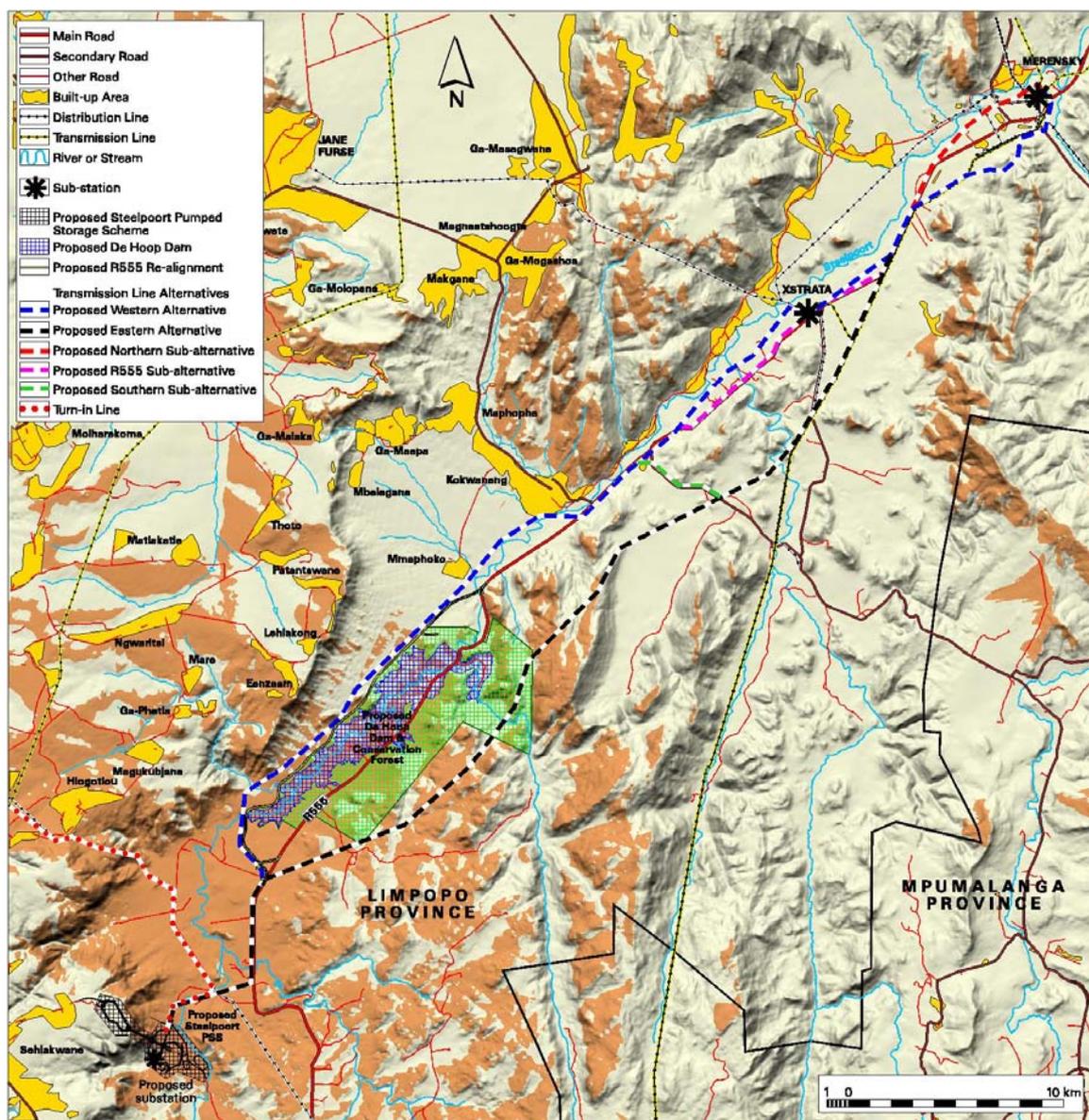


**Figure 5.9:** Potential visual exposure: turn-in lines with the option of using double-circuit towers (potentially exposed areas indicated in brown)

Site-specific issues related to this alignment option utilising the double-circuit line include:

- \* The traversing of elevated and exposed topographical units.
- \* The potential clearing of natural vegetation to widen the distribution line servitude in order to accommodate the additional transmission line.
- \* The exposure to residents from the Hlogotlou settlement located on top of the escarpment.
- \* The visual exposure of the transmission line to the landowner of farm Tigerhoek (Kwalata Lodge).



**Figure 5.10:** Potential visual exposure: turn-in lines with the option of using two lines in parallel towers (potentially exposed areas indicated in brown)

The pattern of visual exposure for the two parallel lines is similar to the exposure of the double circuit line (offset 50 m above ground level - see Figure 5.9 above). The main difference between the two options is the size (width) of the servitude where the two lines in parallel would require a larger servitude. This would imply that a larger area would be cleared of natural vegetation beneath the parallel lines than would be required for the double circuit line. This would aggravate the potential visual impact of the parallel lines compared to the double circuit line.

### **5.8.3. Conclusions**

The visual exposure of the substation is greatly contained within the remote valley of its location. Occasional short distance observations may occur from the R555. No fatal flaws were identified to be associated with the proposed substation site from a visual perspective.

Based on the issues identified, sections of eastern alternative are considered to be potentially fatally flawed from a visual perspective (particularly in terms of potential impacts on the DWAF Conservation Area). These sections were therefore eliminated as feasible from a visual perspective. This elimination practically ensures that the only alternative option would be the western alternative up to Steelpoort Park. The southern sub-alternative option on the western alignment is nominated as the preferred option from a visual perspective.

The options related to the turn-in line identify the double circuit transmission line as the preferred option. The removal of natural vegetation, especially against steep slopes and exposed elevated topographical units, should ideally be restricted to the minimum. As the double circuit line affords the opportunity to minimise the servitude surface area it is preferred above the two parallel lines option.

### **5.8.4. Recommendations**

The fact that areas are exposed does not imply that it constitutes a significant visual impact, at least not for all of the exposed areas. Further investigation is necessary in order to determine the specific visual impact within these exposed areas. The visual impact assessment within the EIA will address other crucial issues related to the visibility of the substation and transmission power lines in order to quantify the actual visual impact and to identify areas of perceived impact.

Issues/criteria to be addressed by the visual impact assessment include:

- » Visual Distance/Observer Proximity to the transmission line and substation (i.e. apply the principle of reduced impact over distance).
- » Viewer Incidence/Viewer Perception (i.e. identify areas with high viewer incidence and negative viewer perception).
- » Landscape Character/Land Use Character (i.e. identify conflict areas in terms of existing and proposed land use).
- » Visually Sensitive Features (i.e. scenic features or attractions).
- » General Visual Quality of the affected area.
- » Potential impact of the integration project on the tourism and eco-tourism potential of the area (specifically the tourism potential of the De Hoop Dam).

- » Visual Absorption Capacity of the natural vegetation.
- » The effect of existing man-made structures on the visual exposure.
- » Potential visual impact of lighting (after-hours operations and security of the substation).
- » Potential mitigation measures.

### 5.9. Potential Impacts on Heritage Sites

The study area is known to be rich in cultural heritage and archaeological resources. Sites identified within the study area (refer to Figure 4.4) include those from the Stone Age, the Iron Age, and the historic period.

Impact analysis of cultural resources under threat of the proposed development, are based on the present understanding of the development. The significance of a heritage site and artefacts is determined by its historical, social, aesthetic, technological and scientific value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

Based on current knowledge and understanding of the area, the heritage sites in the area are evaluated as follows:

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and that are directly impacted by the development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted, can be written into the management plan, whence they can be avoided or cared for in the future.

Heritage sites regarded as having low significance are viewed as being recorded in full after identification and would require no further mitigation. Impact from the development would therefore be judged to be low. Sites with a medium to high significance would require mitigation. Mitigation of heritage sites implies first of all total avoidance, or, secondly, the recovery of sufficient data from the site in order that it can be studied and understood at a later stage. This latter scenario is not necessarily negative as science stands to benefit from such actions, but does require the excavation of a site, which is in essence destructive therefore resulting in an impact which can be viewed as high and as permanent.

Potential risks to heritage sites as a result of the construction and operation of the proposed substation and transmission power line are outlined in Table 5.5 below.

**Table 5.5:** Potential risks to heritage sites as a result of the construction and operation of the proposed substation and transmission power lines

Possible Risks	Source of the risk
<b>Construction phase</b>	
Damage to sites	Construction work
Looting of sites	Curio seekers
<b>Operation phase</b>	
Damage to sites	Non-compliance with management plans and/or unplanned construction/developments

Numerous archaeological sites, historic sites and graves have been identified within the study area from the desk-top survey undertaken.

### **5.8.1. Evaluation of the Proposed Substation Site**

Although no significant archaeological sites, historic sites or graves were recorded on the proposed substation site, it is possible that these may occur on the site due to the large number of sites present in other parts of the study area (refer to Section 4.1.5). Further study within the EIA phase is required in order to establish whether such sites do exist on the proposed site.

### **5.8.3. Comparison of Transmission Power Line Alternatives**

The majority of these known sites occur within the western portion of the study area and would potentially be impacted by the proposed western alternative (refer to Figure 4.6). The location of sites identified is thought to be attributed to the specific economic strategies, settlement requirements and available resources of Stone Age and Iron Age people, which resulted in a preference to settle close to a river. The mountainous areas were to a very large extent avoided. Even in historic times, this seems to have been the case, as most people are currently found settled on the flatter areas close to the river. However, it must be noted that little information is available for sites occurring along the eastern alternative due to the area being largely inaccessible.

Based on the available information, it would seem that, from a heritage point of view, the eastern corridor would be the preferred one. Viewed as a whole, the sub-alternatives would have no significant influence on this selection.

No significant issues were identified to be associated with the proposed turn-in lines. However, as the construction of a single double-circuit line would limit the amount of space required for the establishment of the power line (i.e. 55 m vs 110 m), it is expected that this option would minimise any potential impacts on heritage sites, should these occur along the proposed alignment. Therefore, the option of the double-circuit line is nominated as the preferred option.

### **5.9.1. Conclusions and Recommendations**

Potential risks to heritage sites have been identified and could be potentially significant, depending on the nature of sites present within the development area and whether these are directly impacted by the proposed development. It is possible that significant archaeological sites, historic sites or graves may occur along the proposed transmission power line servitudes and/or within the substation site due to the large number of sites present in other parts of the study area (refer to Section 4.1.5). Therefore, a detailed survey of the proposed site and preferred transmission power line alignment should be undertaken as part of the EIA Phase of the study. This must be undertaken in the form of a full Phase 1 archaeological survey in accordance with the requirements of Section 38(3) of the National Heritage Resources Act (Act 25 of 1999). In the case where resources do occur, assessment of the potential impact of the development can only be done once a final position of the substation has been determined. This will be undertaken as part of the site-specific EMP phase of the project.

Based on the information available at this stage, it does not appear that any fatal flaws in terms of impacts on heritage sites are associated with the establishment of the proposed substation on the identified site.

From a heritage point of view, the eastern corridor is nominated as the preferred route for the Proposed Steelpoort-Merensky line.

The option of the double-circuit line for the turn-in lines between the Steelpoort Substation and the Duvha-Leseding 400kV line is nominated as the preferred option.

However, it is anticipated that if the development takes place, it would be on condition of acceptance of appropriate management measures (as outlined in Section 7 of the specialist heritage scoping report – refer to Appendix L).

### **5.10. Potential Impacts on the Social Environment**

The study area is located in a predominantly natural to rural environment (especially to the south) with increased settlements and industrial and mining activities towards the north (near the town of Steelpoort). Overall, the area appears to be poorly developed and characterised by poverty. This is evident in the high population density, low education levels, the very high unemployment rate, the low levels of household income, and the overall lack of proper municipal services in the area.

Potential change processes and impacts<sup>14</sup> on the social environment associated with the establishment of the proposed substation on the identified site include the following:

- » Demographic processes (the number and composition of people);
- » Economic processes (the way in which people make a living and the economic activities in society);
- » Empowerment, institutional and legal processes (the ability of people to get involved in and influence decision making processes, the role, efficiency and operation of governments and other organisations);
- » Socio-cultural processes (the way in which humans behave, interact and relate to each other and their environment and the belief and value systems which guide these interactions);
- » Land use processes (land use patterns); and
- » Biophysical processes (the natural environment).

These are discussed in more detail below.

#### **5.10.1. Demographic Change Processes**

The construction and maintenance of the proposed substation, the turn-in line and the transmission power lines could lead to a change in the number and composition of a population within any given community, which in turn could lead to economic, land use, and socio-cultural change processes. The potential impact of the influx of construction workers is most applicable to the areas surrounding the construction camps where workers spend evenings and weekends.

Depending on the flexibility of the receiving environment, the impact of an increase in population in an area that is already overpopulated and living in poverty, should not be viewed as purely negative. If the community has the capacity to accommodate additional people, the presence of construction workers could lead to a temporary boost in the local economy if construction workers make use of local services. However, these communities seem unable to meet their own needs and might be unable to sustain additional demands on the local services, which might lead to conflict if services are depleted (e.g. the local grocery store running out of supplies due to the extra demand) or not provided adequately (e.g. sanitation). Conflict could also occur as a result of alcohol abuse, resentment that locals did not get jobs, and cultural differences. Relationships between construction workers and inhabitants could also lead to

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<sup>14</sup> A *change process* can be defined as change that takes place within the receiving environment as a result of a direct or indirect intervention. A *potential impact* follows as a result of the change process

demographic change, for example when unplanned pregnancies occur as result of these relationships.

Locals who secure employment with the contractors might also receive training, thereby enabling them to secure more permanent employment, which in turn might cause them to move out of the area and becoming part of the migrant labour force. People outside of the community could also flock to the area in the hope of securing training opportunities and permanent employment. The presence of these job seekers could mostly be expected during the construction phase of the project and would have similar impacts to that of the presence of the actual construction workers.

The potential impact that the presence of construction workers and job seekers might have on the composition and functioning of the local community, might be further intensified by the presence of construction workers and job seekers on other projects in the area, i.e. the construction of the De Hoop Dam, the construction of the PSS and possibly the construction of the underground water pipeline from the dam to the PSS. More information is required on the timeframes of these respective projects in order to determine how the various construction timeframes would overlap, causing the potential for cumulative construction impacts in terms of demographic change processes.

The potential impacts of maintenance workers on the demographic change process cannot be assessed at this stage, as more information on the construction and operational aspects are required (see below).

» *Information gaps and further studies required:*

To fully assess the potential impacts as a result of demographic change processes, more information is needed on the following aspects:

- \* The construction processes and associated timeframes for the various projects in the area;
- \* The composition of the various projects' construction workforces in terms of size, skills levels, and origin;
- \* The composition of the maintenance workforce and their activities;
- \* The social processes related to the construction of a substation;
- \* The number of local employment opportunities;
- \* The expectations of the local communities in terms of employment opportunities; and
- \* The local municipalities' and other service providers' capacity to handle an increased demand for products and services at either the construction site(s) itself or at the construction camp.

In order to address these information gaps, the following studies are recommended for the EIA Phase:

- \* Conduct interviews with Eskom technical representatives;
- \* Conduct interviews with municipal officials and other stakeholders in the area;
- \* The use a case study to better predict and assess potential impacts; and
- \* Comparing the potential impacts of a construction village versus housing the workers in the community by doing a desktop study.

#### **5.10.2. Economic Change Processes**

Economic change processes relate to the way in which people make a living and the economic activities within a society. Job opportunities are created as a result of the construction and maintenance of the substation or the Transmission power lines. However, it is very likely that there are no skilled local contractors available in the study area able to construct a substation or the Transmission power lines, given the fact that very specific skills and knowledge are required to construct these. Eskom appoints specialised contractors and even international companies due to the fact that local contractors do not have the capacity or skills to handle the workload. Therefore, only a limited number of local individuals within the study area could be employed during construction. Local labourers are usually engaged in work that does not require a substantial amount of skill, such as bush clearance, digging of foundations, erection of gates and acting as security guards.

Indirect job opportunities are mainly created by community members who offer domestic help around the construction camp. One of the services most utilised by construction workers is the washing of clothes. Other services might include cooking, water provision to the camp, transportation services, and assistance with activities around the camp like the moving of heavy materials or equipment. The size, nature and location of the camp will to a large extent determine the level of services needed, but in general these informal job opportunities are limited. Local contractors might be contracted for the provision of sanitation services in the form of portable chemical toilets, food and other products and/or services.

Another opportunity for financial gain is the rental of land for the accommodation of the construction workers and the storage of equipment. This will have a positive impact as communities experience a financial benefit. The accommodation of construction workers in the communities should be considered, as this increases the economic benefits of the project to the affected communities, and also reduces the potential negative impact on the municipal services network as the construction workers can make use of the existing infrastructure as opposed to making additional connections to an already suffering

network. However, it would be necessary to determine the communities' preference in this regard during the next phase of the study.

Servitude compensation and land acquisition for the proposed transmission power line and substation will lead to a change in the living standard of the land owner as a result of compensation fees paid to the land owner (positive), as well as a potential loss of land (potentially negative). Farmers, especially subsistence farmers, must have access to the same size of land as before to ensure that the project does not have a negative, long term effect on their income base. Compensation could either be monetary, and/or in the form of a new dwelling, should relocation be necessary.

On a regional level, the increase in electricity could boost the economy.

The potential impacts derived from the economic change process could lead to an improvement in the health of people, their education, and their living conditions due to the fact that money is now available to buy food, pay fees, etc. The impact might be significant in light of the level of poverty experienced in these communities. It is not only the individual that gains from these changes, but also the said individual's family.

Although economic change processes can lead to positive impacts, most of these impacts are only temporary in nature as these will only last during the construction period. Also, positive economic impacts could lead to negative socio-cultural impacts, such as an increase in the prevalence of sexually transmitted infections (STI) as a result of transactional sexual relationships.

» *Information gaps and further studies required:*

To fully assess the potential impacts as a result of economic change processes, more information is needed on the following aspects:

- \* The construction process and associated timeframes;
- \* The composition of the construction workforce in terms of size, skills levels, and origin;
- \* The social processes related to the construction of a substation;
- \* The local employment opportunities that will be created, both direct and indirect formal and informal job opportunities;
- \* The expectations of the local communities in terms of employment opportunities; and
- \* Comparing the potential impacts of a construction village versus housing the workers in the community by doing a desktop study.

In order to address these information gaps, the following studies are recommended for the EIA Phase:

- \* Conduct interviews with Eskom technical representatives;
- \* The use a case study to better predict and assess potential impacts; and
- \* Determine whether there is a recruitment agency and/or labour union active in the area, and if so, consult with such a body to determine whether it would be possible to utilise them to recruit local job seekers. It has since come to light that the Department of Water Affairs and Forestry (DWAF) are establishing a labour desk through the local municipality to recruit a labour force for the construction of the De Hoop Dam as well as for the re-alignment of the R555. Due to the high unemployment rate in the affected areas, it would be safe to assume that there would be a discrepancy between the supply and demand sides in terms of employment opportunities, i.e. more job applications than opportunities available. It might be possible to use this labour desk to continue recruiting a labour force for the current proposed project, or to obtain a list of job seekers from the labour desk. Either way, this labour desk will be consulted during the next phase of the project to determine the process followed to establish such a service and the recruitment process followed.

### **5.10.3. Empowerment, Institutional and Legal Change Processes**

The negotiation process is a change process on legal and empowerment level. The same applies to the stakeholders that will be involved in the public participation process. The EIA process is an opportunity for these stakeholders to give input into the process and project. However, stakeholders would have to offer up their time to become actively involved in the process and they should clearly understand their rights in terms of the process to enable them to use these rights.

Reflecting on the process that was conducted for the proposed Pumped Storage Scheme (PSS), which involved the same affected communities to an extent, in terms of the issues that were raised and the number of comments received from these communities on the project documentation, it has become evident that the affected communities are in a sense disempowered to fully participate in the process. The issue here is not that these communities are *misinformed* or lack information as such (i.e. a transparent process has been followed), but rather that these communities are *ignorant* about their rights and responsibilities as participants in the process. Due to the fact that most of these community members live in severe poverty, have low educational levels coupled with a high unemployment rate, their expectation of the project mostly relates to the expectation of being employed. However, because of these low educational levels, it is highly unlikely that large segments of the population would be employed on the project, which could lead to potential impacts such as resentment towards and the resultant conflict with outsiders who do get

employed on the project. As such they function on a very basic needs level and fail to comprehend the “bigger picture” or in other words, the associated impacts (both negative and positive) that the proposed project would bring to their area. Their lack of understanding has bearing on future generations that will inhabit the area. From a social perspective this lack of understanding or comprehension of the bigger picture, is of **concern** and has to be addressed throughout the process.

Another institutional change process is that additional municipal services will be required at the construction site(s) and the construction camp during the construction phase (also refer to the land use section). A point of concern that should be noted is the fact that the GTLM does not currently have either an ambulance or a fire fighting service that is operational.

The status of the potential impacts is to a large extent dependant on the EIA process, the negotiation process, and Eskom’s reputation within the communities. A transparent negotiation process that would lead to a positive outcome (i.e. both parties are satisfied with the agreement) would have a positive impact. A breakdown in negotiations would lead to a negative impact in terms of a lengthy legal process that can either lead to an alternative route for the transmission power line or the expropriation of land for the servitude and/or substation. Stakeholder opposition to the project could lead to changes on individual and community level.

The project could be severely delayed if there is a breakdown in the negotiation process and/or the EIA process that would lead to the legal route being followed. The potential impacts of such a breakdown could include, but is not limited to: high levels of frustration as a result of the litigation process and the resultant delay in construction, as well as the potential for perceived and/or actual economic loss for both parties.

The inadequate provision of services could lead to health impacts.

» *Information gaps and further studies required:*

To fully assess the potential impacts as a result of empowerment, legal and institutional change processes, more information is needed on the following aspects:

- \* The potential for opposition to the project, and if so, the reasons behind this opposition;
- \* Communities’ expectations from the project;
- \* The receiving communities’ understanding of the project;
- \* The way in which landowners and tribal authorities expect the negotiation process to proceed; and

- \* The services delivery capacity of the various local municipalities.

In order to address these information gaps, the following studies are recommended for the EIA Phase:

- In collaboration with the public participation practitioner, in-depth consultation with directly affected landowners should be undertaken to elicit issues and concerns;
- The change processes that could be expected as a result of the construction and operation process of the substation, the turn-in lines and the transmission power line should be shared in such a way with the directly affected parties that it would not only elicit issues and concerns, but also empower them to actively participate in the process and be informed about the EIA and negotiation processes; and
- Interviews with tribal authorities and municipal officials will be conducted to address potential issues on the negotiation process and services delivery issues, respectively.

#### **5.10.4. Socio-Cultural Change Processes**

Socio-cultural change processes that are associated with the construction and operation of transmission power lines and a substation include changes such as health and safety aspects and sense of place. The concept of 'health' is not only limited to physical health (i.e. the absence of ailments or illness), but also includes mental and social health. The expected changes that can occur in relation to health and safety aspects can be as a result of the presence of the transmission power line and turn-in lines during operation, as well as the presence of construction workers and/or job seekers during construction.

» *Change processes and potential impacts during construction:*

Construction workers form part of a significant section of the South African population known as migratory workers. The social cultural issues associated with this section of the population have been thoroughly researched. Due to their unique situation, construction workers engage in behaviour that makes them vulnerable, such as risky sexual behaviour (e.g. unprotected sex) and destructive behaviour (e.g. alcohol abuse, damaging the environment), which could be explained by their migratory status. When they are separated from their homes, they are also distanced from traditional norms, prevailing cultural traditions and support systems that normally regulate behaviour within a stable community. In addition, it might also be that construction workers who are faced with dangerous working conditions and the risk of physical injury might be more preoccupied by immediate (direct) risks and therefore tend to disregard salient (more indirect) risks, such as HIV infection. Again, it is likely that HIV transmission occurs, as the local population might

be uneducated about the risk and transmission of HIV and would therefore more easily engage in risky behaviour as a result of ignorance.

Construction workers' situations seem to make them vulnerable to high-risk sexual behaviour. There are ample research results to indicate that there is a direct link between temporary migration and HIV infection. Research also seems to indicate that construction workers might be more at risk of contracting HIV *from* members of local communities, as opposed to transmitting the infection *to* community members.

Not only do health issues impact on communities, but the physical safety of communities can also be endangered as a result of the influx of job seekers and construction workers (e.g. potential increase in crime). This has a mental health impact, such as fear.

The construction activities, construction vehicles and movement patterns of these vehicles and equipment could also impact on the health and safety of communities. However, this only becomes a real concern if such activities occur in close proximity to roads and settlements.

» *Change Process and Potential Impacts during operation:*

Physical and mental health in the context of substations and power lines are related to Electro Magnetic Fields (EMFs), electrocution, fire and collapse of structures. The reason why mental health is mentioned in relation to physical health is because the physical effect or the knowledge of the potential physical effect that transmission power lines have on people could, in turn, have an effect on the mental state of members of the community. For example, although utilities in South Africa that are involved in the generation and distribution of electrical energy are bound by the Occupational Health and Safety (OHS) Act (Act 85 of 1993) to provide such services in a safe manner, and the International Commission for Non-Ionising Radiation Protection (ICNIRP) guidelines are used for assessing human exposure to EMFs, some people still fear that these guidelines are not sufficient. The public perception of risks sometimes differs significantly from objective risk assessments conducted by technical experts. Whereas technical risk assessments takes cognisance of the probability and magnitude of events, subjective risk assessment by the general public depends on a number of additional factors, including the degree of choice in the matter, benefits gained from the intervention, as well as whether the risks are immediate and detectable (e.g. the effect of EMFs might prove to be serious in future). These perceptions, should they be present, should be addressed as part of an impact assessment. It could also be that there is no perception of risk, and these should then be addressed.

Other risks associated with a substation and transmission power lines are that a transmission power line could cause fatal/traumatic accidents (e.g. electrocution). Such accidents could be caused by either the collapse of a tower and/or lines due to mechanical failure, disasters or fire. Fire can be caused by electrical malfunction or human error. Fatal accidents could also be caused by electrocution, which could be caused by induced charges, which can build up on fence wires mounted on wood posts near power lines. According to the Eskom website, this phenomenon is generally restricted to higher voltage lines (200kV or greater).

Also, in light of the baseline community profiles, where it was illustrated that most of these communities live in poverty coupled with high unemployment rates, the probability that cable theft will occur is a possibility. Cable theft is an extremely high risk criminal activity, which further increases the probability and occurrences of accidental electrocution. Although cable theft is not possible, from a technical point of view, on a 400kV line, the possibility that someone would *attempt* cable theft out of ignorance cannot be excluded. An uninformed person only sees a transmission power line and does not necessarily take cognisance of the size of the transmission power line.

Substations are built according to international standards for health, safety, and pollution. Substations are designed in such a way that it can handle incidences that might cause an environmental or operational impact. Fire walls are erected between transformers if the space is confined, and any oil leaks are captured and separated by the specially designed drainage system. Substations are normally fenced off to prohibit unauthorised access. However, these safety mechanisms do not exclude the possibility of the development of the same perceptions on health and safety issues from the public's point of view, i.e. the subjective perception of EMFs and possibility of fire risks and electrocution.

» *Change process and potential impacts related to sense of place:*

Sense of place goes hand in hand with place attachment, which is the sense of connectedness a person/community feels towards certain places. Place attachment may be evident at different geographic levels, i.e. site specific (e.g. a house, burial site, or tree where religious gatherings take place), area specific (e.g. a residential area), and/or physiographic specific (e.g. an attachment to the look and feel of an area). The concept of sense of place attempts to integrate the character of a setting with the personal emotions, memories and cultural activities associated with such a setting.

Much of what is valuable in a culture is embedded in place, which cannot be measured in monetary terms. It is because of a sense of place and belonging

that some people loath to be moved from their dwelling place, despite the fact that they will be compensated for the inconvenience and impact on their lives.

The potential impact on socio-cultural behaviour and the related perception of environmental changes could either have a positive or a negative impact on sense of place (i.e. peace of mind or frustration/anger). It could be viewed as a positive impact if people *perceive* the project as a means of job creation, free/less expensive electricity, and infrastructural and/or economic development, which is not intrusive on their lives and do not cause them immediate danger.

Potential negative impacts include the visual impact and the resultant intrusion on sense of place. Within the study area there are two distinctly different groups on opposite sides of the spectrum. One the end of the spectrum there are communities (mostly along the proposed western alternative) that live in severe poverty. It is likely that for these communities, given their baseline social profile, it is unlikely that the proposed project would have a visual impact as most of them function on a primary needs level where they are more interested in employment opportunities and the perceived direct positive benefits of the project that would enhance their lives as opposed to the negative impacts. On the other end of the spectrum is a rather wealthy group of farmers who have a more balanced view on the project, i.e. considering the negative impacts vis-à-vis the positive impacts. These farmers function on a higher level within the needs hierarchy and would therefore be more concerned about potential negative impacts such as the visual impact of the proposed transmission power line as opposed to tangible benefits such as temporary job creation. For the first group the proposed project might result in temporary economic relief in the form of income, whereas for the second group, it might result in a more permanent decline in income as a result of loss of business due to a loss of land and/or the visibility of the transmission power line. In the past it has been argued by game farmers and hunting safaris that international tourists refuse to visit/support a game farm/hunting safari where infrastructure such as transmission power lines and fences are visible. If this is indeed the case, the presence and/or visibility of a transmission power line might result in a decrease in visitor numbers, which in turn could lead to a decline in income. However, these claims would have to be investigated in more detail during the EIA Phase to determine whether these claims are in fact realistic. As far as could be determined within the scope of this study, the majority of farms in the area are cattle and crop farming, with only a few game farms and/or hunting safaris in active operation.

\* *Tourism:*

There are a number of guest lodges in operation in the area, as well as a few game farms/hunting lodges. Most game farmers believe that the visibility of a Transmission power line would not only decrease the value of their property, but would also have a negative impact on the economic viability of their businesses. A survey completed by MasterQ Research on a previous project of a similar nature, concluded:

- There might be a decrease in international and local visitors with very specific expectations, should Transmission power lines cross game farms. It seemed as if the hunting experience included a natural setting and an appreciation for a pristine natural environment for most hunters. Although research amongst visitors should be conducted to confirm this hypothesis, it is expected that some international tourists come to a game farm in Africa to experience the wilderness. A visible Transmission power line would detract from the experience, and other farms without lines might be preferred.
- Not all potential tourists will be lost. Game farms with power lines crossing their property were still in business. In fact, some of these owners reported a 100% occupation in the hunting season. Visitors included international hunters. However, results of depth interviews with game farmers indicated the presence of a power line detracted from the sense of place of a game farm, which had financial implications. Game farmers said that they lost some of their income potential due to the visual impact of the power line on their property, and that it was not easy to mitigate the presence of the line. Game farmers interviewed indicated that it was difficult to quantify the loss in income as a result of the line going through their property. However, they had comments from tourists regarding the negative visual impact of the line.
- The decision whether to hunt on a farm with a power line depends on the hunters' expectations. Hunters might want a wilderness experience, but also a good trophy and value for money. A game farm with a power line might be given preference should it better fulfil the expectations of the visitor. This does not mean that the strategic placement of the power lines will not be important. The bigger the farm, the easier it would be to manage the farm and hunting safari around the Transmission power line. It will also be more difficult to strategically place lines in flat areas.
- The placement of the line will be crucial to reduce potential socio-economic and socio-cultural impacts. The final recommendations in the Social Impact Assessment will have to be informed by the visual impact assessment. This is especially true on the western alternative where the alignment crosses a portion of the farm Tigerhoek 140JS

belonging to a Mr J Roux who operates a hunting safari. A cumulative impact can be expected on this farm as the proposed R555 re-alignment also crosses the farm, together with the dam wall of the De Hoop Dam as well as the possibility of the underground water pipeline crossing this property. A suggested route deviation on the western alternative has been made in this regard (refer to Section 5.10.8).

- Should hunters not book as a result of the line, the money already spent on marketing might prove to have been a waste of money. The game farm owner might have to change his target market once a power line is on his farm. This might involve a new marketing strategy. It will take years to build up a strong customer base in a new segment of the hunter population.
- Not only game farms with power lines will experience the possible loss of visitors, but also the neighbouring game farms. Game farmers might have to divert game routes and roads on their farms to steer hunters clear of the lines. This will have an economic impact.
- The placement of the Transmission power lines will have to consider game capturing practices.
- Ideally, a study needs to be done by Eskom (or a similar entity) to determine the loss of livelihood as a result of a line. Such a study should involve a baseline measurement of the situation prior to the construction of the power line, followed by an assessment post the construction of the power line. The assessment should be done over a period of years, and changes in other variables such as marketing etc. should be considered in the assessment. Ideally, a control group should also be part of the study to assess whether measured changes could be as a result of what was happening in the area, e.g. a decrease in tourism figures was happening in the whole area, and not only on those properties with a power line. The control group should consist of farms with and without a Transmission power line.

» *Information gaps and further studies required:*

In order to assess the potential impacts as a result of socio-cultural change processes, more information is needed about the construction process, construction workers and their movement patterns, maintenance workers and their activities, the potential visual impact of the proposed substation and communication mast. In addition, more information is needed on the value systems of stakeholders, together with the following additional information:

- \* Local employment creation and expectations;
- \* Local employment possibilities;
- \* Expected population influx;

- \* Origin of construction workers;
- \* An assessment of the types of farming operations and how the project might change these operations;
- \* An assessment to determine tourists' perception on the presence and/or visibility of a transmission power line and how this would affect their behaviour;
- \* The modus operandi for cable theft, steel rafters from pylons and anchor theft, the circumstances that would lead to theft attempts, and how this might be prevented;
- \* A health profile of the local community (if available), including HIV prevalence;
- \* The significance of safety and health aspects applicable to the construction workers; and
- \* Use a case study to better predict and assess potential impacts on both the presence of construction workers as well as the long term impact on tourism activities.

In order to address these information gaps, the following studies are recommended for the EIA Phase:

- \* Use the results of a comparative post hoc evaluation conducted by MasterQ Research (2007) on the influx and associated social problems that have occurred with the construction of Transmission power lines;
- \* Use the results of a comparative post hoc evaluation for the housing of construction workers to determine the best housing alternative and location;
- \* In depth interviews with affected farmers and/or the use of a survey to determine and assess the socio-economic impact on their farms;
- \* Conduct survey amongst local and international tourists to determine their perception on the presence/visibility of a power transmission line and how this would affect their visiting behaviour;
- \* Assess the visual assessment report; and
- \* Consultation with municipal officials and other authority figures (such as the South African Police Service) to determine the current extent of social problems in the area and initiatives to combat them.

#### ***5.10.5. Geographical change processes***

Geographical change processes refer to land use change as a result of the actual or perceived changes in land use, whether it be on a temporary or permanent basis. The construction and maintenance of a substation, turn-in lines and transmission power line will lead to a change in the land use within the local area. The assessment of a land use change process from a social perspective takes into

account how the substation and transmission power lines might affect the behaviour/lives of land owners and/or land users.

Potential land use impacts from a social perspective are considered within the context of change processes in the use of cultivated land, grazing land, mining, infrastructure, and current or future developments. In light of Eskom's guidelines, people are not permitted to reside in the servitude; and the servitude has to be cleared for the most part, with the exception of animals and crops, if crop heights are limited to a maximum height of 4 m. No structures are allowed within the 55 m servitude for a 400kV transmission power line.

» *Cultivated land:*

Experience has shown that, although it is more complicated and even though some land is lost, it is still possible to cultivate land around transmission power line towers. Fire risks increase where crops are high in oil or sugar content, which in turn could impact on the health and safety of people, and also has a potential economic impact.

In terms of crop irrigation, evidence was found within the study area of a number of irrigation schemes in the form of centre pivots. It is preferable that a 400kV line does not cross centre pivots, not only because of the proximity of the water to the Transmission power line, but also because the placement of towers might interfere with sub surface irrigation pipes, and the space needed for the centre pivot system.

According to the soil information report that scoped the agricultural potential in the area, the eastern alternative consists mostly of rocky terrain in the south, with some soil with high agricultural potential in places. The western alternative consists mostly of soil that has a low to medium agricultural potential. The same agricultural potential can be found in the areas surrounding the northern sub-alternative, the turn-in line and the R555 alignment.

» *Grazing land:*

Transmission power line towers and lines on grazing land pose fewer problems, as cattle can move around towers, which mean that less grazing land is lost in the process. However, in the past construction/maintenance workers associated with transmission power lines have been careless and left gates open, did not follow access roads and cut through fences. The effect could be that less land is available for cultivation and grazing, cross breeding of cattle occurs, cattle is lost, and erosion is accelerated – which all have an economic impact, and could further impact on the safety of animals.

» *Mining:*

Transmission power lines should avoid mining activities due to the possibility of slumping and underground fires. Also, towers pose a risk to mining activities in the form of towers falling over, with health and safety as well as economic impacts as a result. In turn, the mining activities might also pose a risk to the safety of the transmission power line; if for example, blasting takes place at the mining operation.

» *Railway lines and pipelines:*

Transmission power lines in close proximity of electric railway lines should be avoided to ensure that there is no cross-interference with the railway. A transmission power line can cross over a railway line, but should not run parallel next to a railway line for an extended distance.

DWAF is planning an underground water pipeline between the De Hoop Dam and the PSS, with the intention of supplying the PSS with water from the De Hoop Dam. Although it is preferable that gas and water pipeline servitudes be avoided, in this instance the land owners in the area insist that the transmission power line and pipeline be placed as close together as possible to minimise the cumulative impact on their farms. However, it is unclear at this point what the associated risk would be if the pipeline and the transmission power line were to be placed within a single servitude. The potential impacts in such circumstances relate to economical and health and safety impacts. DWAF and Eskom are currently co-ordinating the various projects in order to investigate this possibility and the potential issues associated therewith.

» *Housing:*

Experience has shown that where servitudes run in close proximity to communities, housing usually develops illegally into the servitude, either because of normal growth, urbanisation or job expectations because of the project. Such housing structures are mostly informal houses, but can also be formal housing structures. This has health and safety implications for people, and needs to be considered as the relocation of households might be necessary, in the case of the western alternative. Evidence has been found of housing structures encroaching upon the western alternative servitude, which leads to the very real possibility that some households might have already settled within the servitude once construction starts.

» *Information gaps and further studies required:*

To fully assess the potential impacts as a result of land use change processes, more information is needed on the following aspects:

- \* The agricultural potential of the sites;
- \* Planned developments for the area;

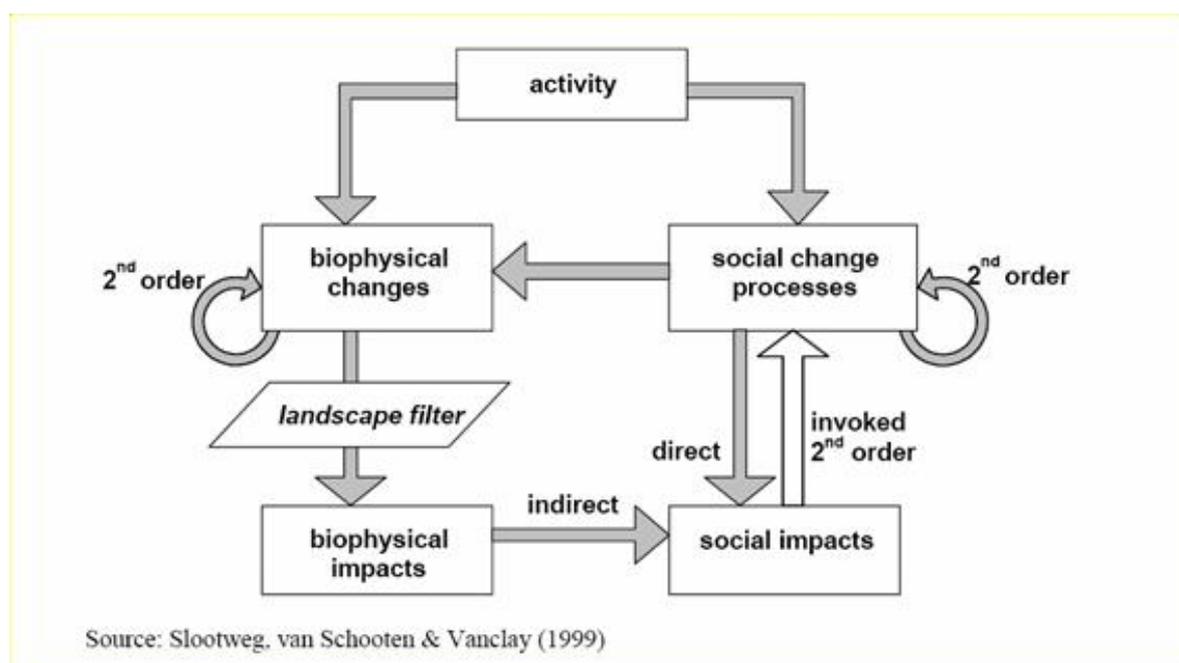
- \* Planned mining activities; and
- \* Current and future road and pipeline developments.

In order to address these information gaps, the following studies are recommended for the EIA Phase:

- \* Assess detailed specialist reports for this project and the other related projects;
- \* Access the recent Spatial Development Frameworks of the municipalities and/or interview the relevant town planners of the affected local municipalities; and
- \* Interview project managers, Eskom technical representatives and relevant mining companies.

### 5.10.6. Biophysical Change Processes

The biophysical environment can lead to indirect social impacts, as illustrated in Figure 5.11. For example, relocation of people can have an impact on income levels, which can lead to processes of rural to urban migration, which can result in further impacts on income levels and changes in food production. Social change processes can also lead to biophysical change processes. Economic developments to increase tourism numbers can change land use and water quality, which can have indirect human impacts because of the reduction in agricultural production, and subsequent lower income levels (Slootweg *et al.*, 2001).



**Figure 5.11:** Bio-physical change processes and indirect social impacts

» *Potential Impacts: Construction:*

Construction workers might be housed in a construction village. Their presence in the village and on site will impact on the environment, which in turn will impact on the surrounding communities. The following change processes and impacts could develop due to the biophysical changes and changes in the physical environment as a result of construction and maintenance.

\* *Sanitation*

A lack of proper sanitation services could lead to health impacts, not only at the construction village itself, but also spreading to the surrounding local community and possibly livestock grazing in the area.

\* *Littering*

Littering could also have further impacts on health and safety. Not only is littering a breeding ground for bacteria, but it could also pose a fire hazard if it contains flammable elements such as paper and plastic.

\* *Pollution*

Vehicles used for construction and maintenance activities could also create fuel and dust pollution, and further impact on the ambient environmental conditions.

The substation will potentially impact on the environment, which could result in indirect social impacts. Although great care is taken at a substation to manage oils, etc. the potential for the pollution of groundwater, due to human error, could affect water quality, which in turn could affect vegetation and the health of surrounding communities who are largely dependant on these natural water sources.

The above biophysical change process have potential economic, physical and mental health impacts.

» *Information gaps and further studies required:*

For a detailed impact assessment, more information is required on excavation activities, civil works, proposed access roads, application of herbicides for weed control, drainage, as well as plans for road upgrades.

In order to address these information gaps, the following studies are recommended for the EIA Phase:

- \* Interview Eskom technical representatives;
- \* Assess detailed specialist reports;

- \* Obtain information on infrastructural development plans (if any) from municipal officials; and
- \* Compare the potential impacts of a construction village versus housing the workers in the community through a desktop study.

#### **5.10.7. Route Alignment Comparison**

This section intends to provide a preliminary comparison between the alternative Steelpoort-Merensky transmission line corridors in order to determine which of them is likely to have the least significant negative impacts on the change processes of the social environment. In order to make a recommendation on the most appropriate alignment for the proposed transmission power line between the Steelpoort and Merensky substations in respect of its anticipated social impacts, a distinction was made between the following impacts:

- » **Category 1:** Impacts that are not expected to differ between the proposed alternative alignments, e.g. the number of employment opportunities that might be created by the proposed project are expected to remain the same, irrespective of the chosen alternative; and
- » **Category 2:** Impacts that are expected to cause significant changes between the proposed alternative alignments, e.g. the need to resettle certain households increases proportionately if the transmission power line traverses densely populated areas as opposed to passing through sparsely populated areas.

The relative advantages and disadvantages of the alternative route alignments were assessed by focusing on the second category of anticipated impacts (i.e. those impacts that are a direct result of the chosen alternative); in order to determine which alternative route alignment is likely to have the least significant negative impacts on the social environment.

» *Proposed eastern alternative:*

This alternative is located well away from any settlements, but it appears as if new and fairly long access roads will have to be constructed, which might impact on subsistence farmers (if present in the area) and future developments. The soil within the southern section of this alternative has been rated as having a high agricultural potential and therefore the alignment of access roads would have to be planned carefully.

» *Proposed western alternative:*

The main concern with this alternative is that it is in fairly close proximity to settlements such as parts of Kokwanong and Mmaphoko. Kokwanong specifically has a very high population density which could intensify potential health and safety impacts. Further concerns are whether there is sufficient

space available for the servitude, whether people might move into the servitude in future (exposing themselves to health and safety risks), and the fairly close proximity of this alignment to the proposed De Hoop Dam, of which the SDM have identified the western banks of the dam as an ideal location for a tourist attraction, give the easy access from the re-aligned R555. If this is the case, the western alternative would have a visual impact on such activities.

Where the western alternative splits from the eastern alternative (towards the northeast of the study area), this alternative runs approximately right through the middle of the proposed Spitzkop Platinum Mine area, which is located to the southwest of Steelpoort on the farms Spitzkop 333KT, De Goede Verwachting 332KT and Kennedy's Vale 331KT. According to this project's Background Information Document (BID), the mine will largely consist of underground operations and construction will commence as soon as authorisation has been obtained from the relevant authorities. The project is currently in Scoping Phase and the EIA will commence in August 2007 and it is expected to be completed by March 2008. It is the intention of Spitzkop Platinum (Pty) Ltd to commission this mining operation during 2009.

However, construction impacts in terms of access roads will be less when compared to the eastern alternative, since existing access routes could be used, and because of easy access from the R555.

» *Proposed northern sub-alternative:*

As with the proposed western alternative, this alternative is located within close proximity to built-up areas. It also appears as if new and fairly long access roads will have to be constructed, which might impact on subsistence farmers (if present in the area) and future developments.

However, during a meeting with the Greater Tubatse Municipality (GTM) held on 27 June 2007, it also came to light that the land surrounding this sub-alternative has been proclaimed for residential and light industrial development for which a separate EIA study is currently underway. The "Olifantspoortje Development" site is bordered by the Steelpoort River to the north and east, the R555 to the south and a secondary road to the west. The Merensky substation also falls within the site and therefore there are already a number of transmission as well as distribution power lines cutting across the site. Part of the northern sub-alternative cuts across this proposed development to the north of the site.

» *Proposed R555 sub-alternative:*

The mining proponent proposing activities on the farms Spitzkop 333KT, De Goede Verwachting 332KT and Kennedy's Vale 331KT has indicated that they

do not require the transmission power line to avoid their property completely, but that certain fixed infrastructure will be present on the property that the transmission power line would interfere with. This requirement gave rise to a proposed re-alignment of the western alternative, known as the R555 sub-alternative. This sub-alternative will to a large extent skirt this proposed mining operation, as this sub-alternative runs on the southern border of the proposed mining site along the R555 alignment.

The proposed R555 sub-alternative splits from the eastern alternative to follow the alignment of the R555 where it travels on the border of and to the south of the proposed Spitzkop Platinum Mine area. This sub-alternative joins up with the western alternative, just north of Kenny's Vale on the Farm Belvedere 362KT.

This sub-alternative mainly passes through tribal land, and no settlements and/or housing structures could be observed in close proximity to the servitude.

» *Proposed southern sub-alternative:*

The southern sub-alternative connects the eastern alternative with the western alternative, parallel to the gravel road between Steelpoort Park and Kalkfontein. From where the southern sub-alternative connected with the western alternative, it follows the alignment of the western alternative. It would appear that the southern sub-alternative passes in close proximity to a settlement called Steelpoort Park, which is a point of concern.

#### **5.10.8. Conclusions and Recommendations**

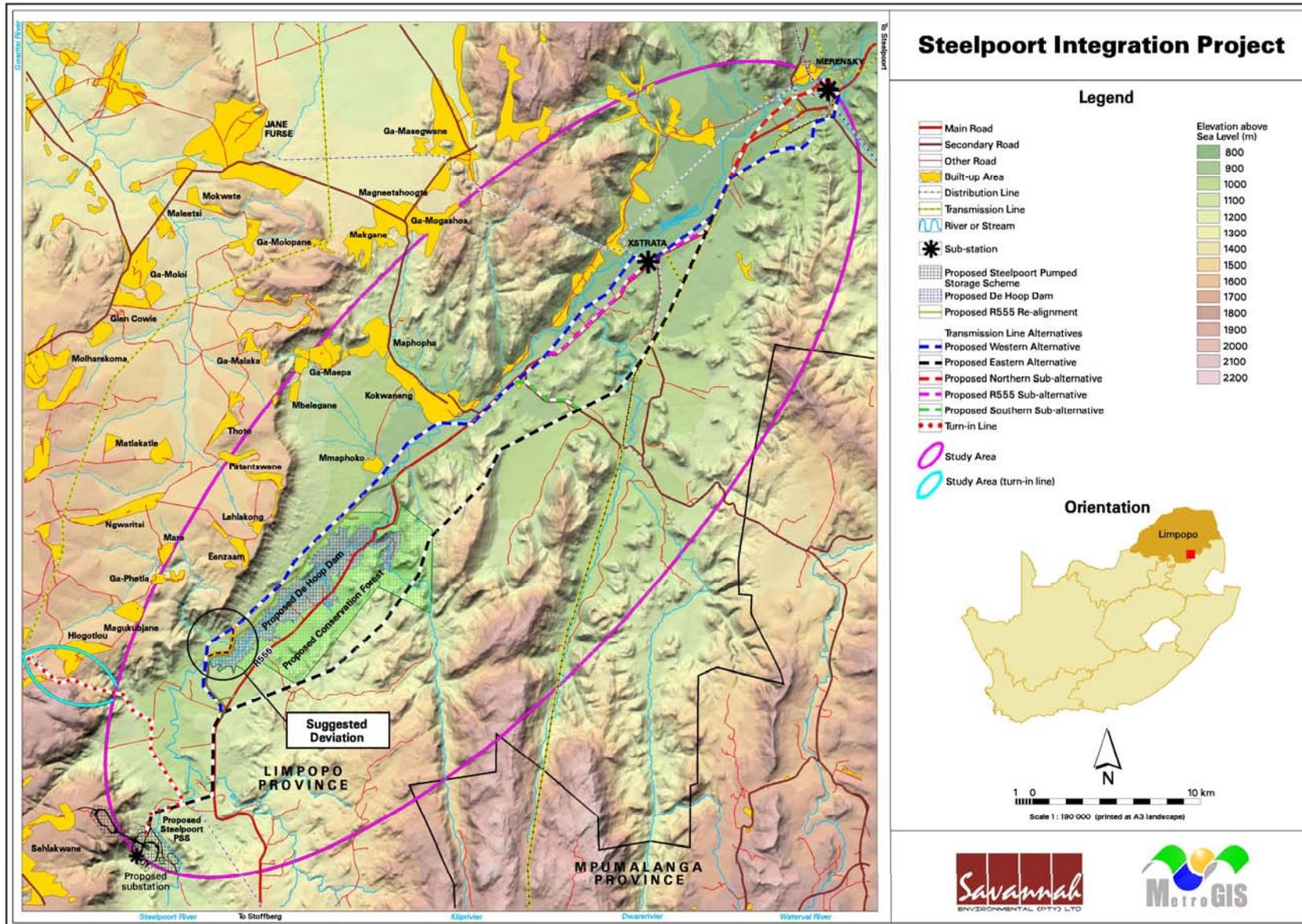
» *Steelpoort-Merensky 400kV transmission power line:*

In conducting the preliminary comparison among the alternative route alignments, by broadly assessing the potential impacts, the **eastern alternative** emerged as the preferred alternative from a social perspective. The second preferred alignment is the **western alternative** following the **R555 sub-alternative** alignment. Potential impacts associated within this alternative could potentially include impacts on settlements, established tourism areas (game lodges) or areas with tourism potential (the De Hoop Dam). Therefore, detailed assessment of this alternative will be required in the EIA phase of the study in order to define mitigation measures which are required to be implemented in order to minimise potential impacts. A possible mitigation measure includes a slight deviation on the western alternative where this alignment crosses the portion of Tigershoek 140JS belonging to Mr J Roux. It is proposed that the western alternative be re-aligned in this area to follow the R555 more closely (refer to Figure 6.1) in order to minimise the cumulative social impact on this property, as this

property is currently affected by the proposed R555 re-alignment, the De Hoop Dam (indirectly), as well as the proposed underground water pipeline.

This recommendation was based on the specialist's:

- \* Understanding of the proposed project, including the alternative route alignments and the nature and timeframe of the proposed activities;
  - \* Assessment of the affected communities, settlements and institutions in terms of:
    - Demographic processes (the number and composition of people);
    - Economic processes (the way in which people make a living and the economic activities in society);
    - Empowerment, institutional and legal processes (the ability of people to get involved in and influence decision making processes, the role, efficiency and operation of governments and other organisations); and
    - Socio-cultural processes (the way in which humans behave, interact and relate to each other and their environment and the belief and value systems which guide these interactions).
    - Geographical processes (land use patterns);
    - Bio-physical processes (the natural environment); and
  - \* Assessment of potential change processes that might occur as a result of the project.
- » *Steelpoort Substation:*  
Only one substation site and one turn-in line alignment have been identified, and currently no fatal flaws from a social perspective have been identified for the substation site.
- » *Turn-in transmission power lines between the Steelpoort Substation and the Duvha-Leseding 400kV transmission power line:*  
Even though it cannot be classified as a fatal flaw, the close proximity of the turn-in line to the south of Hlogotlou is a point of concern at this point in time. Although the use of a double circuit line might minimise the impact due to the use of only a 55 m servitude, the presence of the servitude will still have an impact in terms of potential future settlement expansion/development.



**Figure 5.12:** Suggested deviation on western alternative

» *Information gaps and further studies required:*

For a detailed impact assessment, more information is required on various aspects of the project. In order to address these information gaps, the following studies are recommended for the EIA Phase:

- \* Conduct in depth interviews with affected farmers and/or the use of a survey to determine and assess the socio-economic impact on their farms;
- \* Conduct interviews with municipal officials, tribal authorities and other stakeholders in the area;
- \* Assess detailed specialist reports for this study and other similar studies;
- \* The use a case study to better predict and assess potential impacts;
- \* Compare the potential impacts of a construction village versus housing the workers in the community through a desktop study.;
- \* Determine whether there is a recruitment agency and/or labour union active in the area, and if so, consult with such a body to determine whether it would be possible to utilise them to recruit local job seekers;
- \* In collaboration with the public participation practitioner, undertake in-depth consultation with directly affected landowners to elicit issues and concerns;
- \* Use the results of a comparative post hoc evaluation conducted by MasterQ Research (2007) on the influx and associated social problems that have occurred with the construction of Transmission power lines;
- \* Use the results of a comparative post hoc evaluation for the housing of construction workers to determine the best housing alternative and location;
- \* Conduct survey amongst local and international tourists to determine their perception on the presence/visibility of a power transmission line and how this would affect their visiting behaviour;
- \* Consultation with municipal officials and other authority figures (such as the South African Police Service) to determine the current extent of social problems in the area and initiatives to combat them;
- \* Access the recent Spatial Development Frameworks of the municipalities and/or interview the relevant town planners of the affected local municipalities; and
- \* Interview project managers, Eskom technical representatives and relevant mining companies.

### 5.11. Evaluation of Cumulative Impacts

Apart from the proposed Steelpoort Integration Project which is the subject of this scoping study, there are currently numerous development projects underway in the study area, including:

- » The investigation into the establishment of a Pumped Storage Scheme (being undertaken by Eskom Generation)
- » The investigation into a pipeline alignment to provide water to the PSS from the De Hoop Dam (being undertaken by DWAF in consultation with Eskom)
- » The investigation of numerous new mining operations within the northern portion of the study area (being undertaken by various mining companies)
- » The investigation of residential developments in the northern section of the study area (being undertaken by the Greater Tubatse Local Municipality).

These developments will all impact in some way on the surrounding environment.

In addition, current operations and infrastructure in the area which may impact on the environment include:

- » The construction of the De Hoop Dam and associated infrastructure (being undertaken by DWAF)
- » The realignment of the R555 to the west of the De Hoop Dam (being undertaken by DWAF)
- » Numerous mining operations being undertaken within the northern section of the study area by various mining companies
- » Existing transmission and distribution power lines and substations
- » Existing gravel and tarred roads (including the R555 which passes through the centre of the study area).

There is, therefore, the potential for the proposed project to add to the cumulative impact on the environment in the area. Potential cumulative impacts identified include:

- » Potential impacts on flora, fauna and ecological processes
- » Potential impacts on heritage sites
- » Potential impacts on aesthetics and the visual character of the area
- » Potential impacts on the social environment, including impacts on tourism potential and land use

In order to determine the significance of cumulative impacts associated with the proposed Steelpoort Integration Project, these potential cumulative impacts will require further investigation within the EIA.

## CONCLUSIONS AND RECOMMENDATIONS

## CHAPTER 6

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The Environmental Scoping Study for the proposed Steelpoort Integration Project in the Limpopo Province has been undertaken in accordance with the EIA Regulations published in Government Notice 28753 of 21 April 2006, in terms of Section 24(5) of the National Environmental Management Act (NEMA; No 107 of 1998).

This Environmental Scoping Study aimed at identifying potential issues associated with the proposed project, and defining the extent of studies required within the EIA. This was achieved through an evaluation of the proposed project, involving the project proponent, specialists with experience in EIAs for similar projects and within the study area, and a consultation process with key stakeholders that included both relevant government authorities and interested and affected parties (I&APs). In terms of the EIA Regulations, feasible alternatives have been considered within the Scoping Study (and discussed in detail in Chapters 2 and 5).

The conclusions and recommendations of this Scoping Study are the result of on-site inspections, desk-top evaluations of impacts identified by specialists, and the parallel process of public participation. The public consultation process has been extensive and every effort has been made to include representatives of all stakeholders in the study area.

A summary of the conclusions of the evaluation of the proposed substation site, alternative transmission line corridors identified for the Steelpoort-Merensky 400kV line and the technical alternatives considered for the turn-in lines between the Steelpoort Substation and the Duvha-Leseding 400kV transmission power line, as well as recommendations regarding investigations within the EIA are provided below.

### 6.1. Conclusions and Recommendations drawn from the Evaluation of the Proposed Substation Site

The proposed site identified for the construction of the substation is generally flat, with a slight slope to the south-east. The proposed substation site occurs within *Kirkia wilmsii-Acacia caffra* Mountain Bushveld in a part of the study area that is classified as having HIGH sensitivity from an ecological perspective. The site is located adjacent to steep mountain slopes classified as having VERY HIGH sensitivity and near to a non-perennial drainage line (200 m away) containing *Acacia gerrardii* woodland.

The broader area surrounding the substation site will be developed for the Pumped Storage Scheme (PSS) (including the establishment of the lower dam, associated buildings and access roads), which will result in a significant alteration of the local environment.

The majority of potential impacts identified to be associated with the construction and operation of the proposed substation are anticipated to be localised and restricted to the proposed Steelpoort Substation site. No environmental fatal flaws were identified to be associated with the site, although a number of issues (associated with the substation and associated infrastructure) requiring further study have been highlighted. In order to address these issues, the following studies are required to be undertaken as part of the EIA phase of the process:

- » A detailed ecological survey of the substation site in order to establish the likelihood of any flora and/or fauna species of concern occurring on this site. The detailed survey must concentrate on habitats classified as having High or Very High sensitivity.
- » A detailed survey of the proposed substation site in order to assess the potential impacts of the proposed project on avifauna and to recommend appropriate mitigation measures for significant impacts, where required.
- » A visual impact assessment in order to determine the specific visual impact within identified exposed areas. The visual impact assessment within the EIA will address other crucial issues related to the visibility of the substation in order to quantify the actual visual impact and to identify areas of perceived impact.
- » A Phase 1 archaeological survey in accordance with the requirements of Section 38(3) of the National Heritage Resources Act (Act No 25 of 1999).
- » A Social Impact Assessment in order to address identified information gaps and assess the significance of potential impacts on the social environment as a result of the construction and operation of the proposed substation.
- » Development of appropriate and practical mitigation and management measures for potentially significant environmental impacts for inclusion in the project EMP.

Studies and/or specialist processes which are required to be undertaken outside of the EIA process include:

- » An assessment of the potential impacts of climate and atmospheric conditions (e.g. potential impacts associated with lightening, precipitation and pollution levels) on the proposed transmission infrastructure, in order to provide an indication of what conditions are required to be accounted for by the design team to extend the life and reliability of the new infrastructure.
- » A detailed geotechnical survey of the proposed substation site in order to fully understand the soils in terms of founding conditions and erosion potential.

This information is required to be used as part of the planning and design phase of the Steelpoort Substation.

## **6.2. Conclusions and Recommendations drawn from the Evaluation and Comparison of the Transmission Power Line Alternatives**

The study area is located in a predominantly natural to rural environment (especially the southern portion of the study area) with increased settlements and industrial and mining activities towards the north (near the town of Steelpoort). From a social perspective, the study area is largely poorly developed and characterised by poverty. This is evident in the high population density, low education levels, the very high unemployment rate, the low levels of household income, and the overall lack of proper municipal services in the area.

### ***6.2.1. Nomination of a Preferred Alternative Transmission Power Line Corridor for the Proposed Steelpoort-Merensky 400 kV Transmission Power Line***

The transmission power line alternatives proposed for the Steelpoort-Merensky 400kV transmission power line cross various habitats sensitivity classes and potentially impact on numerous land uses and communities. From the specialist studies undertaken there are varying conclusions with regards to the preferred alternative alignment for the proposed Steelpoort-Merensky 400 kV transmission power line.

» *Conclusions in terms of impacts on the biophysical environment:*

The eastern alternative is considered to be a very poor option from an ecological perspective as four of the five impacts of high significance identified through the Scoping study are associated with this alternative. This conclusion is further supported by the fact that the DWAF Conservation Area, which is traversed by the eastern alternative, is considered to be an area of sensitivity and is protected in terms of the National Forests Act (Act No 84 of 1998). In terms of this declaration, any activities which may cause deforestation in this area (such as the establishment and maintenance of a power line servitude) are prohibited in order to minimise impacts on vegetation and habitats. DEAT and DWAF have indicated that an alignment through this Conservation Area would, therefore, not be considered favourably for authorisation. This is considered to be a fatal flaw to the establishment of a transmission power line within this section of the eastern alternative alignment. Therefore, this section of the eastern alternative is eliminated as a feasible option. The elimination of this alternative results in the only practical option being the western alternative, together with the sub-alternatives identified.

Selection of the **western alternative** will minimise potential impacts on ecology and agricultural potential as this alternative traverses transformed areas. The identified sub-alternatives will not greatly impact on this conclusion, although selection of the **northern sub-alternative** will aid in further minimising ecological impacts. From an avifauna perspective, the **R555 sub-alternative** is nominated as the preferred option as this alternative holds the least risk of bird interactions.

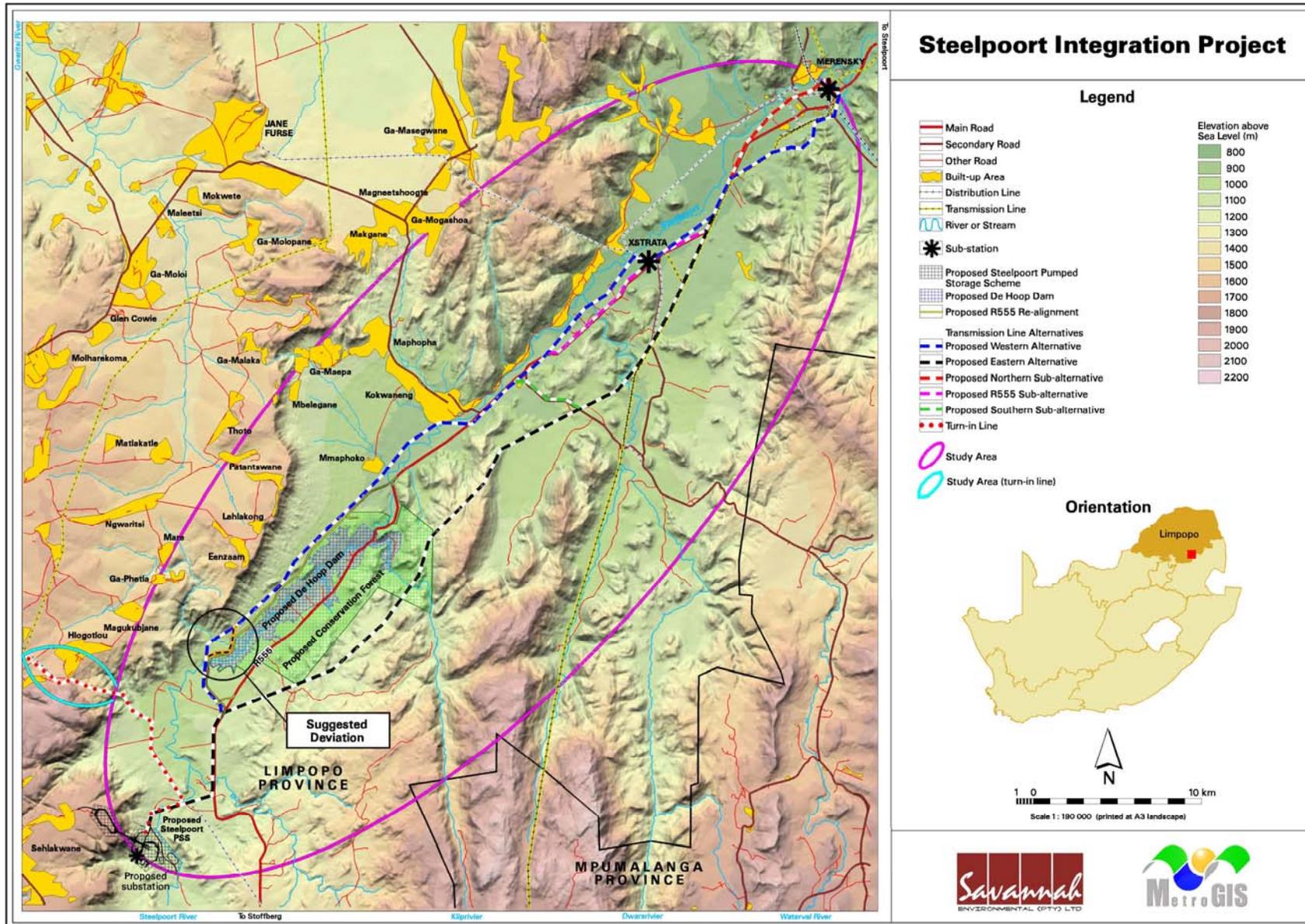
» *Conclusions in terms of impacts on the social environment:*

From a social and heritage perspective, the **eastern alternative** was nominated as the preferred alternative. However, as the section of this alternative through the DWAF Conservation Area is considered to be fatally flawed and therefore not feasible for the establishment of the transmission power line, the next best option will need to be selected for further investigation.

From a heritage perspective, the majority of sites of potential significance which could be potentially impacted are located within the south western section of the study area. Alignment of the proposed transmission power line along any of the sub-alternatives identified will make little difference to the significance of the potential impacts on these sites. Impacts on these sites may be of high significance and this aspect requires further investigation within the EIA phase.

From a visual perspective the **southern sub-alternative** is nominated as the preferred option. This is largely due to the fact that this option will provide for the consolidation of transmission line infrastructure for a portion of the route, thus minimising the visual impacts associated with this new line.

From an overall social perspective, the second preferred alignment is the western alternative following **the R555 sub-alternative** alignment. Potential impacts associated within this alternative could potentially include impacts on settlements, established tourism areas (game lodges) or areas with tourism potential (the De Hoop Dam). Therefore, detailed assessment of this alternative will be required in the EIA phase of the study in order to define mitigation measures which are required to be implemented in order to minimise potential impacts. A possible mitigation measure includes a slight deviation on the western alternative where this alignment crosses the portion of Tigershoek 140JS belonging to Mr J Roux. It is proposed that the western alternative be re-aligned in this area to follow the R555 more closely (refer to Figure 6.1) in order to minimise the cumulative social impact on this property, as this property is currently affected by the proposed R555 re-alignment, the De Hoop Dam (indirectly), as well as the proposed underground water pipeline.



**Figure 6.1:** Suggested deviation on the western alternative

This proposed deviation will require further investigation within the EIA phase in order to assess potential impacts associated with this proposed deviation.

From the above it is clear that there are varying conclusions with regards to the preferred alternative alignment for the proposed Steelpoort-Merensky 400 kV transmission power line. In order to make clear recommendations regarding the preferred alternative, more detailed studies are required to be undertaken within the EIA phase for the **western alternative**, the **southern sub-alternative**, the **R555 sub-alternative** and the **northern sub-alternative**. Specific issues which could potentially affect the route selection and which should be further investigated in the EIA phase include:

- » The positioning of the mining infrastructure for the proposed Spitzkop Platinum Mine area, which is located to the southwest of Steelpoort on the farms Spitskop 333KT, De Goede Verwachting 332KT and Kennedy's Vale 331KT. From current indications, it appears that the western alternative will impact on strategically placed infrastructure associated with this mine in the region of the Xstrata mine (refer to Figure 6.2).
- » The space available between the R555 and the proposed Spitzkop Platinum Mine area, which is located to the southwest of Steelpoort on the farms Spitskop 333KT, De Goede Verwachting 332KT and Kennedy's Vale 331KT. This relates mainly to the location of the tailings dams associated with this mine and the space required for the transmission power line between these dams and the R555 (refer to Figure 6.2).
- » Possible mining activities planned by Xstrata known as the 'Lion Project') in the vicinity of the Steelpoort/Lydenburg secondary road associated with the southern sub-alternative.
- » The presence of communities along the Steelpoort/Lydenburg secondary road associated with the southern sub-alternative.
- » Available space to accommodate an additional power line on the Samancor property located in the northern section of the southern sub-alternative, where this alignment is proposed parallel to the existing transmission power lines.
- » The feasibility of the proposed residential and light industrial development (i.e. the "Olifantspoortje Development") as proposed by the Greater Tubatse Municipality (GTM). Should this development be approved by the environmental authorities, the construction of a power line across the site would not be considered to be compatible with the proposed land use.

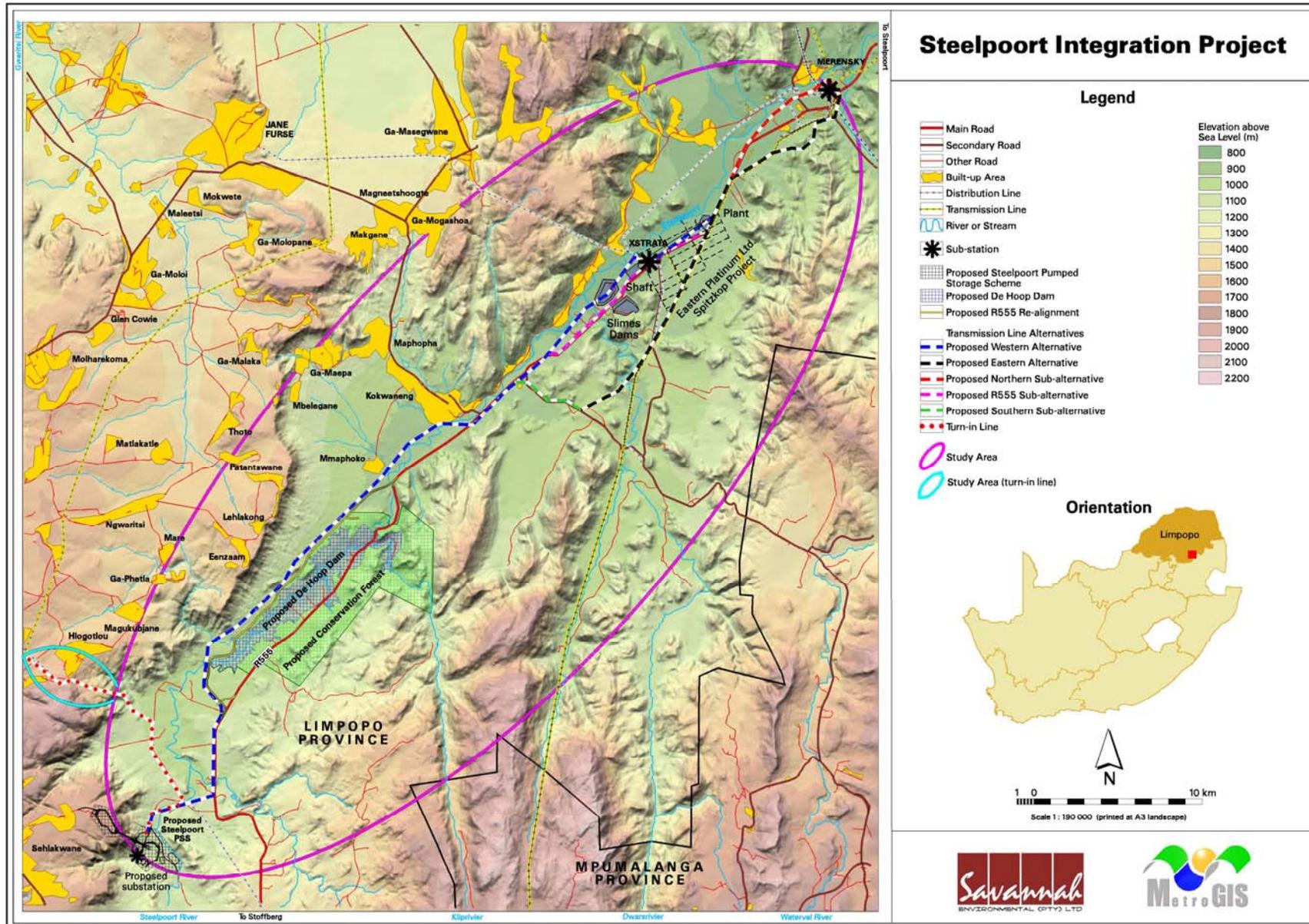


Figure 6.2: Planned positioning of the mining infrastructure for the proposed Spitzkop Platinum Mine

### ***6.2.2. Nomination of a Preferred Alternative for the Turn-in Lines between the Steelpoort Substation and the Duvha-Leseding 400 kV Transmission Power Line***

The proposed turn-in lines cross some areas of high to very high ecological sensitivity (refer to Figure 5.1 in Chapter 5), and potentially impact on the communities of Hlogotlou on the plateau. As the construction of a single double-circuit line instead of two power lines in parallel would limit the amount of space required for the establishment of the powerline (i.e. 55 m vs 110 m) the use of this technical option could minimise the majority of impacts on both the biophysical and social. The option of constructing a **single double-circuit line** is the preferred option from an environmental perspective.

However, if self-supporting double circuit towers are used, it will result in more perching space for birds on the towers. This in turn could result in a bigger risk of streamer-induced faulting on these towers. This has the potential to impact on the operation of the transmission power line. These potential impacts will need to be further investigated in the next phase of the study.

### ***6.2.3. Recommendations for Further Investigations pertaining to Power Line Alternatives within the EIA Phase***

From the Scoping Study undertaken, the following transmission power line corridor alternatives have been nominated for further investigation within the EIA phase of the study:

- » The **western alternative**, the **southern sub-alternative**, the **R555 sub-alternative** and the **northern sub-alternative** for the proposed Steelpoort-Merensky 400 kV transmission power line (refer to Figure 6.3).
- » The option of constructing a **single double-circuit line** for the full length of the turn-in lines between the Steelpoort Substation and the Duvha-Leseding 400 kV transmission power line.

A number of issues requiring further study have been highlighted through the environmental scoping study. In order to address these issues, the following studies are required to be undertaken for the turn-in lines and the Steelpoort-Merensky line (and the associated access roads) as part of the EIA phase of the process:

- » A detailed ecological survey of the transmission power line alternatives in order to establish the likelihood of any flora and/or fauna species of concern occurring in the study area. The detailed survey must concentrate on habitats classified as having High or Very High sensitivity.

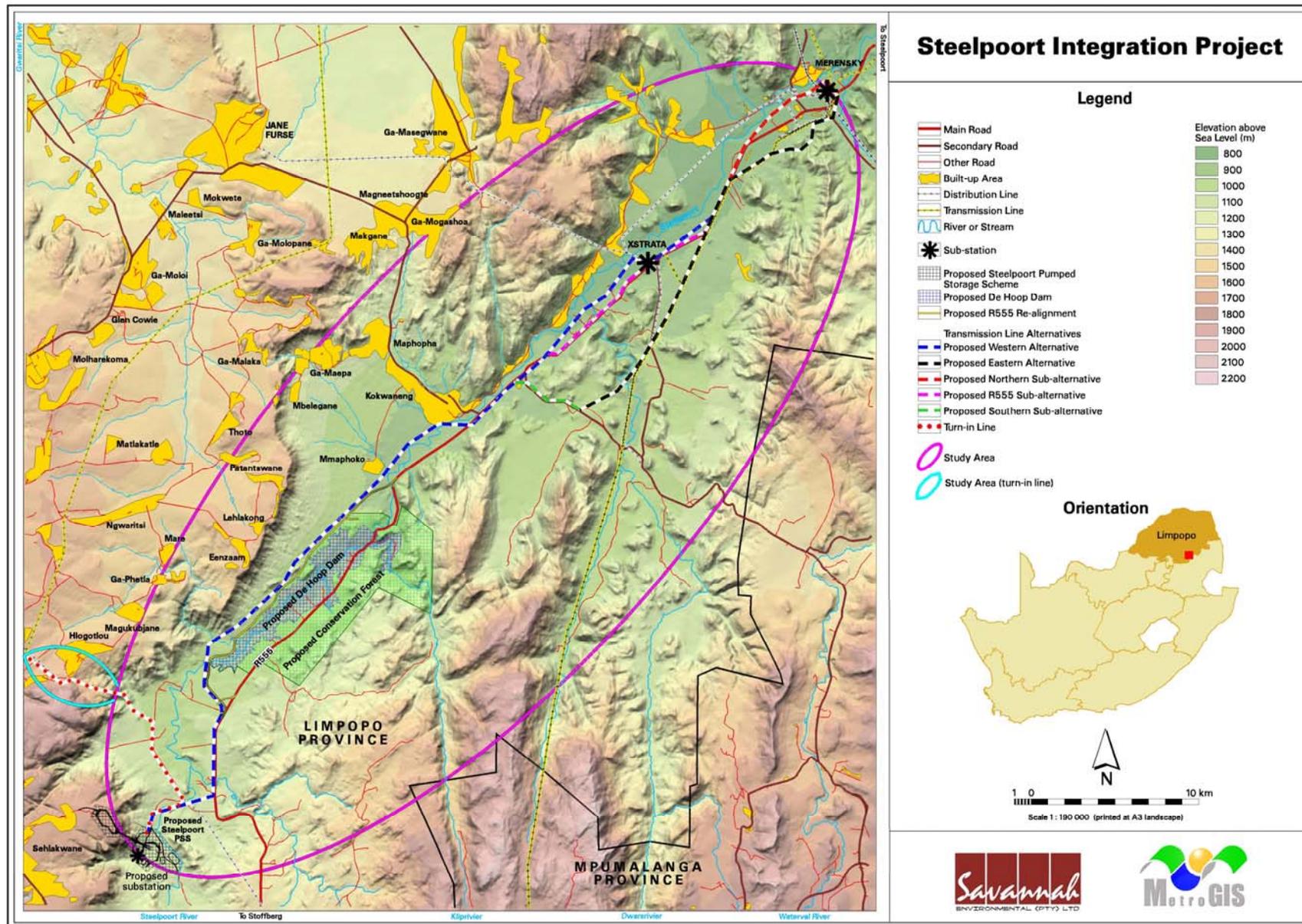


Figure 6.3: Alternatives nominated for consideration within the EIA phase

- » A detailed survey of the proposed transmission power line corridors in order to assess the potential impacts of the proposed project on avifauna and to recommend appropriate mitigation measures for significant impacts, where required. The potential impacts on the operation of the turn-in lines as a result of streamer-induced faulting associated with a double-circuit line must be further investigated in order to make recommendations regarding.
- » A visual impact assessment in order to determine the specific visual impact within identified exposed areas. The visual impact assessment within the EIA will address other crucial issues related to the visibility of the transmission power lines in order to quantify the actual visual impact and to identify areas of perceived impact.
- » A Phase 1 archaeological survey in accordance with the requirements of Section 38(3) of the National Heritage Resources Act (Act No 25 of 1999).
- » A Social Impact Assessment in order to address identified information gaps and assess the significance of potential impacts on the social environment as a result of the construction and operation of the proposed transmission power lines.
- » Development of appropriate and practical mitigation and management measures for potentially significant environmental impacts for inclusion in the project EMP.

Studies and/or specialist processes which are required to be undertaken outside of the EIA process include:

- » An assessment of the potential impacts of climate and atmospheric conditions (e.g. potential impacts associated with lightening, precipitation and pollution levels) on the proposed transmission infrastructure, in order to provide an indication of what conditions are required to be accounted for by the design team to extend the life and reliability of the new infrastructure.
- » A detailed geotechnical survey of the proposed transmission power line tower sites in order to fully understand the soils in terms of founding conditions and erosion potential. This information is required to be used as part of the planning and design phase of the transmission power lines.

### **6.3. Conclusions drawn from the Evaluation of Cumulative Impacts**

Apart from the proposed Steelpoort Integration Project which is the subject of this scoping study, there are currently numerous development projects underway in the study area, including:

- » The investigation into the establishment of a Pumped Storage Scheme (being undertaken by Eskom Generation)
- » The investigation into a pipeline alignment to provide water to the PSS from the De Hoop Dam (being undertaken by DWAF in consultation with Eskom)

- » The investigation of numerous new mining operations within the northern portion of the study area (being undertaken by various mining companies)
- » The investigation of residential developments in the northern section of the study area (being undertaken by the Greater Tubatse Local Municipality).

These developments will all impact in some way on the surrounding environment.

In addition, current operations and infrastructure in the area which may impact on the environment include:

- » The construction of the De Hoop Dam and associated infrastructure (being undertaken by DWAF)
- » The realignment of the R555 to the west of the De Hoop Dam (being undertaken by DWAF)
- » Numerous mining operations being undertaken within the northern section of the study area by various mining companies
- » Existing transmission and distribution power lines and substations
- » Existing gravel and tarred roads (including the R555 which passes through the centre of the study area).

There is, therefore, the potential for the proposed project to add to the cumulative impact on the environment in the area. Potential cumulative impacts identified include:

- » Potential impacts on flora, fauna and ecological processes
- » Potential impacts on heritage sites
- » Potential impacts on aesthetics and the visual character of the area
- » Potential impacts on the social environment, including impacts on tourism potential and land use

In order to determine the significance of cumulative impacts associated with the proposed Steelpoort Integration Project, these potential cumulative impacts will require further investigation within the EIA.

## **PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT**

## **CHAPTER 7**

A detailed description of the proposed Steelpoort Integration Project, the Scoping process, as well as the issues identified and evaluated through the Scoping phase (to date) have been included in the Draft Environmental Scoping Report and provide the context for this Plan of Study for Environmental Impact Assessment (EIA).

This Plan of Study describes how the EIA for the Steelpoort Integration Project will proceed during the EIA phase. The EIA phase of the study includes detailed specialist studies for those potential impacts evaluated to be of significance. The major findings of the Scoping process (which includes inputs from authorities, the public, the proponent and the EIA specialist team) are used to inform this Plan of Study for EIA, together with the requirements of the NEMA EIA Regulations and associated guidelines.

It should be noted that no specific information requirements for the Scoping Report have been specified by DEAT in terms of Regulation 29(1)(j) of the EIA Regulations, besides the general requirement to meet Regulations 29 and 30 of Government Notice No. R385 of 21 April 2006.

### **7.1. Aims of the EIA**

The EIA will aim to achieve the following:

- » Provide an overall assessment of the social and biophysical environments affected by the proposed project
- » Assess potentially significant impacts associated with the nominated preferred alternative substation site and Transmission line corridors
- » Identify and recommend appropriate mitigation measures for potentially significant environmental impacts
- » Undertake a fully inclusive public involvement process to ensure that I&AP are afforded the opportunity to participate, and that their issues and concerns are recorded

The EIA will address potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with all phases of the project including design, construction and operation, and will aim to provide the environmental authorities with sufficient information in order to make an informed decision regarding the project.

## 7.2. Authority Consultation

Consultation with the regulating authorities (i.e. DEAT and DEDET) has been undertaken throughout the Scoping process and will continue throughout the EIA process. On-going consultation will include the following:

- » Invitation to attend a key stakeholder workshop during the review period of the draft Environmental Scoping Report.
- » Submission of a final environmental scoping report following the 30-day public review period.
- » A consultation meeting with DEAT and DEDET in order to discuss the findings of the Scoping Study and the issues identified for consideration in the EIA process.
- » A site inspection during the authority review period for the final scoping report
- » Submission of a final EIA report following the 30-day public review period.
- » A consultation meeting with DEAT and DEDET in order to discuss the findings and conclusions of the EIA.

## 7.3. Specialist Studies

In assessing potential direct, indirect and cumulative impacts associated with the proposed project, Savannah Environmental will be assisted by the following specialist team members:

Specialist	Area of Expertise
David Hoare of David Hoare Consulting cc	Flora, fauna and ecology
Chris van Rooyen of the Endangered Wildlife Trust	Avifauna
Nonka Byker of MasterQ	Social Impact Assessment
Johnny van Schalkwyk of the National Cultural History Museum	Heritage Impact Assessment
Lourens du Plessis of MetroGIS	Visual Impact Assessment

A Peer Review of the EIA process will be undertaken by Dave Blair of SiVEST.

### **7.3.1. Issues not requiring Further Investigation**

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

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

- » Potential impacts on agricultural potential

### **7.3.2. Nomination of Preferred Alternatives to be Assessed within the EIA**

The majority of potential impacts identified to be associated with the construction and operation of the proposed substation are anticipated to be localised and restricted to the proposed Steelpoort Substation site. No environmental fatal flaws were identified to be associated with the site, although a number of issues requiring further study have been highlighted.

From the Scoping Study undertaken, the following transmission power line corridor alternatives have been nominated for further investigation within the EIA phase of the study:

- » The **western alternative**, the **southern sub-alternative**, the **R555 sub-alternative** and the **northern sub-alternative** for the proposed Steelpoort-Merensky 400 kV transmission power line.
- » The option of constructing a **single double-circuit line** for the full length of the turn-in lines between the Steelpoort Substation and the Duvha-Leseding 400 kV transmission power line.

In order to make clear recommendations regarding the preferred alternative for the establishment of the proposed Steelpoort-Merensky 400 kV transmission power line, more detailed studies are required to be undertaken within the EIA phase for the **western alternative**, the **southern sub-alternative**, the **R555 sub-alternative** and the **northern sub-alternative**. Specific issues which should be addressed include:

- » The positioning of the mining infrastructure for the proposed Spitzkop Platinum Mine area, which is located to the southwest of Steelpoort on the farms Spitskop 333KT, De Goede Verwachting 332KT and Kennedy's Vale 331KT. From current indications, it appears that the western alternative will impact on strategically placed infrastructure associated with this mine in the region of the R555 sub-alternative.
- » The space available between the R555 and the proposed Spitzkop Platinum Mine area, which is located to the southwest of Steelpoort on the farms Spitskop 333KT, De Goede Verwachting 332KT and Kennedy's Vale 331KT. This relates mainly to the location of the tailings dams associated with this mine and the space required for the transmission power line between these dams and the R555.
- » The presence of communities along the Steelpoort/Lydenburg secondary road associated with the southern sub-alternative.
- » The feasibility of the proposed residential and light industrial development (i.e. the "Olifantspoortje Development") as proposed by the Greater Tubatse

Municipality (GTM). Should this development be approved by the environmental authorities, the construction of a powerline across the site would not be considered to be compatible with the proposed land use.

### ***7.3.3. Specialist Studies required to be undertaken within the EIA***

In order to address issues identified through the Scoping Study, the following studies are required to be undertaken as part of the EIA phase of the process for all components of the project:

- » A specialist **ecological study**, including:
  - \* A detailed ecological survey of the substation site and nominated transmission power line corridors for the Steelpoort-Merensky line and the turn-in lines in order to establish the likelihood of any flora and/or fauna species of concern occurring on this site. The detailed survey must concentrate on habitats classified as having High or Very High sensitivity. The survey must be undertaken during the summer in order to be able to assess the floristics of the habitat adequately as well as to have a higher probability of detecting species of special concern.
  - \* The identification of site-specific mitigation measures required to minimise potentially significant ecological impacts.
- » A specialist **avifauna study**, including:
  - \* A detailed survey of the proposed substation site in order to assess the potential impacts of the establishment of the proposed substation on avifauna.
  - \* A detailed survey of the proposed transmission power line corridors in order to assess the potential impacts of the proposed project on avifauna and to recommend appropriate mitigation measures for significant impacts, where required. The potential impacts on the operation of the turn-in lines as a result of streamer-induced faulting associated with a double-circuit line must be further investigated in order to make recommendations regarding.
  - \* Recommendations regarding appropriate site-specific mitigation measures for significant impacts, where required
- » A specialist **visual impact assessment** in order to determine the specific visual impact within identified exposed areas. The visual impact assessment within the EIA will address other crucial issues related to the visibility of the substation and transmission power lines in order to quantify the actual visual impact and to identify areas of perceived impact. Issues/criteria to be addressed by the visual impact assessment include:
  - \* Visual Distance/Observer Proximity to the transmission lines and/or substation (i.e. apply the principle of reduced impact over distance).
  - \* Viewer Incidence/Viewer Perception (i.e. identify areas with high viewer incidence and negative viewer perception).

- \* Landscape Character/Land Use Character (i.e. identify conflict areas in terms of existing and proposed land use).
- \* Visually Sensitive Features (i.e. scenic features or attractions).
- \* General Visual Quality of the affected area.
- \* Potential impact of the integration project on the tourism and eco-tourism potential of the area (specifically the tourism potential of the De Hoop Dam).
- \* Visual Absorption Capacity of the natural vegetation.
- \* The effect of existing man-made structures on the visual exposure.
- \* Potential visual impact of lighting (after-hours operations and security of the substation).
- \* Potential mitigation measures.
- » A specialist **heritage assessment**, including:
  - \* A Phase 1 archaeological survey in accordance with the requirements of Section 38(3) of the National Heritage Resources Act (Act No 25 of 1999).
  - \* Recommendations regarding appropriate site-specific mitigation measures for significant impacts, where required
- » A specialist **Social Impact Assessment** in order to address identified information gaps and assess the significance of potential impacts on the social environment as a result of the construction and operation of the proposed project. The following studies are recommended for the EIA Phase:
  - \* Conduct in depth interviews with affected farmers and/or the use of a survey to determine and assess the socio-economic impact on their farms;
  - \* Conduct interviews with municipal officials, tribal authorities and other stakeholders in the area;
  - \* Assess detailed specialist reports for this study and other similar studies;
  - \* Compare the potential impacts of a construction village versus housing the workers in the community through a desktop study;
  - \* In collaboration with the public participation practitioner, undertake in-depth consultation with directly affected landowners to elicit further issues and concerns;
  - \* Consultation with municipal officials and other authority figures (such as the South African Police Service) to determine the current extent of social problems in the area and initiatives to combat them;
  - \* Access the recent Spatial Development Frameworks of the municipalities and/or interview the relevant town planners of the affected local municipalities; and
  - \* Development of appropriate and practical mitigation and management measures for potentially significant environmental impacts for inclusion in the project EMP.

#### **7.3.4. Specialist Studies required to be undertaken outside of the EIA**

Studies and/or specialist processes which are required to be undertaken outside of the EIA process include:

- » An assessment of the potential impacts of climate and atmospheric conditions (e.g. potential impacts associated with lightening, precipitation and pollution levels) on the proposed transmission infrastructure, in order to provide an indication of what conditions are required to be accounted for by the design team to extend the life and reliability of the new infrastructure.
- » A detailed geotechnical survey of the proposed substation site and transmission power line alignments (once determined within the preferred corridor) in order to fully understand the soils in terms of founding conditions and erosion potential. This information is required to be used as part of the planning and design phase of the Steelpoort integration Project.

#### **7.3.5. Assessment of Potential Impacts**

Direct, indirect and cumulative impacts of the above issues, as well as all other issues identified will be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- » The **duration**, wherein it will be indicated whether:
  - \* the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - \* the lifetime of the impact will be of a short duration (2–5 years) - assigned a score of 2;
  - \* medium-term (5–15 years) – assigned a score of 3;
  - \* long term (> 15 years) - assigned a score of 4; or
  - \* permanent - assigned a score of 5;
- » The **magnitude**, quantified on a scale from 0–10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5,

where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).

- » the **significance**, which shall be 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.
- » the degree to which the impact can be reversed.
- » the degree to which the impact may cause irreplaceable loss of resources.
- » the *degree* to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:

$$S=(E+D+M)P$$

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

### 7.3. Integration and Preparation of the EIA Report

The results of the specialist studies and other available information will be integrated and synthesised by the Savannah Environmental project team. An EIA report will be compiled, and will include:

- » detailed description of the proposed activity
- » a description of the property(ies) on which the activity is to be undertaken and the location of the activity on the property(ies)
- » a description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity
- » details of the public participation process conducted, including:

- \* steps undertaken in accordance with the plan of study for EIA;
  - \* a list of persons, organisations and organs of state that were registered as interested and affected parties;
  - \* a summary of comments received from, and a summary of issues raised by registered I&APs, the date of receipt of these comments and the response to those comments; and
  - \* copies of any representations, objections and comments received from registered I&APs
- » a description of the need and desirability of the proposed project and identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity
  - » an indication of the methodology used in determining the significance of potential environmental impacts
  - » a description and comparative assessment of all alternatives identified during the environmental impact assessment process
  - » a summary of the findings and recommendations of specialist reports
  - » a description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures
  - » an assessment of each identified potentially significant impact
  - » a description of any assumptions, uncertainties and gaps in knowledge
  - » an environmental impact statement which contains:
    - \* a summary of the key findings of the environmental impact assessment; and
    - \* a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives
  - » a draft environmental management plan
  - » copies of specialist reports

The draft EIA Report will be released for a 30-day public review period (refer to Section 9.5). The comments received from I&APs will be captured within a Comments and Response Report, which will be included within the final EIA Report, for submission to the authorities for decision-making.

#### 7.4. Public Participation Process

A public participation process will be undertaken by **Afrosearch** in association with **Imaginative Africa**, public participation specialist consultants. The key objective of public participation during an EIA is to assist I&APs to identify issues of concern or highlight positive aspects of the project and to comment on the findings of the EIA process.

Through experience in social development facilitation and community education and organising, as well as from feedback obtained during the Scoping Phase a range of methods have been identified which will be used during the EIA phase to enable consultation, awareness raising, collaboration and empowerment. These are detailed in Table 7.2.

**Table 7.2:** Summary of the strategy on how the various groupings of I&APs would be engaged and communicated to:

Stakeholder Grouping	Communication and Involvement Strategy
Landowners / residents	<ul style="list-style-type: none"> <li>• Advertisements</li> <li>• One-on-one consultation (where necessary)</li> <li>• Focused consultation sessions</li> <li>• Public meetings</li> <li>• Written reports</li> </ul>
Governmental departments (National, Provincial, District and Local authorities)	<ul style="list-style-type: none"> <li>• Focused consultation sessions</li> <li>• Stakeholder workshop</li> <li>• Written reports</li> </ul>
General public (interested parties)	<ul style="list-style-type: none"> <li>• Advertisements</li> <li>• Public meetings</li> <li>• Written reports</li> </ul>
Organisations (e.g. SAHRA, NGOs, Agricultural Unions, etc.)	<ul style="list-style-type: none"> <li>• Advertisements</li> <li>• Focused consultation sessions</li> <li>• Stakeholder workshop</li> <li>• Written reports</li> </ul>

» *Focused communication and consultation sessions*

Focused consultation sessions will include telephonic interviews, one-on-one interviews, focus group meetings, stakeholder workshops and public meetings. The following provides a broad outline of what is envisaged with each focused consultation session during the EIA phase.

Sessions	Aim of Communication	I&APs Involved
One-on-one consultations	<ul style="list-style-type: none"> <li>• Interaction on a one-on-one basis</li> <li>• Provide detailed technical information and to discuss issues in detail</li> <li>• Clarify any misunderstandings</li> <li>• Assist I&amp;APs to formulate their comments in a manner that will ensure that they can be afforded due attention in the EIA process</li> <li>• Follow up on issues raised</li> <li>• Obtain information as part of the research and assessment process</li> </ul>	<ul style="list-style-type: none"> <li>• Affected landowners</li> <li>• Targeted I&amp;APs</li> </ul>
Focus group meetings (x8)	<ul style="list-style-type: none"> <li>• Assist I&amp;APs to submit additional comments regarding the proposed project for consideration within the EIA</li> <li>• Follow up on additional issues raised</li> </ul>	<ul style="list-style-type: none"> <li>• Affected landowners</li> <li>• Groupings of I&amp;APs with</li> </ul>

Sessions	Aim of Communication	I&APs Involved
	<ul style="list-style-type: none"> <li>Obtain information as part of the assessment process</li> </ul>	similar interests in project <ul style="list-style-type: none"> <li>Organised groupings e.g. NGOs</li> </ul>
Stakeholder workshops (x1)	<ul style="list-style-type: none"> <li>Provide detailed information regarding the EIA</li> <li>Clarify any misunderstandings</li> <li>Provide I&amp;APs the opportunity to comment further on the EIA</li> </ul>	<ul style="list-style-type: none"> <li>Key stakeholders, e.g. government department, NGOs</li> </ul>
Public meeting (x1)	<ul style="list-style-type: none"> <li>Provide detailed information of the findings of the EIA</li> <li>Provide I&amp;APs the opportunity to comment on the findings of the EIA Report</li> </ul>	<ul style="list-style-type: none"> <li>All I&amp;APs</li> </ul>

The draft EIA report will be made available for public review for a 30-day period prior to finalisation and submission to DEAT for review and decision-making. In order to provide an overview of the findings of the EIA process and facilitate comments, a public meeting and key stakeholder workshop will be held during this public review period.

### 7.5. Key Milestones of the programme for the EIA

The envisaged key milestones of the programme for the Environmental Impact Assessment (EIA) phase of the project are outlined in the table below.

Key Milestone Activities	Proposed completion date
Finalisation of Environmental Scoping Report	End-September 2007
Authority acceptance of the Environmental Scoping Report and Plan of Study to undertake the EIA	October 2007
Undertake detailed specialist studies and public participation process	November 2007 – mid-January 2008
Compile draft EIA Report and draft EMP	Mid-January – February 2008
Make draft EIA Report and draft EMP available to the public, stakeholders and authorities	End-February 2008

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