. At Ga-molopa and Ga-monene, proposed corridor 1 is wide enough to accommodate the proposed powerlines within the identified corridor in such a way as not to influence the existing erven in the settlements. Proposed corridor 1 passes over Ga-malapila. The existing Matimba-Witkop No. 1 400 kV Transmission line passes to the north of Ga-malapila. Proposed corridor 1 appears to be wide enough to accommodate the proposed new Transmission line on either side (north or south) of Ga-malapila, without influencing the existing erven within the township.

Proposed corridor 1 passes over Vlakfontein B and the southern portion of Ga-mokwena and the northern portion of Goedehoop. The above-mentioned townships are located in close proximity to each other. It appears that the proposed Transmission line can be aligned in such a way that it passes between Goedehoop and Vlakfontein B within the identified corridor without influencing any existing erven within the above-mentioned townships.

Proposed corridor 1 passes between Segoahleng and Ga-matlapa parallel to the existing 400 kV Transmission line, which are dangerously close to existing erven within Ga-matlapa. At this point, it is proposed that the new Transmission line be aligned to the north of the existing line in order to prevent possible relocation of families in Ga-matlapa. The identified corridor appears to be wide enough to accommodate the proposed line to the north of the existing Transmission line without influencing existing erven in Sekgwaleng.

Informal settlements that may be affected by proposed corridor 2 are as follows (*Refer to Map 11*):

- Setateng
- Vianen
- Ga-rapadi
- Ga-monare
- Nong

- Ga-matekga
- Mesuka
- Diretsaneng

A component of corridor 2 passes over the southern extensions of Setateng next to the R518 Road. Setateng is restricted to the north of the R518 Road and will, therefore, not be influenced if the proposed corridor is aligned to the south of the R518 Road. Corridor 2 also passes over the southern portions of Vianen, Ga-monare and Nong. In all three instances, the proposed corridor appears to be wide enough where it passes over the above-mentioned townships to align the Transmission line servitude in such a way as to not influence the existing erven in the settlements. The proposed Transmission line can be accommodated within the identified corridor, so as to pass to the south of the above-mentioned townships.

At Ga-rapadi, corridor 2 passes close to and to the north of the township, but again the proposed corridor appears to be wide enough to accommodate the Transmission line within the identified corridor, so as to pass to the north of the township.

At Ga-mathekga, proposed corridor 2 passes to the east of the township and again the Transmission line can be accommodated within the identified corridor, so as to pass to the east of the township without influencing the existing erven in the settlement.

Proposed corridor 2 passes to the east of Mesuka and Diretsaneng before it joins proposed corridor 1. At both townships it appears that the corridor is wide enough to accommodate the proposed Transmission line within the identified corridor, so as to pass to the west of the townships without influencing the existing erven in the settlements.

Proposed corridors 3 and 4 do not influence any formal or informal townships. The above-mentioned informal settlements are similar in terms of land uses, infrastructure and layout. The settlement consists of secondary roads with some basic services including water, electricity, and telephone lines. The dominant land use category in these townships is residential, supported by smaller shops, schools, and community centres.

## **6.6. Agriculture**

The larger part of the proposed Transmission line corridors traverse areas which are used for traditional communal farming and rural occupation. These areas are not densely populated

and large tracts of lands lie fallow without any identifiable use (*refer to Maps 5 to 8*). The farming methods evident in the area include cattle farming (on dry land) and limited subsistence crop farming. The proposed Transmission line would, therefore, not appear to substantially affect any densely populated areas, where relocation would be required. In addition, the nature of the Transmission line infrastructure would appear to be such that existing farming activities would continue long after the infrastructure has been installed. Apart from possible visual intrusion and secondary health/safety risks, there do not appear to be any major consequences associated with any of the proposed corridor alignments in these areas.

The rural areas (farms) around Pietersburg (Polokwane), Marken and Ellisras are typically used by farmers for commercial farming purposes in the form of maize and crop growing and cattle farming. In these areas it is evident that the farming activities continue without a significant impact around the towers of the existing 400 kV Transmission line. It is, therefore, anticipated that the proposed new lines will not have a significant influence on the agricultural activities.

#### **6.7. Nature Conservation Areas and Biosphere**

Proposed corridor 1 passes through the Waterberg Biosphere Reserve between the Moepel Farms, Keta and Masebe Nature Reserve, where after it turns in a south-eastern direction and passes to the north of Witvinger Reserve and the Percy Fyfe Reserve, before it enters the Witkop Substation approximately 20km south-west of Pietersburg. The Moepel Farms, Keta and Masebe Nature Reserve are, therefore, the only nature reserves, apart from the Waterberg Biosphere, which may possibly be affected by the proposed Transmission line.

At the point where it passes through the above-mentioned nature reserves, proposed corridor 1 is aligned next to the exiting 400 kV Transmission line which already passes through the reserves.

Proposed corridor 2 passes to the north and east of Masebe Nature Reserve and, therefore, only goes through the Waterberg Biosphere, without influencing any of the nature reserves mentioned in the discussion on proposed corridor 1. If this alternative is chosen it will mean that no additional impact will be experienced along the existing 400 kV Transmission line between the Moepel farms and Masebe Nature Reserve. It is, however, important to note that if corridor 2 is chosen, the area of impact will be widened (two lines, several kilometres apart vs. two lines next to each other) which will mean that the Masebe Nature Reserve is

surrounded by 400 kV Transmission lines, which may have a detrimental impact in terms of visual quality.

### **6.8. Exemption farms (Hunting Lodges)**

For the purposes of this report, it is important to take into consideration that numerous farms along the proposed routing of the Transmission line are being used for tourist related facilities (game ranches). These farms (exemption farms) are clearly illustrated on *Maps 5 to 8*, and illustrate the demand for and popularity of this area for such purposes. The proposed Transmission line may have a detrimental impact on these farms in terms of visual quality and functional division which may result in loss of income by the registered owners.

The nature of the proposed Transmission line infrastructure (towers, etc) is such that it may impact on the visual aesthetics and quality of the farms involved. It is anticipated that the least impact will be experienced if the proposed new Transmission line is established parallel to the existing Transmission line. This is due to the existing impact on certain farms as a result of the existing Transmission line. If the new proposed Transmission line follows a different routing, it will mean that other farms (that are currently unaffected by any powerlines) will most probably become affected.

### **6.9. Mineral potential areas**

With reference to *Map 5* it is confirmed that the areas to the north and north-east of Ellisras (around Matimba powerstation) are well known for the Ellisras Coalfield (Coal deposits). This area, therefore, has potential in terms of coal mining. (Refer to *Map 5*)

The area surrounding Vlakfontein B and Goedehoop in Mogalakwena also contains rich coal deposits and therefore this area has potential in terms of coal mining. (Refer to *Maps 6 and 7*)

In Pietersburg, the area surrounding the Witkop Substation is well known for the rich deposits of coal and aluminium and therefore has potential in terms of coal and aluminium mining, as indicated on the Spatial Development Framework (*Map 8*).

Although some areas along the identified routing of the proposed Transmission line has potential in terms of minerals and mining, no intensive mining, that could influence the routing of the Transmission line was identified.

## 6.10. Development Clusters

The Spatial Development Framework (*Maps 5 to 8*) that were used for the purposes of this report identified the following categories of development clusters on a provincial level:

- Provincial growth point
- Restrict growth point
- Municipal growth point
- Population concentration point
- Local services point

The area surrounding Ellisras, close to the Matimba Power Station, is identified in the Spatial Development Framework as a Provincial Growth Point. In this area, the Transmission line passes over the area that is identified as a Provincial Growth Point. The identified Growth Point is indicated at a strategic level and no existing or future development, apart from the extension of Marapong, will be influenced by the proposed route alignment.

At Setateng, proposed corridor 2 passes through a Population Concentration Point, as illustrated on *Map 5*. It is anticipated that the proposed Transmission line will not negatively influence the communities at this point, if the proposed route is kept to the south of the R518 road.

Proposed corridor 2 passes over certain extensions of Marken which are identified as Local Services Points in the Spatial Development Framework. If this alternative is chosen, the sensible placement of towers will have to be considered to minimise the potential impact on existing development.

At Segoahlang and Ga-matlapa proposed corridor 2 passes over the southern portions of a Population Concentration Point, as identified in the Provincial Spatial Development Framework. As previously discussed, it appears that the Transmission line can be aligned within the identified corridor in such as not to influence the existing erven in the settlements.

Apart from the above-mentioned situations, the proposed route alignment will not influence any development clusters as identified in the provincial Spatial Development Framework.

## 7. THE EXPECTED IMPACT OF THE DEVELOPMENT FROM A LAND USE PERSPECTIVE

### 7.1. Towns and Settlements (formal and informal)

#### 7.1.1. Functional division

Where the proposed Transmission line passes close to, or through settlements it may result in the functional division of the settlements, as it may result in servitude areas which pose certain restrictions in terms of development, and placement of towers which may result in restriction of accessibility. This may result in the separation of two portions of a settlement, which formerly functioned as one integrated entity.

From the assessment described in the preceding sections, it appears that certain informal settlements may be affected by the proposed corridors. However, there is no specific example of the route alignment dividing an existing settlement (formal or informal) to the extent described above. Although the proposed Transmission line corridors affect certain parts of the informal settlements, it would appear that it would generally be peripheral and could be avoided by minimal realignment, to skirt the settlements rather than crossing over portions thereof.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
<i>Functional division (Towns)</i>							
Marapong	Local	Permanent	Definite	High	Medium	Negative	Neutral
Other settlements	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.1.2. Possible restriction of access

The proposed Transmission line may restrict the accessibility between certain settlements and extensions, with specific reference to the location of the towers. If towers are not placed sensibly, it may result in restriction of accessibility between settlements. During the construction phase, access and movement will be temporarily affected along the servitude alignment.

Specific reference is made to the Marapong area where the existing and proposed Transmission line servitude divide Marapong into two areas, where the existing extensions are north of the servitude and the new and proposed extensions are to the south of the servitude.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible restriction of access	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.1.3. Possible restriction of future development

The proposed Transmission line may restrict the future extension of settlements located in close proximity to the proposed servitude, as no residential buildings are permitted close to or underneath the Transmission line. In this regard specific reference is made to Vianen, Garapadi, Ga-monare, Nong, Ga-mathekga, Mesuka, Ga-molopa, Ga-monene, Diretsaneng, Gamalapila, Goedehoop, Vlakfontein B, Ga-mokwena, Segoahleng, Ga-matlapa and Marapong. Except for Marapong, the proposed Transmission line can be aligned in such a way within the identified corridor that it does not restrict future extension of the mentioned townships. At Marapong the restriction of future developments will be inevitable if the proposed Transmission line is aligned next to the existing servitude.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
<i>Possible restriction of development</i>							
Marapong	Local	Permanent	Highly Probable	High	Medium	Negative	Neutral
Other settlements	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.1.4. Visual Impact

The proposed Transmission line may, upon completion of construction, have a negative impact on the visual character of existing settlements, as the towers are large steel structures

and very prominent. Aesthetic appreciation of the landscape and townscape may be detrimentally affected.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Visual impact	Local	Permanent	Highly Probable	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.1.5. Possible resettlement of households

It may be necessary to relocate some of the households if existing dwellings are found to be located within the proposed servitude of the proposed Transmission line. In this regard, specific reference is made to situations where the physical characteristics of the environment do not allow for the Transmission line to be aligned in such a way that it bypasses existing settlements. Specific reference is made to the mountainous areas where several informal settlements are found.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
<i>Possible Resettlement of Households</i>							
Marapong	Local	Short	Definite	High	Medium	Negative	Neutral
Other settlements	Local	Short	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.1.6. Possible impact on planning policies and future development

The proposed Transmission line is deemed to be generally consistent with the existing LDO/IDP directives for the area under consideration and amendment of these policies will, therefore, not be necessary.

The Transmission line is also regarded as being consistent with the provincial Spatial Development Framework as illustrated on *Maps 5 to 8*.

The largest expected impact on future planning and pending applications for changes in land use rights and/or applications for township establishment is experienced at Marapong, where



proposed corridor 1 divides Marapong into two functional areas and restricts future development of the said township towards the south.

Apart from the situation mentioned above, the proposed Transmission line does not influence any properties that are subject to pending applications.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible impact on planning policies and future development	Regional & Local	Short	Probable	None	None	Neutral	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.1.7. Possible safety risk

Where the proposed Transmission line passes close to, or through residential areas, it may create a safety and/or health risk. The towers are an attraction for children in rural areas, where it is often found that children climb on these towers with usually fatal consequences. This requires precautionary measures and appropriate management.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible safety risk	Local	Permanent	Highly probable	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

## 7.2. Agriculture (communal and commercial farming)

### 7.2.1. Functional Division

The proposed Transmission line may have the effect of functional division of certain farm portions, where the presence of the line “divides” a farm portion into two or more portions. According to representatives of the Agricultural Unions, animals (for instance cattle) do prefer not to pass underneath powerlines in rainy or cloudy conditions. The Transmission line may, therefore, restrict the movement of cattle (or other animals) on a farm portion.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Functional Division	Local	Permanent	Definite	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.2.2. Possible restriction of access and movement

The placement of towers on farm portions may restrict access and movement. This applies to centre pivot irrigation schemes and access for crop-spraying aeroplanes. This would typically apply to the areas around Pietersburg, Marken and Ellisras, since these areas are typically used for commercial farming as illustrated on *Maps 5 to 8*.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible Restriction of access and movement	Local	Permanent	Highly Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.2.3. Loss of Agricultural Land

Some agricultural activities, such as maize farming, are permitted underneath powerlines, but other forms of farming, like citrus farming (where trees grow to a height of more than 4 m) may pose problems if the trees grow to high.

The base plinths of the towers take up substantial areas of valuable farm land which will be permanently lost as agricultural potential.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Loss of Agricultural Land	Local	Permanent	Highly Probable	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.2.4. Visual impact

The proposed Transmission line may have a negative impact on farms and game lodges in the area that offer recreational and tourist related services. Numerous farms along the proposed corridors are currently being used for commercial farming and game farming and may, therefore, experience a negative impact in terms of visual quality.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Visual impact	Local	Permanent	Definite	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.2.5. Possible relocation of houses/structures

The exact location of buildings (houses, barns, etc) on farm portions is not known and will be determined at a later stage when the final routing of the Transmission line is approved and surveyed in site specific circumstances.

It is anticipated that some houses and structures may fall within the final routing of the Transmission line, and will therefore have to be relocated. Alternatively, realignment may be negotiated on a site specific basis, to accommodate the resident farmer.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible Relocation of Houses/ Structures	Local	Short-term	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.2.6. Possible safety risk

As mentioned earlier in this report, some agricultural activities can take place under powerlines without significant health/safety risks. Other agricultural activities hold a higher risk, if exercised under the powerlines. These activities normally involve the growth of

bigger trees (in the excess of 4 metres high) and activities that include the use of large agricultural implements and other vehicles (i.e. combine harvesters).

The towers of the Transmission line may create further safety risks when activities like ploughing and planting take place dangerously close to the towers in the case where the towers are situated within cultivated areas.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible Safety Risk	Local	Permanent	Probable	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.2.7. Fences and construction

The construction phase of the Transmission line project may pose problems in terms of project management and co-ordination on each affected farm portion. When, for example, construction takes place over a cattle farm, some fences will have to be removed to allow access and sufficient space to route the cables and install the proper equipment. The possibility exists that cattle (or other animals) may move through the temporary access points during construction.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Fences and construction	Local	Short-term	Highly Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.2.8. Impact on production

Construction of the Transmission line over farms that are being used for the commercial crop farming should take place off season, to minimise the impact of construction on productivity.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Impact on Production	Regional	Short-term	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.3. Nature Conservation Areas and Biospheres

As discussed previously in this report, several nature conservation areas, including the Waterberg Biosphere Reserve, may experience possible impacts from the proposed Transmission line infrastructure.

#### 7.3.1. Visual Impact

The proposed Transmission line may, upon completion of construction, have a negative impact on the visual character of the nature reserves and biosphere reserve, since the towers are large steel structures and very prominent. Aesthetic appreciation of the landscape and natural environment may be detrimentally affected by the construction of the proposed Transmission line infrastructure. The wilderness experience associated with a Biosphere Reserve may be negatively affected.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Visual Impact	Local	Permanent	Highly Probable	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.3.2. Possible impact on natural environment (Flora)

The Transmission line infrastructure and consequent servitude area may lead to the destruction of protected plants and vegetation if the necessary precautionary measures are not adhered to.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible Impact on vegetation and plants	Regional	Permanent	Probable	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.3.3. Impact on game (animals)

During the construction phase and the consequent maintenance procedures, measures need to be implemented to prevent animals in nature reserves from breaking loose or being hurt.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Impact on game (animals)	Local	Short-term	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

## 7.4. Exemption Farms

### 7.4.1. Functional Division

The proposed Transmission line may have the effect of functionally dividing certain farm portions, where the presence of the Transmission line “divides” the farm portion into two or more portions. The Transmission line may restrict the movement of animals on these farm portions.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Functional Division	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.4.2. Possible restriction of access and movement

The placement of towers on farm portions may restrict access and movement if the towers are not placed sensibly. In terms of game farms, this applies to fire break roads and roads that are used to demarcate certain camps on game farms. The presence of major Transmission line infrastructure in close proximity to a game lodge may require realignment of the proposed corridor servitudes.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible restriction of access & movement	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.4.3. Decrease in property value

Where the proposed Transmission line divides a farm portion into two or more portions, it may result in a decrease in property value if the property was not influenced by any such factors before the construction of the proposed Transmission line.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible decrease in property value	Regional	Permanent	Probable	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

#### 7.4.4. Visual Impact

The Transmission line may have a negative impact on exemption farms and game lodges in the area that offer tourist related services. With reference to *Maps 5 to 8* it is confirmed that numerous properties along the routing of the proposed Transmission line are being used for such purposes. Serious consideration will have to be given to the exact alignment of the proposed Transmission line, so as to prevent unnecessary visual intrusion in these wilderness areas.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Visual Impact	Local	Permanent	Definite	High	Medium	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

## 7.5. Mineral Potential Areas

The possible impact of the proposed Transmission line infrastructure on mineral potential areas and potential mining activities would appear to be minimal.

### 7.5.1 Possible Restrictions of Future Mining Operations

The servitude to be registered for the purposes of the Transmission line may influence the development of future mines where Mineral Potential Areas exist along the routing of the proposed line. It is, however, confirmed that no substantial mining activities exist along the routing of the proposed Transmission line and no future planning in terms of mining activities could be identified.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible restrictions of future mining operations	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

## 7.6. Development Clusters

Proposed corridor 1 passes through two areas that have been identified as potential Development Clusters. The first Development Cluster is found at Segoahleng in the Aganang local municipal area. It is, however, anticipated that the proposed Transmission line will not influence the proposed development cluster. The second Development Cluster is found at Ellisras, where a Provincial Growth Point has been identified around this township. The



proposed Transmission line will not impact negatively on any existing or future planning at this stage.

Proposed corridor 2 passes through two Development Clusters. The first cluster is found in the Marken area and serves as a Local Services Point. Careful consideration will have to be given to the planning of the route alignment and the placement of towers in this area. The second cluster is found at Setateng but does not pose a problem in terms of the proposed Transmission line, as the cluster is restricted by R518 Road on the southern boundary thereof, and the proposed Transmission line for this corridor can be aligned to the south of the R518 road.

### 7.6.1. Possible Restriction of Future Development

In terms of future development of the identified clusters, it is confirmed that the proposed Transmission line will not restrict development in any of the above-mentioned areas.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible restriction of development	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.6.2. Possible Restriction of Access and movement

If the proposed towers and Transmission line infrastructure are not placed sensibly it may result in the restriction of access between certain Development Clusters and portions of clusters.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible Restriction of access & movement	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.6.3. Possible Safety Risk

Development clusters are usually associated with higher density population and, therefore, the proposed Transmission line infrastructure may possibly pose a threat in terms of health and safety in these areas. Careful consideration will have to be given to the placement of towers and the alignment of the Transmission line.

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
Possible Safety Risk	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

### 7.7. Summary of Impacts

The impacts mentioned above are summarised in Table 1 below. In order to evaluate the significance of the impacts, the following characteristics of each potential impact will be identified:

- the *nature*, including a description of what causes the effect, what will be affected and how it will be affected;
- the *extent*, indicating whether the impact will be located (limited to the immediate area or site of development) or regional;
- the *duration*, indicating whether the lifetime of the impact will be of a short duration (0-5 years), medium-term (5-15 years), long term (>15 years) or permanent;
- the *probability*, described the likelihood of the impact actually occurring, indicate as improbable (low likelihood), probable (distinct possibility), highly probable (most likely), or definite (impact will occur regardless of any preventative measures);
- the *significance*, determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the *status*, which will be described as either positive, negative or neutral.

**Table 1:** Summary of potential impacts on land use associated with the proposed project

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
<b><i>Towns and Settlements</i></b>							
<i>Functional Division (Towns)</i>							
Marapong	Local	Permanent	Definite	High	Medium	Negative	Neutral
Other settlements	Local	Permanent	Probable	Medium	Low	Negative	Neutral
Possible Restriction of Access	Regional	Permanent	Probable	Medium	Low	Negative	Neutral
<i>Possible Restriction of Development</i>							
Marapong	Local	Permanent	Highly Probable	High	Medium	Negative	Neutral
Other settlements	Local	Permanent	Probable	Medium	Low	Negative	Neutral
Visual Impact	Local	Permanent	Highly probable	High	Medium	Negative	Neutral
<i>Possible Resettlement of Households</i>							
Marapong	Local	Short	Definite	High	Medium	Negative	Neutral
Other settlements	Local	Short	Probable	Medium	Low	Negative	Neutral
Possible impact on planning policies and future development	Regional & Local	Short	Probable	None	None	Negative	Neutral
Possible safety risk	Local	Permanent	Highly probable	High	Medium	Negative	Neutral
<b><i>Agriculture</i></b>							
Functional Division	Local	Permanent	Definite	High	Medium	Negative	<b>Neutra I</b>
Possible Restriction of access and movement	Local	Permanent	Highly Probable	Medium	Low	Negative	Neutral
Loss of Agricultural Land	Local	Permanent	Highly probable	High	Medium	Negative	Neutral
Visual Impact	Local	Permanent	Definite	High	Medium	Negative	Neutral
Possible Relocation of Houses/Structures	Local	Short	Probable	Medium	Low	Negative	Neutral
Possible Safety Risk	Local	Permanent	Probable	High	Medium	Negative	Neutral
Fences and Construction	Local	Short	Highly probable	Medium	Low	Negative	Neutral
Impact on Production	Regional	Short	Probable	Medium	Low	Negative	Neutral

Nature of Impact	Extent	Duration	Probability	Significance		Status	
				WOM*	WM**	WOM*	WM**
<i>Nature Conservation Areas and Biosphere</i>							
Visual Impact	Local	Permanent	Highly probable	High	Medium	Negative	Neutral
Possible impact on vegetation and plants	Regional	Permanent	Probable	High	Medium	Negative	Neutral
Impact on game (animals)	Local	Short	Probable	Medium	Low	Negative	Neutral
<i>Exemption Farms</i>							
Functional Division	Local	Permanent	Probable	Medium	Low	Negative	Neutral
Possible Restriction of Access and movement	Local	Permanent	Probable	Medium	Low	Negative	Neutral
Possible decrease in property value	Regional	Permanent	Probable	High	Medium	Negative	Neutral
Visual Impact	Local	Permanent	Definite	High	Medium	Negative	Neutral
<i>Mineral Potential Areas</i>							
Possible Restrictions of Future Mining Operations	Local	Permanent	Probable	Medium	Low	Negative	Neutral
<i>Development Clusters</i>							
Possible Restriction of Development	Local	Permanent	Probable	Medium	Low	Negative	Neutral
Possible Restriction of access and movement	Local	Permanent	Probable	Medium	Low	Negative	Neutral
Possible Safety Risk	Local	Permanent	Probable	Medium	Low	Negative	Neutral

\*WOM-without mitigation

\*\*WM -with mitigation

## 8. PROPOSED MITIGATION MEASURES

The mitigation measures proposed in this section should be read in the context of the identified impacts generally described in Section 7. Many of the identified impacts are not of a significant nature (in the context of the land use regime in the area) and will not necessarily require substantial mitigation.

## **8.1. Towns and settlements (formal and informal)**

### **8.1.1. Functional Division**

- *Marapong:*

To minimise the possibility of functional division of settlements, the alignment of the Transmission line should be planned in such a way as to bypass towns and settlements, where possible. In this regard it is necessary to appropriately consider the locational context of the towns (formal and informal) along the proposed corridor alignments.

Corridor 1 affects the southern extensions of Marapong, as clearly illustrated on *Map 9*. The alignment of the proposed Transmission line next to the existing Transmission line servitude will result in the possible relocation of several families since certain extensions of Marapong have been proclaimed to the south of the servitude. This means that the existing servitude is bordered on both sides by residential development.

It is suggested that the proposed Transmission line be realigned to the north of Marapong, in the area of farms Scheerpoort and Zongesien. It will also be possible to realign the proposed Transmission line to the south of Marapong if the Matimba Powerstation must be entered from the south.

It is suggested that the proposed Transmission line be aligned to the north of Marapong (over farms Zongesien and Nelsonskop) in such a way that they enter the Matimba Powerstation from the north, instead of the proposed eastern entry point.

An alternative would be to realign the proposed Transmission line in such a way that it bypasses Marapong on the southern boundary and enters the Matimba Powerstation from the south. However, this option will prove to be problematic in future as it is anticipated that Marapong will extend in a southern direction since the northern boundary of Marapong forms the boundary of the area covered by the Ellisras/Marapong Town Planning Scheme and any development north of this boundary will, therefore, be outside the area that is covered by the scheme and will not be supported by the relevant officials at the local authority.

- *Setateng, Marken and Vianen:*

Corridor 2 passes to the south of the above-mentioned settlements. At Setateng it is suggested that the proposed Transmission line be aligned to the south of the R518 Road,

since the road forms the boundary of the settlement and no developments are found on the southern side of the road.

At Marken it is suggested that the proposed Transmission line also be aligned to the south of the R518 Road as Marken is situated to the north of the R518 Road, with a few developments on the southern side. If the proposed Transmission line is aligned to the south of the R518 Road it will still impact on certain land uses in Marken and it may, therefore, be necessary to realign this portion of the proposed route alignment.

At Vianen, corridor 2 passes to the south of the settlement, and it appears that the corridor is wide enough to accommodate the proposed Transmission line within the identified corridor without influencing any of the erven within the settlement.

- Ga-monare, Ga-rapadi, Nong and Ga-mathekga

The southern boundary of proposed corridor 2 crosses over the northern portions of Ga-rapadi, and the northern portion of proposed corridor 2 crosses over the southern portions of Ga-monare and Nong and it will, therefore, be possible to align the proposed Transmission line within the identified corridor in such a way that it passes in between these settlements. At Ga-mathekga, proposed corridor 2 passes to the east of the settlement and it appears that the identified corridor is wide enough to accommodate the proposed Transmission line to the east of the settlement.

- *Mesuka, Diretsaneng:*

Proposed corridor 2 passes to the east of Mesuka and the west of Diretsaneng and in both instances the identified corridor appears to be wide enough to accommodate the proposed Transmission line without influencing existing erven within the townships. The Diretsaneng, proposed corridor 2 joins up with proposed corridor 1.

- *Magagamatala, Ga-molopa, Ga-monene and Ga-malapila:*

Proposed corridor 1 passes to the north of Magagamatala and to the east of Ga-molopa and Ga-monene. At all three instances it also appears that the identified corridor is wide enough to accommodate the proposed Transmission line within the corridor in such a way that it does not influence the existing erven within the townships.

It is suggested that the new 400 kV Transmission line be aligned to the north of the existing Transmission line at Magagamatala, since the existing line is close to the

existing development. Proposed corridor 1 crosses over Ga-malapila where the existing Transmission line passes the said township to the north. The width of the proposed corridor at this point allows for the alignment of the new Transmission line on either side (north or south) of the township, in such a way that it will not have direct influence on the erven within the township.

- *Goedehoop, Ga-mokwena and Vlakfontein B:*

Proposed corridor 1 passes over the northern portions of Goedehoop and the southern portions of Ga-mokwena and Vlakfontein B. This corridor appears to be wide enough at this point to allow for the proposed Transmission line to be aligned in such a way to pass to the south of Ga-mokwena and Vlakfontein B and to the north of Goedehoop in such a way that it will influence the existing erven within the township.

- *Ga-matlapa and Segoaahleng:*

The existing Transmission line passes very close to the north of Ga-matlapa and at this point the proposed line will have to be aligned to the north of the existing line in order to accommodate the lines between Ga-matlapa and Segoaahleng without having a detrimental impact on existing erven within these townships.

Given that the Transmission line is aligned according to the above proposals, it is anticipated that the possible impact on towns and informal settlements can be minimised. This applies to all corridors.

### **8.1.2. Possible restriction of access**

Where the alignment of the proposed Transmission line is adopted in terms of the above proposals, and the placement of towers is planned to suite site specific circumstances, the restriction of access between existing townships and existing functional areas will be minimised.

### **8.1.3. Possible restriction of future development**

No buildings are allowed underneath or in close proximity to the proposed Transmission line because of safety considerations. The imposition of a new Transmission line servitude along the outer perimeter of an existing township or settlement usually has the effect of restricting access over the servitude, so as to allow for future extensions of the settlement beyond the servitude line. In mitigation of any possible impact in this regard, the alignment and position

of the servitude, where it fronts on existing settlements (or is located in close proximity) must take cognisance of future expansion possibilities (beyond the Transmission line servitude). In other words, access provisions to traverse the future Transmission line servitude should be considered from the outset together with a sufficiently wide margin to accommodate the Transmission line servitude.

In this regard, specific reference is made to the situation at Marapong where extensions of the existing township have been proclaimed on both sides of the existing Transmission line servitude. The proclaimed township areas, therefore, limit the existing servitude to the current width and it will not be possible to widen this servitude at this point. It is suggested that, at this point, the new Transmission line be realigned to pass to the north of Marapong and outside the area affected by the Ellisras/Marapong Town Planning Scheme. A second alternative would be to realign the proposed corridor to pass to the south of Marapong. This alternative may pose a problem in future since the trend is that Marapong would extend in a southern direction and may in future meet up with the Transmission line.

#### ***8.1.4. Visual impact***

The cost involved in installing powerlines underground is of such a nature that it becomes financially prohibitive. The only alternative is to erect overhead powerlines by means of towers and suspended cables. The visual impact of these lines can be minimised by the strategic placement of towers around towns and settlements, as well as the type of towers used for the purposes of the Transmission line. It is suggested that towers with the lower visual impact be used along the routing in proximity of existing townships and residential settlements.

The prominent nature of the infrastructure effectively precludes the possibility of camouflaging or hiding the structures. Because of the path of the sun in the southern hemisphere, most dwellings are orientated towards the north. Where possible, the visually intruding Transmission line infrastructure should be routed to the south of the existing residential settlements or, where no alternative exists, to either the west or east thereof rather than affecting the skyline directly north of such facilities.

#### ***8.1.5. Possible resettlement of households***

It is suggested that, where it proves to be impossible to bypass erven in existing townships (because of other physical factors like slopes and gradient), possible resettlement and the



consequent remuneration be negotiated with the residents of the erven to be influenced in order to reach an agreement on the conditions of resettlement. It is anticipated that resettlement of households can be avoided if the proposed mitigating measures are implemented.

#### ***8.1.6. Possible impact on planning policies and future development***

The proposed Transmission line can be accommodated in terms of the existing LDO/IDPs applicable to the area under consideration and changes to these policy documents will, therefore, not be necessary.

#### ***8.1.7. Possible safety risks***

Where the Transmission line is to be constructed in close proximity to existing residential areas, access to the towers should be restricted by means of appropriate fencing of barbed wire structures to prevent children from climbing onto these towers. Sufficient side space along servitudes should be provided to separate dwellings structures from the safety risks associated with the Transmission line.

### **8.2. Agriculture (communal and commercial farming)**

#### ***8.2.1. Functional Division***

Functional division of farm portions can be minimised by proper planning of the final routing to ensure that, where farm portions are divided, it be done in such a way that the smallest possible portion is separated from the affected farm portion. Route alignments should, where possible, hug cadastral boundaries, or traverse areas of the farms least likely to be used for active agriculture.

#### ***8.2.2. Possible restriction of access***

To minimise the impact of restriction of access and movement on farm portions it is proposed that the layout of functional areas, roads and structures on each farm portion affected be considered before the placement of towers to minimise the impact of restriction of access. The type of farming and farming equipment used on each affected farm should be considered before the final placement of infrastructure is confirmed.

### **8.2.3. *Loss of agricultural land***

It is proposed that the cross-rope suspension towers be used (where possible) to minimise the area (agricultural land) sterilised by the footprint of these towers. This will enable farmers to use valuable agricultural land around the smaller footprint of the cross-rope suspension towers. Conventional towers cover larger base areas and sterilise larger portions of agricultural land.

The commercial farming sectors around Pietersburg, Marken and Ellisras should be taken into consideration when planning the routing of the Transmission line in these areas. It is suggested that the line be placed as close as possible to the existing Transmission line to concentrate the impact on one servitude (if possible) and, therefore, prevent further unnecessary division of farm portions.

### **8.2.4. *Visual impact***

To minimise the visual impact of the Transmission line, the same procedure described in Section 8.1.4 of this report should apply.

### **8.2.5. *Possible relocation of dwelling structures and/or structures***

It is suggested that the final routing of the Transmission line be planned in such a way that existing dwellings and structures on farm portions be bypassed. Where it is impossible to do so, the possibility of relocation and/or expropriation should be discussed and negotiated with the registered owner.

### **8.2.6. *Possible safety risk***

The safety risks can be minimised by the inclusion of proper conditions into the deed of servitude to specify which agricultural activities can and cannot take place underneath the Transmission line.

It is again suggested that the cross-rope suspension towers be used to minimise the area of contact that may occur between implements used on the farm and the towers.

The footprint of the cross-rope suspension tower is much smaller than the conventional tower and will, therefore, allow space for movement around these towers.

### **8.2.7. *Fences and construction***

To prevent illegal access to farms and possible loss of cattle (and other animals) during construction, it is suggested that temporary gates, that can be closed, be erected where fences need to be removed. This will allow proper management of access to and from the affected farms during construction. Alternative grazing options can be negotiated with the resident farmer for the construction period.

### **8.2.8. *Impact on production***

To minimise the impact on agricultural production, it is suggested that construction of the Transmission line be limited to the off-season, when agricultural activity is reduced to a minimum, to prevent conflict and logistical problems between construction personnel and farmers.

## **8.3. Nature Conservation Areas and Biosphere**

### **8.3.1. *Visual Impact***

The visual impact of this line can be minimised by the strategic placement of towers in and around nature conservation areas and the Waterberg Biosphere Reserve. It is suggested that towers with smaller visual impact be used along the routing in proximity of nature reserves and the biosphere.

### **8.3.2. *Possible impact on natural environment (flora)***

It is suggested that the minimum amount of plants and vegetation be removed in the servitude area underneath the Transmission line to prevent unnecessary destruction of vegetation in the nature conservation areas and the biosphere area.

### **8.3.3. *Impact on game (animals)***

It is suggested that very strict guidelines be prescribed as to control the monitoring and management of game in the conservation areas and biospheres during construction and maintenance of the proposed Transmission line infrastructure.

## **8.4. Exemption Farms**

### ***8.4.1. Functional Division***

Functional division of farm portions can be minimised by proper planning of the final routing to ensure that, where farm portions are functionally divided, it be done in such a way that the smallest possible portion is affected. Route alignment should, where possible, traverse areas of a farm which already have been impacted by other infrastructure.

### ***8.4.2. Possible restriction of access***

To minimise the impact of restriction of access and movement on the farm portions, it is suggested that the layout of functional areas, roads and structures (including hunting camps) on each affected farm portion be considered before the placement of towers to minimise the impact of restriction of access.

### ***8.4.3. Decrease in Property Value***

The decrease in property value can be minimised by proper planning of the final routing to ensure that, where farm portions are divided, it be done in such a way that the smallest possible portions are separated from the affected farm portion. Furthermore, the remuneration payable for the land to be affected must be negotiated with each farm owner along the proposed route alignment.

### ***8.4.4. Visual Impact***

The cost involved in installing powerlines underground is of such a nature that it becomes financially prohibitive. The only alternative is to erect overhead powerlines by means of towers and suspended cables. The visual impact of these lines can be minimised by the strategic placement of towers around towns and settlements as well as the type of towers used for the purposes of the Transmission line. It is suggested that towers with the smaller visual impact be used along the routing in proximity of exemption farms to minimise the visual impact.

## **8.5. Mineral Potential Areas**

### ***8.5.1. Possible Restriction of Future Mining Operations***

To prevent the restriction of future mining activities and operations it is proposed that the relevant mining groups that are active in the area be contacted and meetings be scheduled to discuss the final alignment of the Transmission line.

## **8.6. Development Clusters**

### ***8.6.1. Possible restriction of future development***

To prevent the restriction of future development of the identified clusters it is suggested that the final routing of the proposed Transmission line be discussed with the relevant officials at the local authorities. In this regard, it is confirmed that the proposed route alignments are in line with future development of the development clusters with the exception of Marapong where special mitigation is proposed.

### ***8.6.2. Possible restriction of access***

To minimise the impact of restriction of access and movement it is proposed that the layouts of functional areas, development clusters, roads and structures be considered before the placement of towers and the alignment of the routing be finalised to minimise the impact of restriction of access.

### ***8.6.3. Possible safety risk***

Where the proposed Transmission line is to be constructed in close proximity of development clusters and residential areas, access to the towers should be restricted by means of appropriate fencing or barbed wire structures to prevent contact with these structures. Sufficient site spacing along servitudes should be provided to separate development and structures from the safety risks associated with the Transmission line.

## **9. CONCLUSION AND RECOMMENDATIONS**

The investigation into the possible impact of the proposed 400 kV Transmission line infrastructure in the Northern Province (from Matimba Powerstation to Witkop Substation)

has revealed no fatal flaws from a land use perspective. Although certain areas of concern have been highlighted, it appears that most are of such nature that appropriate mitigation may reduce the impact to an acceptable level.

With reference to the alternative corridors proposed for the proposed Transmission line, the conclusions on each identified option are summarised below:

- Proposed corridor 1 passes over several townships (formal and informal), agricultural land and exemption farms, nature conservation areas, the Waterberg Biosphere Reserve and several mineral potential areas. Some of the above-mentioned land uses along the routing of proposed corridor 1 poses challenges in terms of land use implications. With proper mitigation it is confirmed that the proposed new 400 kV Transmission line can be accommodated within corridor 1. Although corridor 1 passes over nature reserves, it is confirmed that the alignment of the proposed Transmission line parallel to the existing Transmission line will minimise the impact.
- Proposed corridor 2 passes over the same land uses as mentioned above, with the exception that it avoids nature reserve areas and, therefore, passes through only the Waterberg Biosphere Reserve, whereafter it links up with proposed corridor 1. From a land use perspective, the new proposed 400 kV Transmission line can be accommodated in corridor 2. Although corridor 2 does not pass over nature reserves, it will impact on several properties that are currently not impacted on by powerlines.
- Corridor 3 does not influence any existing townships, but crosses several farms, and serves as a link between corridor 1 and corridor 2. From a land use perspective, the proposed Transmission line can be accommodated within this corridor, without having significant impacts in terms of land use.
- Corridor 4 passes over several farm portions and links corridor 2 with the existing 400 kV Transmission line. It is suggested that this alternative route not be followed since it crosses over several farms without taking the farm boundaries into consideration. In comparison, corridor 2 follows existing farm boundaries up to the existing Transmission line.

Marapong Township, on the farm Peerboom poses certain problems for the intended route alignment in this area. It appears that this township restricts the existing Transmission line servitude to the current width. It appears that the widening of the existing servitude at this point, to accommodate the proposed new Transmission line, will definitely result in possible relocation of households and possible restriction of future development of Marapong. From a

land use perspective, this is probably the most important consideration and requires urgent and timeous intervention or alternative planning.

The larger extent of the proposed Transmission line corridors traverse agricultural land, exemption farms and nature reserves. Various mitigation measures are proposed to minimise the impact on agricultural production, quality of the environment and visual aesthetics.

In final conclusion and from a land use perspective, it is suggested that corridor 1 or corridor 2 be adopted, unless other considerations dictate otherwise.

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**ANNEXURE 1:  
LAND USE MAPS**