

APPENDIX

F-5 *SOCIO-ECONOMIC*

**SOCIAL IMPACT ASSESSMENT
FOR
IMPUMELELO GRID INFRASTRUCTURE**

MPUMPALANGA PROVINCE

MARCH 2022

Prepared for

WSP

by

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EXECUTIVE SUMMARY

INTRODUCTION AND LOCATION

WSP was appointed by ENERTAG South Africa to manage the Basic Assessment (BA) process for the proposed overhead Grid Connection of up to 132kKV and associated infrastructure for the 200 MW Impumelelo Wind Energy Facility (WEF). The majority of the study area is located within the Dipaleseng Municipality (DM) and Govan Mbeki Municipality (GMM), with a small section that traverses the Lekwa Municipality (LM), all of which form part of the Gert Sibanye District Municipality (GSDM).

Tony Barbour Environmental Consulting was appointed to undertake a specialist Social Impact Assessment (SIA) as part of an BA process. This report contains the findings of the Social Impact Assessment (SIA) Report undertaken as part of the BA process.

SUMMARY OF KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative impacts.
- Decommissioning phase impacts.
- No-development option.

FIT WITH POLICY AND PLANNING

The development of renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy and associated energy distribution infrastructure is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure. The development of the proposed power line is therefore supported by key policy and planning documents.

CONSTRUCTION PHASE

Potential positive impacts

- Creation of employment and business opportunities.

The construction phase for the grid infrastructure will extend over a period of 6-12 months and create approximately 40-50 employment opportunities. Most of the low and semi-skilled employment opportunities are likely to benefit residents from local towns in the area. Most the beneficiaries are likely to be Historically Disadvantaged (HD) members of the community. This would represent a short term positive social benefit in an area with limited employment opportunities. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in DM and GMM.

The capital expenditure associated with the construction of power line will create opportunities for the local and regional and local economy. The local service sector will also benefit from the proposed development. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers. However, given the relatively small scale of the development and short construction period the benefits will be limited.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Noise, dust, and safety impacts of construction related activities and vehicles.
- Risk of veld fires.
- Risks posed to farming activities by construction workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed construction of the power line can therefore be effectively mitigated if the recommended mitigation measures are implemented.

Table 1 summarises the significance of the impacts associated with the construction phase.

Table 1: Summary of social impacts during construction phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Creation of employment and business opportunities	Low (+)	Moderate (+)
Presence of construction workers and potential impacts on family structures and social networks	Low (-)	Low (-)
Impact of construction activities and vehicles	Low (-)	Low (-)
Risk of veld fires	Moderate (-)	Low (-)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate (-)	Low (-)

OPERATION PHASE

The benefits associated with the Impumelelo WEF are dependent upon being able to connect to the national grid. The key social issues associated with the operational phase include:

Potential positive impacts

- Provide energy infrastructure to support the use of renewable energy.
- Creation of employment, skills development, and procurement opportunities.
- Generate income for landowners.

Potential negative impacts

- Visual impacts and associated impacts on sense of place.
- Impact on land uses and farming activities.
- Impact of maintenance activities on farming activities and operations.

The findings of the SIA indicate that the significance of the potential negative impacts is likely be **Low Negative** if the required mitigation measures are implemented. The significance of the impacts associated with the operational phase are summarised in Table 2.

Table 2: Summary of social impacts during operational phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Provide energy infrastructure to support the use of renewable energy	Moderate (-) ¹	Moderate (+) ²
Creation of employment and business opportunities during maintenance	Low (+)	Low (+)
Generate income for landowners	Low (+)	Moderate (+)
Visual impact and impact on sense of place	Moderate (-)	Low (-)
Impact on land uses and farming activities	Moderate (-)	Low (-)
Safety risk, stock theft and damage to farm infrastructure associated with presence of maintenance workers	Moderate (-)	Low (-)

CUMULATIVE IMPACT ON SENSE OF PLACE

There are existing transmission lines associated with the Secunda facility and mines in the area. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking) does therefore exist. However, the cumulative impact on the areas sense of place is likely to be low. In this regard the areas sense of place is dominated by existing transmission lines, coal mining and the large industrial Secunda facility. None of the landowners interviewed raised concerns regarding the potential visual impact on the areas sense of place.

NO-DEVELOPMENT OPTION

The No-Development option would represent a lost opportunity for South Africa to produce green hydrogen and ammonia and reduce its carbon footprint. Given South Africa's current energy security challenges and its position as one of the highest per

¹ Assumes power line is not developed.

² Assumes power line is developed.

capita producers of carbon emissions in the world, this would represent a negative social cost.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The benefits associated with the proposed Impumelelo WEF which include the generation for renewable energy for the mining and industrial sector are dependent upon being able to connect the Impumelelo WEF to these sectors via the establishment of grid connection infrastructure.

The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed 132 kV Impumelelo overhead power line, substation and associated infrastructure are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The establishment of proposed 132 kV Impumelelo overhead power line and associated infrastructure is therefore supported by the findings of the SIA.

Recommendations

- Based on the findings of the SIA, Alternative 1 is the preferred Alternative.
- Proponent should liaise with owner of Holgatsfontein 535/6 (Mr Botha) to identify a suitable alignment for Alternative 1 within the assessment corridor.
- An alignment within the assessment corridor located to the south of the coal conveyor line and west of the R50 for the shared section of the Alternative 1 and 2 should be investigated.

CONTENTS OF THE SPECIALIST REPORT – CHECKLIST

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report
(a) details of the specialist who prepared the report; and the expertise of that specialist to compile a specialist report including a <i>curriculum vitae</i> ;	Section 1.5, Annexure A
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 1.6, Annexure B
(c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1.1, Section 1.2
(cA) an indication of the quality and age of base data used for the specialist report;	Section 1.2, Section 3,
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 4
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Interviews in 2021 (Annexure A)
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 1.2, Annexure B
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 4, Section 5,
(g) an identification of any areas to be avoided, including buffers;	Section 4
(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	N/A
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 1.4,
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives on the environment, or activities;	Section 4, Section 5
(k) any mitigation measures for inclusion in the EMPr;	Section 4
(l) any conditions for inclusion in the environmental authorisation;	Section 4, Section 5
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	N/A
(n) a reasoned opinion— i. as to whether the proposed activity, activities or portions thereof should be authorised; iA. Regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr or Environmental Authorization, and where applicable, the closure plan;	Section 5.3
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report	Annexure A, lists key stakeholders interviewed
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	Annexure A, lists key stakeholders interviewed
(q) any other information requested by the competent authority	N/A
Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a	Comply with the Assessment Protocols that were published

Regulation GNR 326 of 4 December 2014, as amended 7 April 2017, Appendix 6	Section of Report
<p>specialist report, the requirements as indicated in such notice will apply.</p>	<p>on 20 March 2020, in Government Gazette 43110, GN 320. This specifically includes Part A, which provides the Site Sensitivity Verification Requirements where a Specialist Assessment is required but no Specific Assessment Protocol has been prescribed. As at September 2022, there are no sensitivity layers on the Screening Tool for Socio-economic-features. Part A has therefore not been compiled for this assessment.</p>

ACRONYMS

DM	Dipaleseng Municipality
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
GSDM	Gert Sibanye District Municipality
GMM	Govan Mbeki Municipality
IDP	Integrated Development Plan
IPP	Independent Power Producer
LM	Lekwa Municipality
LED	Local Economic Development
MW	Megawatt
OHPL	Overhead Powerline
SDF	Spatial Development Framework
SIA	Social Impact Assessment
WEF	Wind Energy Facility

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SECTION 1: INTRODUCTION

1.1 INTRODUCTION

WSP was appointed by ENERTAG South Africa to manage the Basic Assessment (BA) process for the proposed overhead Grid Connection of up to 132kV and associated infrastructure for the 200 MW Impumelelo Wind Energy Facility (WEF). The majority of the study area is located within the Dipaleseng Municipality (DM) and Govan Mbeki Municipality (GMM), with a small section that traverses the Lekwa Municipality (LM), all of which form part of the Gert Sibanye District Municipality (GSDM) (Figure 1.1).

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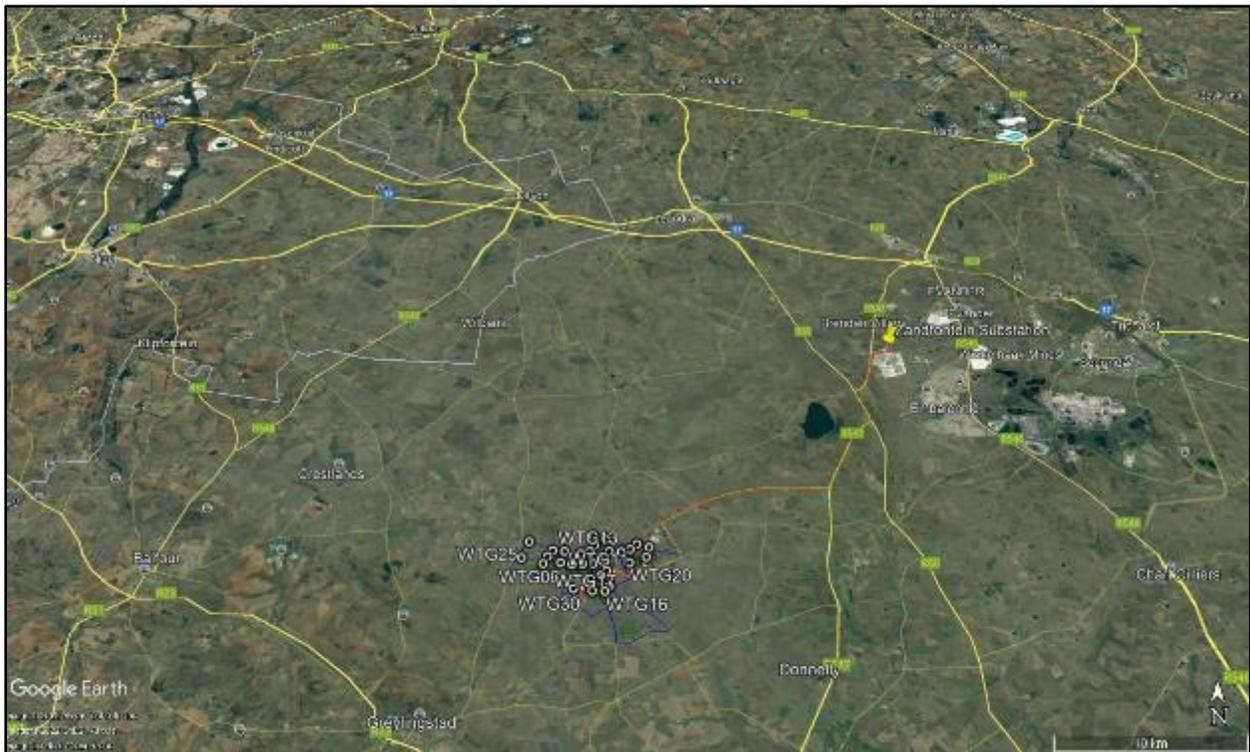


Figure 3.2: Regional location of Impumelelo WEF site and grid connection (red line) running in north easterly direction from WEF

1.2 TERMS OF REFERENCE AND APPROACH TO STUDY

The approach to the SIA study is based on the Western Cape Department of Environmental Affairs and Development Planning Guidelines for Social Impact Assessment (February 2007) and IAIA Guidance for Assessing and Managing Social Impacts (2015). The key activities in the SIA process embodied in the guidelines include:

- Describing and obtaining an understanding of the proposed intervention (type, scale, and location), the settlements, and communities likely to be affected by the proposed project.
- Collecting baseline data on the current social and economic environment.
- Identifying the key potential social issues associated with the proposed project. This requires a site visit to the area and consultation with affected individuals and communities. As part of the process a basic information document was prepared and made available to key interested and affected parties. The aim of the document was to inform the affected parties of the nature and activities associated with the construction and operation of the proposed development to enable them to better understand and comment on the potential social issues and impacts.
- Assessing and documenting the significance of social impacts associated with the proposed intervention.
- Identifying alternatives and mitigation measures.

In this regard the study involved:

- Review of socio-economic data for the study area.
- Review of relevant planning and policy frameworks for the area.
- Review of information from similar studies, including the SIAs undertaken for other renewable energy projects.
- Site visit and interviews with key stakeholders.
- Identifying the key potential social issues associated with the proposed project.
- Assessing and assessing the significance of social impacts associated with the proposed project.
- Identification of enhancement and mitigation measures aimed at maximizing opportunities and avoiding and or reducing negative impacts.

Annexure A contains a list of the secondary information reviewed and interviews conducted. Annexure B summarises the assessment methodology used to assign significance ratings to the assessment process.

1.3 PROJECT DESCRIPTION

The proposed Impumelelo WEF and Grid connection up to 132 kV will have a project area of approximately 2800ha. The grid connection affects approximately 45 property portions (Table 1.1). The proposed project will comprise the following key components:

- 132 kV overhead power line (two alternative alignments identified (Alternative 1 the preferred alignment)
- Monopole or lattice pylons, or a combination of both where required with maximum pylon height of 40m.
- On site substation (with a footprint of approximately 5 ha). The preferred location for the substation is on portion 5/543 of Farm Platkop.
- Standard substation electrical equipment, i.e., transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, busbars, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be needed.

- Temporary laydown or staging area. Typical area 220m x 100m = 22000m². Laydown area could increase to 30000m² for concrete towers, should they be required.
- The control building, telecommunication infrastructure, etc,
- All the access road infrastructure to and within the substation
- Associated infrastructure including but not limited to lighting, fencing, and buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area and storerooms).
- 500m corridor along each of the proposed options (250m from the centrelines) are included in the assessments.

Two alternative alignment have been identified, namely:

Grid Connection Alternative 1 (Preferred)

Alternative 1 will be approximately ~33 km and will connect to the Impumelelo WEF to the Zandfontein Substation located immediately to the west of Secunda via the onsite substation located on portion 5/543 of Farm Platkop (Preferred substation – Option 1). The preferred pylon and powerline will be 132 kV Intermediate Self-Supporting single circuit or double circuit. The powerline will have a 500m (250m on either side of centre line) assessment corridor to allow for micro-siting.

Grid Connection Alternative 2

Alternative 2 will be approximately ~34 km and will connect to the Impumelelo WEF to the Zandfontein Substation located immediately to the west of Secunda via the onsite substation located on portion 0/544 of Farm Mahemsfontein. The preferred pylon and powerline will be 132 kV Intermediate Self-Supporting single circuit or double circuit. The powerline will have a 500m (250m on either side of centre line) assessment corridor to allow for micro-siting.

Alternative 1 and 2 share the same alignment for the off-site section of the grid connection for ~80% of its length, a distance of ~27 km. As indicated in Figure 1.2, this portion of the alignment runs in a north easterly direction for ~12 km before intersecting with the R547. The line is located adjacent to an existing road and coal conveyor. The alignment swings north and follows the R547 for 11 km before intersecting with the R50 and running in north westerly direction along the R50 for ~ 3 km before swinging north east and following the R 547 for ~ 4km and linking up to the Zandfontein Substation, which is located ~1km to the east of the R547.

As indicated in Figure 1.2, Alternative 1 (Preferred alignment) links up with proposed onsite substation located on portion 5/543 of Farm Platkop (yellow box area). Alternative 2 links up with the proposed onsite substation located on portion 0/544 of Farm Mahemsfontein, which is located 1.5 km to the south west of the onsite substation located on portion 5/543 of Farm Platkop.



Figure 1.2: Impumelelo Grid Connection – comment shared sections

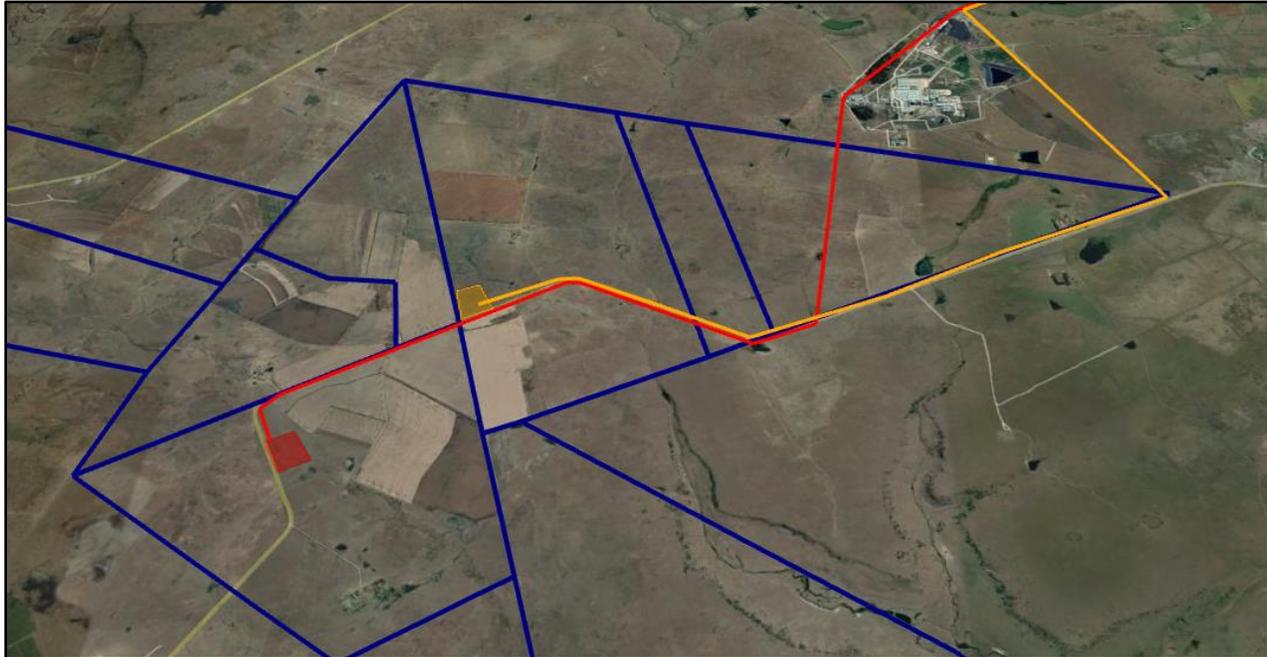


Figure 1.3: Impumelelo Grid Connection – onsite sections (Alternative 1, preferred onsite substation (yellow box area). Alternative 2 onsite substation (red box))

Table 1.1: Property details associated with Impumelelo WEF grid connection

Portion No.	Farm No.	Farm Name
3	130	Zandfontein
2	130	Zandfontein
5	130	Zandfontein
8	130	Zandfontein
9	130	Zandfontein
0	279	Grootspruit
1	280	De Bank of Vaalbank
2	280	De Bank of Vaalbank
4	280	De Bank of Vaalbank
6	280	De Bank of Vaalbank
2	528	Kaalspruit
3	528	Kaalspruit
9	528	Kaalspruit
6	528	Kaalspruit
7	528	Kaalspruit
16	323	Roodebank
0	542	
3	535	Holgatsfontein
4	535	Holgatsfontein
20	535	Holgatsfontein
18	535	Holgatsfontein
17	535	Holgatsfontein
19	535	Holgatsfontein
16	535	Holgatsfontein
15	535	Holgatsfontein
14	535	Holgatsfontein
0	529	Uitspan
2	543	Platkop
4	543	Platkop
5	543	Platkop
9	543	Platkop
3	277	Sprinbokdraai
5	277	Sprinbokdraai
8	277	Sprinbokdraai
20	323	Roodebank
1	534	Wolvenfontein
18	534	Wolvenfontein
19	534	Wolvenfontein
20	534	Wolvenfontein

Portion No.	Farm No.	Farm Name
16	532	Leeuwpans
0	544	Mahemsfontein
7	544	Mahemsfontein
8	544	Mahemsfontein
25	522	Hartbeestfontein
6	522	Hartbeestfontein

1.4 ASSUMPTIONS AND LIMITATIONS

1.4.1 Assumptions

Strategic importance of the project

The strategic importance of promoting renewable energy and associated grid infrastructure is supported by the national and provincial energy policies.

Fit with planning and policy requirements

Legislation and policies reflect societal norms and values. The legislative and policy context therefore plays an important role in identifying and assessing the potential social impacts associated with a proposed development. In this regard a key component of the SIA process is to assess the proposed development in terms of its fit with key planning and policy documents. As such, if the findings of the study indicate that the proposed development in its current format does not conform to the spatial principles and guidelines contained in the relevant legislation and planning documents, and there are no significant or unique opportunities created by the development, the development cannot be supported. However, the study recognises the strategic importance of renewable energy and the technical, spatial and land use constraints required for renewable energy facilities and the associated grid infrastructure.

1.4.2 Limitations

Demographic data

The information contained in some key policy and land use planning documents, such as Integrated Development Plans etc., may not contain data from Community Household Survey of 2016. However, this will not have a material impact on the findings of the study.

1.5 SPECIALIST DETAILS

Tony Barbour, the lead author of this report, is an independent specialist with 28 years' experience in the field of environmental management. In terms of SIA experience Tony Barbour has undertaken in the region of 260 SIAs and is the author of the Guidelines for Social Impact Assessments for EIA's adopted by the Department of Environmental Affairs and Development Planning (DEA&DP) in the Western Cape in 2007. Annexure C contains a copy of Tony Barbour's CV.

Schalk van der Merwe, the co-author of this report, has an MPhil in Environmental Management from the University of Cape Town and has worked closely with Tony Barbour over the last seventeen years.

1.6 DECLARATION OF INDEPENDENCE

This confirms that Tony Barbour and Schalk van der Merwe, the specialist consultants responsible for undertaking the study and preparing the SIA Report, are independent and do not have any vested or financial interests in the proposed power line being either approved or rejected. Annexure D contains a signed declaration of independence.

1.7 REPORT STRUCTURE

The report is divided into five sections, namely:

- Section 1: Introduction.
- Section 2: Policy and planning context.
- Section 3: Overview of study area.
- Section 4: Identification and assessment of key issues.
- Section 5: Summary of key findings.

SECTION 2: POLICY AND PLANNING CONTEXT

2.1 INTRODUCTION

Legislation and policy embody and reflect key societal norms, values, and developmental goals. The legislative and policy context therefore plays an important role in identifying, assessing, and evaluating the significance of potential social impacts associated with any given proposed development. An assessment of the “policy and planning fit³” of the proposed development therefore constitutes a key aspect of the Social Impact Assessment (SIA). In this regard, assessment of “planning fit” conforms to international best practice for conducting SIAs. Furthermore, it also constitutes a key reporting requirement in terms of the applicable Western Cape Department of Environmental Affairs and Development Planning’s *Guidelines for Social Impact Assessment* (2007).

The proposed grid connection infrastructure is linked to the proposed Impumelelo WEF. The review therefore includes reference to key policy documents that have a bearing on renewable energy. Most of the alignment is located within the site is located within Dipaleseng Municipality (DM) and Govan Mbeki Municipality (GMM), with a small section that traverses the Lekwa Municipality. The focus is therefore on the DM and GMM at a local level.

- National Growth Path Framework (2010).
- The National Development Plan (2011).
- National Infrastructure Plan (2012).
- Mpumalanga Vision 2030 Strategic Implementation Framework (2013-2030)
- Mpumalanga Economic Growth and Development Path (2011).
- Mpumalanga Spatial Development Framework (2019).
- Dipaleseng Municipality Integrated Development Plan (2020-2021).
- Dipaleseng Municipality Spatial Development Framework (2020).
- Dipaleseng Municipality Local Economic Development Strategy (2011).
- Govan Mbeki Municipality Integrated Development Plan (2020-2021).

2.2 NATIONAL POLICY ENVIRONMENT

2.2.1 New Growth Path Framework

Government released the New Economic Growth Path Framework on 23 November 2010. The aim of the framework is to enhance growth, employment creation and equity. The policy’s principal target is to create five million jobs over the next 10 years and reflects government’s commitment to prioritising employment creation in all economic policies. The framework identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa’s developmental agenda. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In

³ “Planning fit” can simply be described as the extent to which any relevant development satisfies the core criteria of appropriateness, need, and desirability, as defined or circumscribed by the relevant applicable legislation and policy documents at a given time.

this regard the framework identifies investments in five key areas namely: energy, transport, communication, water, and housing.

2.2.2 National Development Plan

The National Development Plan (NDP) contains a plan aimed at eliminating poverty and reducing inequality by 2030. The NDP identifies 9 key challenges and associated remedial plans. Managing the transition towards a low carbon national economy is identified as one of the 9 key national challenges. Expansion and acceleration of commercial renewable energy is identified as a key intervention strategy.

2.2.3 National Infrastructure Plan

Government adopted a National Infrastructure Plan (NIP) in 2012. The aim of the plan is to transform the economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services. The aim of the NIP is support investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, **electricity plants**, hospitals, schools, and dams will contribute to improved economic growth.

As part of the National Infrastructure Plan, Cabinet established the Presidential Infrastructure Coordinating Committee (PICC). The Committee identified and developed 18 strategic integrated projects (SIPs). The SIPs cover social and economic infrastructure across all nine provinces (with an emphasis on lagging regions) and included three energy SIPs, namely SIP 8, 9 and 10.

- SIP 8: Green energy in support of the South African economy.
- SIP 9: Electricity generation to support socio-economic development.
- SIP 10: Electricity transmission and distribution for all.

The NIP 2050 was gazetted for public comment on 10 August 2021⁴. The first phase of the NIP 2050 focuses on four critical network sectors that provide a platform, namely, energy, freight transport, water, and digital infrastructure. In line with the NDP, the vision for the energy sector is to promote:

- Economic growth and development through adequate investment in energy infrastructure” (generation, transmission, and distribution) and reliable and efficient energy service at competitive rates, while supporting economic growth through job creation by stimulating supply chains.
- Social equity through expanded access to energy at affordable tariffs and through targeted, sustainable subsidies for needy households.
- Environmental sustainability through efforts to reduce pollution, reduce water usage and mitigate the effects of climate change.

The NIP 2050 notes that by 2030, the NDP set a target that more than 90% of the population should enjoy access to grid connected or off-grid electricity by 2030. To realise this vision, South Africa's energy system will be supported by effective policies, institutions, governance systems, regulation and, where appropriate, competitive markets. In terms of energy mix, NIP 2050 notes that coal will contribute significantly less to primary-energy needs in the

⁴ Gazette No. 44951

future, while gas will have an important enabling role, energy supply will be increasingly dominated by renewable energy resources– especially wind and solar which are least cost and where South Africa has a comparative advantage.

NIP 2050 also notes that South Africa is signatory of the Paris Agreement which aims to achieve Net Zero greenhouse gas emissions by 2050. To achieve this will require a shift to a least cost energy path that is increasingly reliant on renewables. For South Africa this is imperative for the following reasons:

- SA cannot afford to overspend while dramatically expanding capacity
- Renewables can be built quickly and in modular form thereby avoiding many of the challenges associated with mega projects.
- Trade partners are expected to increasingly impose border carbon taxes harming SA exports.
- SA will need to commit to emission reductions as a global citizen.

2.3 PROVINCIAL AND LOCAL LEVEL POLICY AND PLANNING

2.3.1 Mpumalanga Vision 2030

The Mpumalanga Vision Mpumalanga Vision 2030 Strategic Implementation Framework (2013-2030) provides a provincial expression of the key priorities, objectives and targets outlined in the National Development Plan 2030. In line with the objectives of the NDP the Mpumalanga Vision focusses on the following key socio-economic outcomes.

- Employment and Economic Growth
- Education and Training
- Health Care for all
- Social Protection

The Mpumalanga Vision 2030 also identifies nine key drivers that have a bearing on the spatial development of the province. Key Drivers 1 to 6 are focused towards promoting economic development and job creation, Key Drivers 7 and 8 are focused on human settlement in and around the key priority nodes/areas identified and linked to Key Drivers 1-6, and Key Driver 9 is focused on the conservation and sustainable management of the natural environment. The key relevant Key Drivers are summarised below.

Key Driver 1: Nodal Development. Key Driver 1 identifies corridors linked to key roads where investment should be focussed. Of relevance to the project the N17 is identified as a key corridor. Five primary nodes for development are also identified, including Secunda (and Ermelo).

Key Driver 2: Business, Commercial and Industrial Development. Key driver 2 focuses on development of business and commercial sectors on the primary, secondary and rural nodes in Mpumalanga and the potential for these activities to generate employment job opportunities. Of relevance to the study the vision notes that the bulk of industrial investment in Mpumalanga Province should be clustered around the existing industrial strongholds, including Secunda (Petrochemical Industry).

Key Driver 9: Environmental Management and Conservation. The vision notes that in terms of mining it is important to establish proper environmental management systems during the operational phase of the mines to prevent large scale water and air pollution. While the section does not specifically refer to renewable energy, much of the mining in Mpumalanga is linked to coal mining and power generation, both of which are large consumers of water. The water

demands associated with renewable energy are significantly lower than those associated with traditional coal power stations.

2.3.2 Mpumalanga Growth and Development Path

The Mpumalanga Economic Growth and Development Path (MEGDP)(2011) is informed by the National Economic Growth Path. The MEGDP notes that Mpumalanga is committed to increasing local economic development and job creation in the agricultural, industrial, manufacturing, **green economy**, tourism, and mining sectors.

The (MEGDP) is informed by six key pillars, namely:

- Job creation
- Inclusive and shared growth of a diversified economy
- Spatial distribution
- Integration of regional economies
- Sustainable human development
- Environmental sustainability

The pillars of job creation, the development of a diversified economy, and sustainable environmental development are all relevant to the proposed development.

The MEGDP also identifies a number of key employment drivers aimed at realising the MEGDP objectives and securing strong and sustainable growth for the next decade. Of relevance these include the creation of employment of economic sectors including energy and the development of new economies including green industries.

2.3.3 Mpumalanga Spatial Development Framework (2019)

The spatial vision for Mpumalanga Province is "A sustainable, vibrant and inclusive economy, Mpumalanga". The SDF identifies a number of opportunities and challenges facing the province. The opportunities are linked to the province's natural resources, well developed economy, and established economies.

Natural Environment: The natural environment is diversified and is associated with the Highveld and the Lowveld areas in the province. Five major rivers systems in the flow through Mpumalanga and it is an important catchment area.

Connectivity and Infrastructure: The province is well connected in terms of infrastructure and is connected to Maputo and Richards Bay ports by both rail and road.

Economy: The province's rich biodiversity and scenic beauty support the tourism industry, while at the same time mining, specifically coal mining, plays a key role in the province's economy. The availability of high potential soil and diverse climatic condition also support a range of crops.

Urban settlements: The key urban centres are well established economic centres and offer the opportunity for further economic development by leveraging on the towns' economic bases.

In terms of challenges, climate change is identified as a key challenge. In this regard the activities in the province, specifically the generation of coal powered energy, account for 90% of South Africa's scheduled emissions. The province is also home to 50% of the most polluted towns in the country. The predicted impacts associated with climate change include decreased

rainfall in the province and increase temperatures. This will increase the risk of natural disasters, including droughts, flooding, and fires.

The SDF identifies five spatial objectives, namely:

Connectivity and corridor functionality: The aim is to ensure connectivity between nodes, secondary towns, marginalised areas, the surrounding area, and to green open space systems.

Sustainable concentration and agglomeration: The aim is to promote the creation of an agglomeration economy that will encourage people and economic activities to locate near one another in urban centres and industrial clusters.

Conservation and resource utilisation: The aim is to promote the maximisation, protection and maintenance of ecosystems, scarce natural resources, high-potential agricultural land, and integrated open space systems.

Liveability and sense of place: The aim is to create settlements that contribute to people's sense of personal and collective wellbeing and to their sense of satisfaction in being residents of a settlements.

Rural diversity and transformation: The aim is to create Urban-Rural anchors and choices for residents within the rural economy linked to access to markets, food security and security of land tenure.

Connectivity and corridor functionality, Sustainable concentration and agglomeration, and Conservation and resource utilisation are of specific relevance the proposed development.

Connectivity and corridor functionality

The strategic objectives (SOs) that are relevant the study area and the proposed development include:

- Strategic Objective 2: Development of the existing corridors and building new linkages to increase capacity and economic opportunities and ensure connectivity to the surrounding areas
- Strategic Objective 5: Decongestion of the coal haul roads and Improvement of Freight Network

In terms of SO 2, the spatial linkages identified for development and upgrading include the upgrade of N17, N17/N2 Corridor and the N12 and N11 corridor. The N17 is located to the north of the site.

Sustainable concentration and agglomeration

Of specific relevance, Strategic Objective 4, Diversify Economy, focusses on the need to diversify the economy. The SDF notes that mining sector contributes 25% to Mpumalanga's GVA. In addition, there are a number of other sectors directly or indirectly dependent on mining such as manufacturing (specifically metal processing) and utilities (specifically power generation). The combined GVA of these three sectors makes up more than 40% of the provincial GVA.

However, the SDF recognises that mining is not a sustainable industry and resources are finite. There is therefore a need for a gradual shift from mining-oriented sectors to the sustainable economic sectors to maintain sustained growth of the provincial economy.

Mpumalanga's Coal Mining and Coal Fired Power Plant region (located mainly in the Highveld area) will be come under increasing pressure due to environmental considerations. As a result, the region is likely to experience a decline in demand for coal and with it a decline in the associated employment it creates. There is therefore a need to diversify the regional economy and facilitate the gradual transition of economic activities in the region. The proposed development supports the objective of diversifying the provinces economy.

Conservation and resource utilisation

The strategic objectives (SOs) that are relevant the study area and the proposed development include:

- Strategic Objective 2: Ensure conservation of all water resources and catchment Areas.
- Strategic Objective 4: Promote a low carbon and climate resilient economy.
- Strategic Objective 6: To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment.

Strategic Objective 2: Ensure Conservation of all Water Resources and Catchment Areas

Achieving Strategic Objective 2, Ensure Conservation of all Water Resources and Catchment Areas is closely linked to diversifying the economy. The SDF notes that the provinces water resources are under pressure from high demand activities, including Eskom's power stations, mining, and industrial uses. The proposed development represents a low consumer of water.

Strategic Objective 4: Promote a Low Carbon and Climate Resilient Economy

Mpumalanga is home to 12 of Eskom's 15 coal-fired power stations; petrochemical plants including Sasol's refinery in Secunda; metal smelters; coal and other mines; brick and stone works; fertiliser and chemical producers; explosives producers; and other smaller industrial operations, making the Highveld one of South Africa's industrial heartlands (CER, 2017). As a result, the air quality within the Mpumalanga Province, especially within the Highveld area, is the poorest in South Africa. The Highveld region accounts for approximately 90 % of South Africa's scheduled emissions of industrial dust, sulphur dioxide and nitrogen oxides (Wells et al. 1996, as cited in Josipovic et al. 2009). Achieving Strategic 4, Promote a low carbon and climate resilient economy, is closely linked to diversifying the economy. The proposed development supports the development of a low carbon, climate resistant economy.

Strategic Objective 6: To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment

Mining contributes R 49.6 billion (approximately 25%) to the provincial economy. The key mining sector is coal, which represents 83% of South Africa's coal production. The mining sector, specifically coal mining, creates employment opportunities and supports the manufacturing and power generation sector. However, mining is also associated with many issues including water and soil contamination, air pollution and environmental degradation. Achieving Strategic 6, To optimally utilise the mining potential without compromising the long-term sustainability of the natural environment is closely linked to diversifying and developing a low carbon climate resistant economy. The proposed development supports the objective of diversifying and developing a low carbon, climate resistant economy. In terms of the high-level composite spatial development framework, Ermelo is identified as a Regional Service Centre (red dot) and the development area located to the south east of the town falls within a mining area (brown hatched) (Figure 2.2). The economic sectors in the area include mining and power generation. The dominant land use in the area is commercial agriculture (yellow, Figure 2.3).

2.3.4 Dipaleseng Integrated Development Plan

The vision of the Dipaleseng Local Municipality as set out in the DM Integrated Development Plan (IDP) (2020/21) is to be “a centre of quality, affordable, good governance and sustainable economic opportunities”. The associated mission statement is “is to provide sustainable services to communities and ensure that they are served by accountable and effective Municipality.”

The IDP identifies five Key Performance Areas (KPAs) namely:

- KPA 1: Municipal transformation and organisational development
- KPA 2: Service delivery and infrastructure development
- KPA 3: Local economic development
- KPA 4: Municipal financial viability and management
- KPA 5: intergovernmental relations and public participation

KPA 2 and 3 are relevant to the proposed development.

KPA 2: Service Delivery and Infrastructure Development

In terms of KPA the IDP identifies youth development and upgrading of community services and facilities as key objectives. Sports and recreation are identified as a key component of the strategy for youth development. In this regard inadequate and run-down sports and recreational facilities represent a key challenge. To address this the IDP identifies the need to:

- Create accessible spaces in a form of recreational parks and spaces in each ward to promote sports.
- Establishing outdoor gyms to promote healthy lifestyle.
- Refurbishing and maintaining existing sports facilities.
- Support all sporting activities within the municipality including schools’ sports.

Likewise, the IDP also highlights the importance of arts and culture and the need to support and provide accessible space for arts and cultural activities. The importance of working and accessible libraries is also identified in the IDP.

KPA 3: Local Economic Development

The IDP highlights the importance of the tourism, agricultural, mining and manufacturing sectors.

2.3.5 Dipaleseng Local Economic Development Strategy

The Dipaleseng Local Economic Development Strategy (LED) was developed in 2011 and does not appear to have been updated. The aim of the LED strategy is to create opportunities for accelerated economic development, increased job creation and improved standards of living in the Municipal area.

The LED vision is “to create a conclusive environment for economic growth, stability and development within Dipaleseng LM”.

The LED strategy underpinned by four pillars namely:

- Pillar 1: Rural Development

- Pillar 2: Human Resource Development
- Pillar 3: Institutional Development
- Pillar 4: Tourism Development

The LED strategy also identifies a set of Strategic Goals to support the vision, namely:

- The Protection of Natural Capital: Ensuring sustainable long-term local economic development through the protection and maintenance of natural capital.
- The Reduction in Income Disparity: Reducing the income disparity by focusing on skills training, capacity-building initiatives, local competitive advantages and development of the informal sector.
- Improvement of Institutional Capacity: Ensuring sustainable local economic development by improving the capacity of the Municipality through the establishment of an Economic Development Agency.
- The Promotion of the Retention of Local Wealth: Retaining wealth and increasing the circulation of the wealth in the Municipality by promoting local savings, investment, and entrepreneurship.
- Promotion of Public, Private Partnerships: Ensuring that relations between the public and private sector are improved in an effort to better leverage LED support and resources at a local level by engaging all the sectors about their roles in LED.
- The Promotion of Business/Investment Attraction and Job-Creation: Ensuring effective job-creation strategies by focusing on specific occupations and industry sectors.
- Innovation: Creative and inclusive Rural Development and the application of Information Communication Technologies (ICT) in LED (e.g. Knowledge Economy).

2.3.6 Dipaleseng Spatial Development Framework

The Spatial Vision set out in the DM Spatial Development Framework (SDF) (2020) for the Dipaleseng Local Municipality is *“Providing quality affordable services, good governance, rural development and sustainable economic opportunities, while protecting the natural environment”*. The SDF lists six spatial objectives, namely:

- Strategic Objective 1: Movement and Transportation Corridors.
- Strategic Objective 2: Sustainable Economic Development and Concentration.
- Strategic Objective 3: Environmental Conservation and Utilisation.
- Strategic Objective 4: Sustainable Human Settlement Development.
- Strategic Objective 5: Infrastructure Investment.
- Strategic Objective 6: Rural Development and Transformation.

Strategic Objective (SO) 2, 3 and 4 are relevant to the proposed development.

SO2: Sustainable Economic Development and Concentration

A number of sub spatial development strategies are associated with each SO. Spatial Development Strategy 2, Economic Infrastructure Restructuring, identifies the importance of creating incentives for investment in the DM, noting that the municipality must adopt a pro-economic development policy and consider providing incentives to investors who are willing to invest in the municipality. The SDF also identifies the need for skills development and capacity building. The proposed development will create opportunity for private investment and skills development.

S03: Environmental Conservation and Utilisation

The objective of this strategy is to ensure that land use and settlement growth does not impact unnecessarily on the areas environmental services and systems and well as addressing the risks posed by climate change. The relevant spatial development strategies include:

- Spatial Development Strategy 1: Protection of the Municipal Biodiversity & Ecosystem Services.
- Spatial Development Strategy 2: Conservation of Water Resources and Catchment Areas.
- Spatial Development Strategy 3: Sustainable Agriculture.
- Spatial Development Strategy 4: Climate Change Adaptation

The SDF notes that the DM, like all Municipalities, is extremely vulnerable to impacts of climate change.

S04: Infrastructure Investment

The SDF notes that the provision of water, electricity, sanitation and refuse disposal etc, should be fashioned toward achieving the objectives of sustainable development. Spatial Development Strategy 3: Upgrading and maintenance of existing infrastructure: Renewable Energy and Electricity, highlights the importance of supporting renewable energy initiatives combined with improved energy efficiency.

The SDF also notes that the existing power stations impact on health and environment, specifically for communities living near coal power stations like Grootvlei.

The SDF also identifies the potential socio-economic opportunities and challenges associated with the DM. The following are relevant to the proposed development.

Opportunities

- Rich biodiversity and landscapes create opportunities for eco-tourism.
- Strategically located between industrial hubs, mining areas and urban centres.
- The municipality can establish itself as a mineral beneficiation hub as it strategically located within close proximity to industrial hubs and mineral-rich areas.
- Manufacturing and utility sectors can be promoted as the municipality is within close proximity to industrial bases, water, and mineral resources.

Challenges

- low skills base and high unemployment rates.
- Lack of economic diversification.
- Lack of beneficiation facilities.
- ESKOM has a plan to shutdown Grootvlei power station in 2020. The closure will hurt the municipality's economic prospects.

2.3.7 Govan Mbeki Integrated Development Plan

The Govan Mbeki Municipality (GMM) is located in the south-eastern part of Mpumalanga Province and is one of seven local municipalities that make up the Gert Sibande District Municipality (GSDM). The GMM is made up of eight towns and 32 electoral wards. The project site is located within Ward 5 to the east and south east of Secunda. The vision of the Govan Mbeki Municipality (GMM) as set out in the 2020/2021 IDP review is "To be a Model City and Centre of Excellence" The associated Mission Statement is to serve our community by:

- Providing sustainable, quality services.
- Enabling diversified local economic development and job creation.

- Ensuring the financial sustainability of the Municipality.
- Working together with our stakeholders.
- Empowering our workforce.
- Ensuring sound corporate governance.

The Vision, Mission and Values are informed by six (6) Key Strategic objectives of which Strategic Objective 3, To facilitate and create an enabling environment for diversified local economic development, social cohesion, and job creation and Strategic Objective 5, To develop spatially integrated, safe communities and a protected environment, are relevant to the proposed development.

A SWOT analysis undertaken as part of the IDP process identified key strengths, weaknesses, opportunities, and threats. The key findings relevant to the project include:

Strengths

- Petro-Chemical and synthetic fuels plant
- Good tourism potential
- Good infrastructure
- Rail Network
- Mining Area
- University /satellite campus

Opportunities

- Economic development opportunities
- SMME Development
- Industrial Park West of Secunda

Weaknesses

- Ageing electricity infrastructure.
- Pressure on energy sources.

Threats

- Eskom Price increases.
- Unemployment and poverty.
- Climate change.
- Air pollution.
- Water shortages.
- Limited lifespan of mines.
- Increasing population (informal settlements, pressure on housing, unemployment, infrastructure, and municipal services).
- Closure of mining and petrochemical industry.

The IDP provides a summary of the key socio-economic challenges facing the GMM, of which the following are relevant to the project.

- High and rising in unemployment.
- Youth unemployment.
- Creating of local economic development opportunities.
- Closure of mines.
- Increasing dependency rates.
- Low education levels and declining matric pass rate.
- Social development concerns such as clinics, police stations, schools,

The IDP notes that the key economic sectors that contribute to the local economy within in Govan Mbeki community are:

- Trade (including tourism).
- Mining.
- Manufacturing.
- Finance.
- Agriculture.

The IDP lists the Local Economic Development (LED) Strategic Objectives as per the LED Strategy. Of relevance these include:

- Industrialisation of the Govan Mbeki economy using current and future comparative and competitive advantages; and newly targeted industries.
- Diversification of the local economy to reduce overreliance on the two complimentary sectors of coal mining and fuel from coal SASOL production.
- Improvement of living standards of the local citizenry through business and employment opportunities across economic sectors and industries

The LED strategy for the GMM is underpinned by six strategic pillars or programmes, namely:

- **Pillar One:** Govan Mbeki Industrialisation Programme. Of key relevance the programme the programme focuses on manufacturing activities based on sectors and industries with future growth prospects especially agro-processing and **alternative energy sources**. The aim is to diversify the economy and reduce dependence on the two dominant and complimentary sectors of coal mining and fuel production.
- **Pillar Two:** SMME and Cooperatives Incubation Programme. Agriculture and agro processing have been identified as key sectors and industries that can provide leverage for SMME and cooperatives incubation.
- **Pillar Three:** Tourism Hub Development Programme.
- **Pillar Four:** Warehousing and Logistics Hub Development Programme. –
- **Pillar Five:** Education, Skills and Capacity Development Programme. The programme thrust is to develop and or boost the skills and capacity of small businesses and cooperatives within the GMM.
- **Pillar Six:** Marketing and Investment Promotion Programme.

The IDP also refers to the establishment of a Special Economic Zone (SEZ) in the GMM, including the establishment of an industrial park. The proposed Industrial Park is to be located on an identified portion of land north west of Secunda. The success of the park and other industrial developments in the GMM will be dependent on the provision of reliable energy.

Section 7.1 of the IDP provide an overview of the Spatial Development Framework for the GMM. Six strategic objectives (SOs) are listed namely:

- Strategic Objective 1: Economic development and job creation supporting and guiding development.
- Strategic Objective 2: Promoting education, training, and innovation.
- Strategic Objective 3: Accommodating urbanisation and transforming human settlements.
- Strategic Objective 4: Promote the development of the rural areas within Govan Mbeki that can support sustainable economic, social, and engineering infrastructure.
- Strategic Objective 5: Protect biodiversity, water, and agricultural resources.
- Strategic Objective 6: Infrastructure Investment.

Strategic Objective 1, 5 and 6 are relevant to the proposed development.

Strategic Objective (SO) 1: Of specific relevance SO 1 refers to the need to diversify the local mining dependent economy by phasing in renewable energy options, which include concentrated solar power, wind, and natural gas, reducing dependence on coal resources.

Strategic Objective (SO) 5: Of specific relevance SO5 highlights the need to minimise the consumption of scarce environmental resources, particularly water, electricity and land and protect biodiversity, water, and agricultural resources.

Strategic Objective (SO) 6: Of specific relevance SO6 highlights the need to ensure efficient supply of electricity and water install green infrastructure, including renewable energy.

At the local ward level, the needs analysis for Ward 5 indicated that the key challenges and community relevant to the project and that could be supported by SED contributions include repair of street lights, general maintenance of verges, up-grading of taxi rank next to Secunda Mall, cemetery and sports facilities.

SECTION 3: OVERVIEW OF THE STUDY AREA

3.1 INTRODUCTION

Section 3 provides an overview of the:

- The administrative context.
- The demographic context.
- The site and surrounding land uses.

3.2 ADMINISTRATIVE CONTEXT

The study area falls within the Dipaleseng Municipality (DM) and Govan Mbeki Municipality (GMM) within the Mpumalanga Province, with a small section that traverses the northern section of the Lekwa Municipality (LM). The DM, SM and LM are three of seven Local Municipalities that make up the Gert Sibande District Municipality (GSDM)(Figure 3.1). The town of Dipaleseng (Balfour) is the administrative seat of the DM, while Secunda is the set of the GMM. Given that the majority of the alignment falls within the DM and GMM, the focus is on these two areas.



Figure 3.1: Location of Dipaleseng Municipality within the Gert Sibande District Municipality.

3.3 DEMOGRAPHIC OVERVIEW-DIPALESENG MUNICIPALITY

Population

The population of the DM in 2016 was 45 231 (Community Household Survey 2016). Of this total, 32.7% were under the age of 18, 61% were between 18 and 64, and the remaining 6.2% were 65 and older. The figures or the percentage of the population falling within the economically active age category of 18-64 were higher than the figures for the GSDM and Mpumalanga (57.7% and 56.6% respectively). This is likely to be due to the employment opportunities associated with the mining and manufacturing activities in the DM.

The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates to reduced revenue for local authorities to meet the growing demand for services. The traditional approach is based people younger than 15 or older than 64. The information provided provides information for the age group under 18. The total number of people falling within this age group will therefore be higher than the 0-15 age group. However, most people between the age of 15 and 17 are not economically active (i.e., they are likely to be at school).

Using information on people under the age of 18 is therefore likely to represent a more accurate reflection of the dependency ratio. Based on these figures, the dependency ratios for the DM, the GSDM and Mpumalanga in 2016 were 64%, 73.5% and 77% respectively. The lower dependency ratios in the DM reflect the employment and economic opportunities in mining and power sector.

In terms of race groups, Black Africans made up 85.5% of the population on the DM, followed by Whites, 13% and Indian or Asian (1.2%). The main first language spoken in the DM was isizulu, 56.6%, followed by Sesotho (22.7%) and Afrikaans (12.9%).

Households and house types

The total number of households in the DM in 2016 was 14 880, which constituted less than 10% of the total number of households in the GSDM. Of these 59.8% were formal houses, 25.8% were shacks, and 12.7% were flats in backyards. The figures for the GSDM were 67.2%, 13.4%, 6.7% and 8.3% respectively. While the majority of dwellings in the DM are formal structures there are a high percentage of informal structures which reflects the migration of jobseekers to the area and the pressure this in turn places on housing.

In terms of ownership, 41.9% of the dwellings in the DM were owned and fully paid off, while 5.2% were in the process of being paid off. 18.8% were occupied rent free and 12.2% of the dwellings were rented from private individuals. A relatively large percentage of the properties in the DM (47.1%) were owned and or in the process of being paid off. This reflects a relatively stable and established community.

In terms of household heads, approximately 35.8% of the households in the DM and 39.1% of the households in the GSDM were headed by women. These figures similar to the provincial figure of 39.71%. The high percentage of households headed by women in the DM reflects the likelihood that the men have left the area in search of employment opportunities in Gauteng. This is despite the well-developed mining and energy sector in the DM and around Secunda. Women headed households tend to be more vulnerable.

Household income

Based on the data from the 2011 Census, 13.2% of the population of the DM had no formal income, 4.4% earned less than R 4 800, 6.9% earned between R 5 000 and R 10 000 per annum, 19.9% between R 10 000 and R 20 000 per annum and 22.8% between R 20 000 and 40 000 per annum (2016). The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 67.2% of the households in the DM and 65.2% in the GSDM live close to or below the poverty line.

The low-income levels in the DM and GSDM reflect the limited formal employment opportunities outside the urban areas. This is also reflected in the high unemployment rates. The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the DM. This in turn impacts on the ability of the DM to maintain and provide services.

Household income levels are likely to have been impacted by the COVID-19 pandemic. The number of households in the DM and GSDM that live close to or below the poverty line is likely to have increased over the last 18 months. This, coupled with the high dependency ratio, is a major cause of concern for the area.

Employment

The official unemployment rate in the DM in 2016 was 22.3%, while 37.7% were employed, and 35.3% were regarded as not economically active. However, the COVID-19 pandemic is likely to have resulted in an increase in unemployment rates in the DM. Recent figures released by Stats South Africa also indicate that South Africa's unemployment rate is in the region of 36%, the highest formal unemployment rate in the world.

Education

In terms of education levels, the percentage of the population over 20 years of age in the DM with no schooling was 6.6% in 2016, compared to 10.8% and 11.3% for the GSDM and Mpumalanga Province respectively. The percentage of the population over the age of 20 with matric in the DM (2016) was 30.7%, compared to 34.3% and 36.1% for the GSDM and Mpumalanga. The education levels in the DM are therefore lower than the GSDM and Provincial figures.

3.4 MUNICIPAL SERVICES- DIPALESENG MUNICIPALITY

Electricity

Based on 2016 survey, 84.7% of households in the DM had access to electricity, compared to 90% for the GSDM and 93% for Mpumalanga. 15.3% therefore had not access to electricity compared to 9.6% and 6.8% for the GSDM and Mpumalanga respectively.

Access to water

Based on the 2016 survey information, 86.3% of households in the DM were supplied by a regional or local service provider. This compares to 88.4% and 86.85% for the GSDM and Mpumalanga respectively. Of this total 48.1% had piped water in the yard, and 29.7% had piped water in the house. The relatively high percentage that relied on piped water in their yards reflects the relatively high percentage of shacks (25.8%) in the DM.

Sanitation

76.4% of the households in the DM had access to flush toilets (2016), while 15.8% relied on pit toilets and 1.6% on bucket toilets. The relatively high percentage that relied on pit toilets reflects the relatively high percentage of shacks (25.8%) in the DM.

The figure for flush toilets compares to 65.3% and 42.1% for the GSDM and Mpumalanga respectively. 4.4% of the households in the DM reported that they had no access to formal sanitation, compared to 2.6% and 2.8% for the GSDM and Mpumalanga respectively.

Refuse collection

76.4% of the households in the DM had access to regular refuse removal service, while for 13.6% relied on their own dump. The relatively high percentage that relied on their own dump reflects the relatively high percentage of shacks (25.8%) in the DM. The figure for regular service compares to 52.2% for the GSDM.

3.5 DEMOGRAPHIC OVERVIEW-GOVAN MBEKI MUNICIPALITY

Population

The population of the GMM in 2016 was 340 091 (Community Household Survey 2016). Of this total, 32.5% were under the age of 18, 63.3% were between 18 and 64, and the remaining 4.2% were 65 and older. The GMM therefore had a high percentage of the population that fall within the economically active group of 18-65. The population of Ward 5 in 2011 was 9 219 (Census 2011). Of this total, 21.5% were under the age of 18, 72.1% were between 18 and 64, and the remaining 6.4% were 65 and older. Ward 5 like the GMM also had a high percentage of the population that fall within the economically active group of 18-65. The figures are higher than the figures for the GSDM and Mpumalanga (57.7% and 56.6% respectively). This is due to the employment opportunities associated with the industrial, mining and manufacturing activities in the MM.

The dependency ratio is the ratio of non-economically active dependents (usually people younger than 15 or older than 64) to the working age population group (15-64). The higher the dependency ratio the larger the percentage of the population dependent on the economically active age group. This in turn translates to reduced revenue for local authorities to meet the growing demand for services. The traditional approach is based people younger than 15 or older than 64. The information provided provides information for the age group under 18. The total number of people falling within this age group will therefore be higher than the 0-15 age group. However, most people between the age of 15 and 17 are not economically active (i.e., they are likely to be at school).

Using information on people under the age of 18 is therefore likely to represent a more accurate reflection of the dependency ratio. Based on these figures, the dependency ratios for the GMM, the GSDM and Mpumalanga in 2016 were 58%, 73.5% and 77% respectively. The dependency ratio for Ward 5 in 2011 was 38.6%. The lower dependency ratios in the GMM and Ward 5 reflect the employment and economic opportunities in and around Secunda linked to the towns petrochemical and industrial sector.

In terms of race groups, Black Africans made up 85.8% of the population on the GMM, followed by Whites, 12.1% and Coloureds (1.2%). The figures for Ward 5 in 2011 were Whites (72.6%), Black Africans (22.2%), Indian or Asian (2.7%) and Coloureds (2.3%). The main first language spoken in the GMM was isizulu, 60.5%, followed by Siswati, 7.3% and Afrikaans, 6.2%. In Ward 5 Afrikaans (64.6%) followed by English (11.1%) were the main languages spoken.

Households and house types

The total number of households in the GMM in 2016 was 108 892, which constituted approximately 33% of the total number of households in the GSDM. Of these 63% were formal houses, 20.4% were shacks, and 10.6% were flats in backyards. The figures for the GSDM were 67.2%, 13.4%, 6.7% and 8.3% respectively. While the majority of dwellings in the GMM are formal structures there are a high percentage of informal structures which reflects the migration of jobseekers to the area and the pressure this in turn places on housing. In Ward 5 82.5% of the dwellings were formal houses. There were no reported shacks.

In terms of ownership, 46% of the dwellings in the GMM were owned and fully paid off, while 10.6% were in the process of being paid off. 17.9% of the dwellings were rented from private individuals. In Ward 5, 15.2% were owned and fully paid off, 34.2% were in the process of being paid off, and 35% were rented. A relatively large percentage of the properties in the GMM (56.6%) were owned and or in the process of being paid off. This reflects a relatively stable and established community.

In terms of household heads, approximately 30.8% of the households in the GMM and 39.1% of the households in the GSDM were headed by women. These figures similar to the provincial figure of 39.71%. The figure for Ward 5 in 2011 was substantially lower at 15.5%. The high percentage of households headed by women in the GMM reflects the likelihood that the men have left the area in search of employment opportunities in Gauteng. This is despite the well-developed industrial sector in and around Secunda. Women headed households tend to be more vulnerable.

Household income

Based on the data from the 2011 Census, 16.6% of the population of the GMM had no formal income, 3.6% earned less than R 4 800, 5.5% earned between R 5 000 and R 10 000 per annum, 12.6% between R 10 000 and R 20 000 per annum and 16.4% between R 20 000 and 40 000 per annum (2016). The poverty gap indicator produced by the World Bank Development Research Group measures poverty using information from household per capita income/consumption. This indicator illustrates the average shortfall of the total population from the poverty line. This measurement is used to reflect the intensity of poverty, which is based on living on less than R3 200 per month for an average sized household (~ 40 000 per annum). Based on this measure, in the region of 54.7% of the households in the GMM and 65.2% in the GSDM live close to or below the poverty line. The figure for Ward 5 in 2011 was 16.9%.

The low-income levels in the GMM and GSDM reflect the limited formal employment opportunities outside in the urban areas. This is also reflected in the high unemployment rates. The low-income levels are a major concern given that an increasing number of individuals and households are likely to be dependent on social grants. The low-income levels also result in reduced spending in the local economy and less tax and rates revenue for the GMM. This in turn impacts on the ability of the GMM to maintain and provide services.

Household income levels are likely to have been impacted by the COVID-19 pandemic. The number of households in the GMM and GSDM that live close to or below the poverty line is

likely to have increased over the last 18 months. This, coupled with the high dependency ratio, is a major cause of concern for the area.

Employment

The official unemployment rate in the GMM in 2016 was 17.2%, while 48.5% were employed, and 31% were regarded as not economically active. The figures for Ward 5 in 2011 were 3.6%, 63.6% and 32.4% respectively. However, the COVID-19 pandemic is likely to have resulted in an increase in unemployment rates in both the GMM and Ward 5. Recent figures released by Stats South Africa also indicate that South Africa's unemployment rate is in the region of 36%, the highest formal unemployment rate in the world.

Education

In terms of education levels, the percentage of the population over 20 years of age in the GMM and GSDM with no schooling was 6.5% in 2016, compared to 10.8% and 11.3% for the GSDM and Mpumalanga Province respectively. The figure for Ward 5 in 2011 was 1.8%. The percentage of the population over the age of 20 with matric in the GMM (2016) and Ward 5 (2011) was 39.4% and 39.2% respectively, compared to 34.3% and 36.1% for the GSDM and Mpumalanga. The education levels in the GMM and Ward 5 are therefore marginally higher than the DM and Provincial figures.

3.6 MUNICIPAL SERVICES-GOVAN MBEKI MUNICIPALITY

Electricity

Based on 2016 survey, 95.1% of households in the GMM had access to electricity, compared to 90% for the GSDM and 93% for Mpumalanga.

Access to water

Based on the 2016 survey information, 96.9% of households in the GMM were supplied by a service provider. This compares to 86.7% and 80.5% for the GSDM and Mpumalanga respectively. The figure for Ward 5 in 2011 was 91.4%.

Sanitation

94.9% of the households in the GMM had access to flush toilets (2016), while 3.4% relied on pit toilets. This compares to 65.3% and 42.1% for the GSDM and Mpumalanga respectively. The figure for Ward 5 in 2011 was 94.5%. Only 0.5% of the households in the GMM reported that they had no access to formal sanitation, compared to 2.6% and 2.8% for the GSDM and Mpumalanga respectively.

Refuse collection

72.5% of the households in the GMM had access to regular refuse removal service, while for 13.9% the service was provided, but not on a regular basis. This compares to 52.2% for the GSDM (regular) and 5.2% (irregular). 89% of households in Ward 5 had their waste collected on a regular basis by a service provided.

3.7 OVERVIEW OF STUDY AREA

3.7.1 Introduction

The Impumelelo grid connection project is located in the western Mpumalanga highveld, to the east of the large town of Secunda (including Embalenhle) and SASOL's large Secunda industrial complex (Figure 3.2). The alignment runs in a south west to north east direction

over a distance of $\sim 30 \text{ km}^5$, from the rural area north of the small town of Greylingstad in the south west to the outskirts of the small residential settlement of Brendan Village in the north east.

The study area portion west of the R50 is predominantly rural and agricultural in nature, while that to its' east is peri-urban and dominated by historic and current mining activities. In terms of urban receptors, Brendan Village is located $<500 \text{ m}$ north of the project, Embalenhle 3 km to its south east, Evander 5.3 km to the north east, and Greylingstad (Willemsdal) approximately 10 km to the south west. The nearest large town is Secunda 12 km to the east. The broader study area economy is dominated by commercial mixed farming, mining (coal, gold), and heavy industry (Secunda).

The project is located between the N17 corridor (East Rand-Ermelo) to the north, and the R23 (Heidelberg-Standerton) to the south. Primary access to the study area properties is via the north south aligned R50 (N17-Standerton) and the R547 (Kinross-R23 via Val). The R547 consists of two non-continuous segments (N and S)⁶ connected by a portion of the R50 (Photographs 3.1, 3.2 and 3.3)

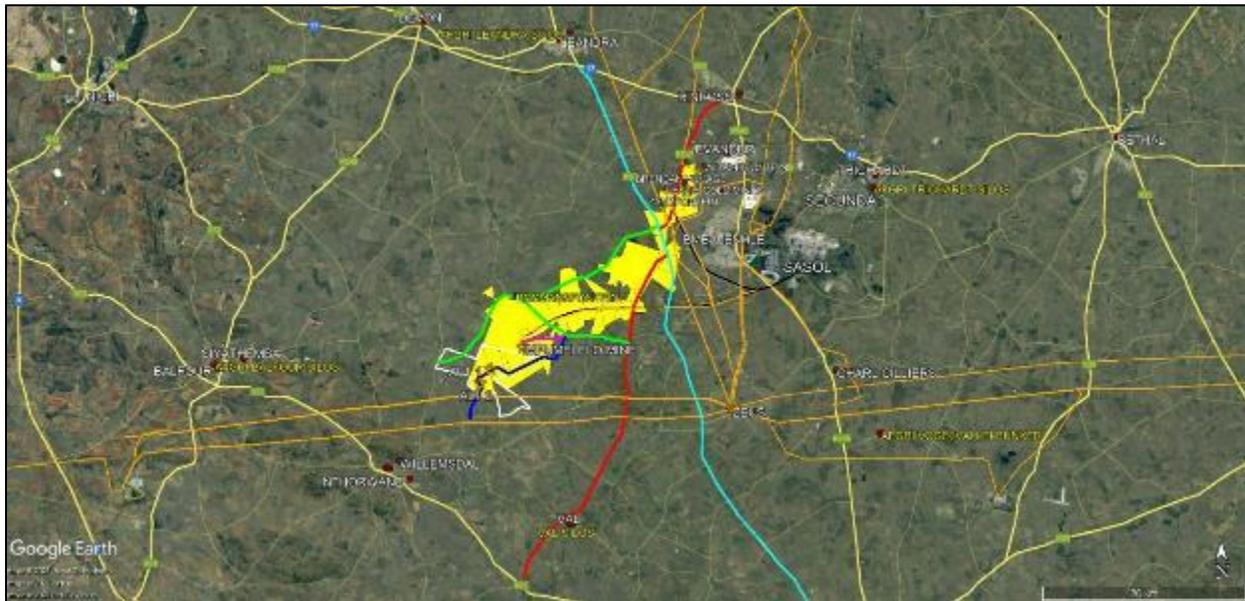


Figure 3.2: Properties affected by Impumelelo WEF grid connection proposal (yellow) in relation to WEF site properties (white), local settlements, overhead power lines (orange lines), coal conveyor corridors (back), and key roads, namely the R547 S and N (red), R50 (light blue), Mahemsfontein gravel road (dark blue), Boschmansfontein roads (green), Impumelelo mine road (pink)

⁵ All distances linear.

⁶ For the purpose of discussion, these have been labelled North and South, with the R547 N accounting for the portion between Kinross and the R50 (Springbokdraai), and the R547 S for that between the R50 (Vaalbank) and the R23.



Photograph 3.1: Intersection of R547N (foreground) and road which provides access to Brendan Village from the south, via the SASOL Simunye shaft and Zandfontein substation premises



Photograph 3.2: Intersection of R50 (foreground) and R547S, looking west, Vaalbank farmsteads in the background



Photograph 3.3: R547S south of residential area on Vaalbank (280/2 and 280/4), looking north (towards R50 intersection)

The study area has a well-developed public gravel road network, with most properties accessible via alternative roads. Key roads serving the study area west of the R50 are the

Boschmansfontein road (S and N)⁷ and the Mahemsfontein gravel road which intersects with it east of SASOL's Impumelelo coal mine (Photographs 3.4 and 3.5). The mine is accessed via a private road in the westward continuation of the Boschmansfontein Road (S). The Mahemsfontein Road is accessed from the south via the Greylingstad-Devon Road and then the Roodebank Road and provides access to the WEF site and Holgatsfontein game farm adjacent to its east (Photograph 3.6). Properties located along the Impumelelo coal conveyor line make use of roads adjacent to the corridor (Photograph 3.7). The Boschmansfontein Road portion up to the Mahemsfontein road intersection and its continuation up to Impumelelo mine is tarred. The other relevant roads are gravel roads.



Photograph 3.4: Intersection of R547 (foreground) and Boschmansfontein Road south (which continues west as Impumelelo mine access road west of Mahemsfontein Road intersection)



Photograph 3.5: Intersection of Boschmansfontein Road S/ Impumelelo mine access road (foreground) and Mahemsfontein Road (south, right), looking east. The Mahemsfontein Road continues north across the crossing as the Boschmansfontein Road

⁷ Two separate roads are both signposted 'Boschmansfontein' without further designation. The roads have consequently been labelled N and S.



Photograph 3.6: Looking north-east along Mahemsfontein Road, Platkop 543/ farm yard (trees) adjacent to the west (left) of the road, chalet and game pens on Holgatsfontein game farm (Platkop 543/11 to the east (right))



Photograph 3.7: Road adjacent to the north of the Impumelelo mine coal conveyor corridor on Uitspan 529

Land use in the study area is dominated by mixed farming operations (Photograph 3.8). Cadastral units are typically modest, and most farming operations consist of several adjacent or nearby properties farmed as one unit. The study area is mainly associated with beef cattle and summer rainfall field crops. Soy and maize are the key crops, but sunflowers are also grown. Most of the cropping is done under dryland conditions. In the immediate study area, irrigated cropping is only associated with the properties located between the R50 and the Waterval River to the east (west of Embalenhle). (Photograph 3.9) The nearest silo complexes are located at Val (adjacent to the R547), in Greylingstad, Leandra, Balfour and Trichardt.



Photograph 3.8: Cattle and cultivated fields on Hartbeestfontein (WEF site).

Land comprised of heavier turf soils is considered unsuitable for cropping and is used as rangeland. Beef cattle predominate (Photograph 3.10). The veld carrying capacity is high, 1 head of cattle to 5 ha (2018).⁸ Harvest residue is utilized as fodder on many properties. Many operations also manage areas of pasture (typically Oulandsgras – *Eragrostis curvula*) for own and commercial hay production (Photograph 3.11). Game has been introduced onto many properties in small numbers, but commercial game farming and associated hunting in the immediate study area appears to be limited to Holgatsfontein game farm south east of the Impumelelo mine (see below).



Photograph 3.9: Centre-pivot irrigation on Springbokdraai 277/3 along the portion of the property traversed by the R547N (foreground).

⁸ <https://gis.elsenburg.com/apps/cfm/#>



Photograph 3.10: Beef cattle on Platkop 543/5 south of the Mahemsfontein Road.



Photograph 3.11: Baled hay on Platkop 543/4 north of the Mahemsfontein Road

Apart from the extreme northern portion (Brendan Village), the study area settlement pattern is sparse. Dwellings are concentrated along or near major public roads, particularly the R50 and the R547 S (Photograph 3.12). Many properties are used purely as cropping and/or grazing. Due to the multi-farm nature of local farming operations, many historic farmsteads are no longer inhabited, with inhabitation (owners and staff) instead concentrated on base farms). Redundant farmsteads on some properties are leased out for residential purposes (Photograph 3.13). Small numbers of caretaker labour may be associated with secondary properties, i.e., where the owner and most of the labour force live on the base farm.



Photograph 3.12: Farmstead and outbuildings on Springbokdraai 277/3 located approximately 340 m SE of the R50/R547N intersection, seen from the R50



Photograph 3.13: Farmstead leased out as accommodation on Mahemsfontein 544/8

The sense of place in the broader study area is characterized by historic and ongoing mining activities and associated industrial land uses. SASOL's Impumelelo coal mine is located directly to the north of the Impumelelo WEF site (the property is affected by both proposed line alternatives) (Photograph 3.14). Large mine dumps (Evander Gold) straddle portions of four properties south of Zandfontein substation (Photograph 3.15).



Photograph 3.14: SASOL Impumelelo coal mine



Photograph 3.15: Mine dumps on Evander Gold properties to the east of the R547 N south of Zandfontein substation.

Two coal conveyor line corridors traverse the study area, namely one traversing the central study area W-E from Impumelelo mine to SASOL, and another from a coal mine north of Brendan Village to SASOL, which traverses the eastern portion of the study on alternating sides of side of the R547N (Photographs 3.16 and 3.17).



Photograph 3.16: Coal conveyor line from Impumelelo mine to SASOL Secunda



Photograph 3.17: Coal conveyor line portion located to the west of the R547N looking north

Eskom’s large Zeus substation is located approximately 20 km east of the project. Several substations are associated with SASOL Secunda and mining operations in the study area. The

only substation of relevance is Zandfontein adjacent to SASOL's Simunye Shaft premises south of Brendan Village into which the Impumelelo WEF project is proposed to feed (Photograph 3.18). Only 2 x 132 kV lines currently feed into Zandfontein.



Photograph 3.18: 132 kV lines entering Zandfontein substation

Three broad overhead power line corridors are associated with the study area, namely a ~1.1 km corridor which carries 4 x north south aligned lines (2 x 400 kV, 2 x from Leslie mine) east of the R50/R547 N-intersection; two lines associated with the Impumelelo coal conveyor line adjacent to the line; and 2 x 40 kV lines which traverse the southernmost portion of the southernmost project-affected property (Mahemsfontein 544/RE) (Photographs 3.19, 3.20 and 3.21). Properties (or property portions) along the R547 S and most of the Mahemsfontein road are not currently affected by power lines.



Photograph 3.19: Overhead lines to Leslie mine crossing the R547N on Zandfontein 130/9 (Evander)



Photograph 3.20: Overhead lines to Impumelelo mine between cropped fields on Wolvenfontein 534/20 (Roodebank) and the Impumelelo coal conveyor corridor to its north, looking west.



Photograph 3.21: Eskom 400 kV lines traversing the southernmost portion of Mahemsfontein 544/RE, looking east from the Mahemsfontein Road. These are the only lines located in the study area portion south of Impumelelo mine.

No tourism receptors are located in the immediate study area. SASOL Secunda dominates the broader sense of place in the study area. Trophy hunting and associated accommodation is associated with Holgatsfontein (see below).

3.7.2 Affected landowners

The Impumelelo WEF grid connection potentially affects a total of 44 properties⁹. This is largely related to the relatively small sizes of cadastral units in the study area over the ~30 km distance covered by the proposed infrastructure (Alts) (Figure 3.3). Most of the proposed alignment is common to alignment Alternative 1 and 2. The remaining sections of Alternative 1 and 2 that are not shared only affect the terminal portions of the proposal associated with

⁹ Near-identical alignment alternatives and alignments meanderings across existing roads have been rationalized. For the sake of consistency, alignment portions along the R457N, R50 and R547S and the Impumelelo coal conveyor corridor have been centred on these features. Properties up to 300 m on either side of the rationalized alignment have been included.

the 2 proposed WEF project substations and Zandfontein substation, respectively. The bulk of the collective alignment follows existing corridors, namely roads such as the Mahemsfontein Road, the R547 and R50, and the Impumelelo coal conveyor line. Deviations are only associated with the terminal portions (both alternatives).

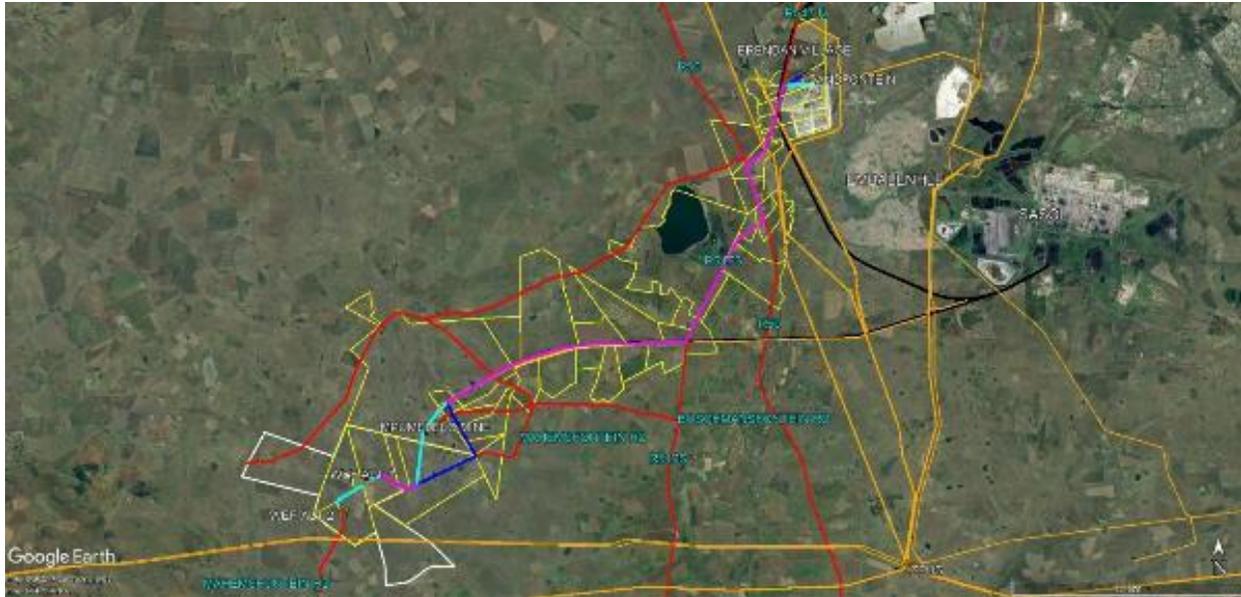


Figure 3.3: Overview of Impumelelo grid connection proposal and properties affected by 500 m assessment corridor. Alternative 1 alignment only indicated in dark blue, Alternative 2 only in light blue, and common shared alignment in pink. Also indicated are the Impumelelo WEF site (white), key roads (red), coal conveyor belt corridors (black), and existing overhead power lines (orange)

For the purpose of a more detailed discussion, the project route has been subdivided into 5 sections, namely (from north to south):

- Portion along the R457N from Brendan Village to the 400 kV corridor east of Springbokdraai.
- Portion along the R50 (including some properties also adjacent to the R547 N and R547 S).
- Portion between the R50/R547 S intersection and the Impumelelo mine coal conveyor line.
- Portion along the Impumelelo mine coal conveyor line east of Impumelelo mine.
- Portion from Impumelelo mine to the relevant WEF site properties.

Brendan Village to 400 kv corridor

The northernmost project section affects a peri-rural area visually dominated by large mine dumps located to the east of the R547 N south of Brendan Village. Most of the relevant properties straddle the R547 (Figure 3.4). Large tracts of open veld are located to the west of the road. Two overhead line corridors and a coal conveyor line traverse the area, while an additional 2 x 132 kV lines feed into Zandfontein substation from the east (and then north). The SASOL Simunye Shaft premises are located adjacent to the substation.



Figure 3.4: Overview of properties (yellow outlines) affected by Impumelelo grid connection proposal alignment portion from Brendan Village to 400 kV corridor. Alternative 1 alignment indicated in dark blue, Alternative 2 in light blue, and common alignment section in pink. Also indicated are local roads (red), coal conveyor belt corridors (black), existing overhead power lines (orange, 400 kV corridor in bold), and contiguous cropping areas on affected properties (green fill)

This alignment section affects 7 properties immediately to the east of the cropping areas on Springbokdraai 277/2 and 277/3 (Table 3.1). The bulk of the properties are owned either by the Govan Mbeki LM, SASOL, or Evander Gold Mining. Residential receptors are restricted to the small Brendan Village residential area (approximately 470 m to the north of Alt 1) and potentially the node at the Leslie Engen garage approximately 530 m west of the common alignment. The only cropping areas associated with this alignment section are peripheral portions of dryland fields on Zandfontein 130/5 immediately to the north of Zandfontein substation (Photograph 3.22-3.25).

Table 3.1: Properties affected by Impumelelo WEF grid corridor Alt 1, Alt 2 and common (C) alignments between Brendan Village and 400 kV corridor (N to S)

PROPERTY	OWNER	KM ¹⁰	RES ¹¹	LAND USE	EXISTING
Zandfontein 130/5	Govan Mbeki LM	1.2 (1)	Brendan Village (470 m)	Brendan Village; Cropping (dryland); Grazing (likely)	2 x 400 kV; R547 N
Zandfontein 130/19	Unknown	Point (C) (outlier)	Leslie ENGEN (530 m)	Small built cluster; Mining; Veld	2 x OHL (Leslie); R547 N; Coal conveyor
Zandfontein 130/3/RE	Govan Mbeki LM	1.3 (1) 1.6 (2) 0.64 (C)	n.a.	Veld	2 x OHL (Leslie); R547 N; Coal conveyor
Zandfontein 130/2/RE	SASOL [?]	0.16 (C) 1.2 (1)	n.a.	SASOL Simunye shaft;	Zandfontein SS; 2 x 132 kV lines;

¹⁰ Approximate linear distance over which property is affected by corridor.

¹¹ Distances given are to rationalized central line of assessment corridor.

PROPERTY	OWNER	KM ¹⁰	RES ¹¹	LAND USE	EXISTING
				Zandfontein SS; Mining (tailings); Dryland cropping	2 x OHL (Leslie); R547 N; Coal conveyor
Zandfontein 130/8	Evander Gold Mining	0.68 (C)	n.a.	Mining (tailings); Veld	2 x OHL (Leslie); R547 N; Coal conveyor
Zandfontein 130/9		0.67 (C)	n.a.	Mining (tailings); Veld	2 x OHL (Leslie); R547 N; Coal conveyor
Grootspruit 279/RE		0.44 (C)	n.a.	Mining (tailings); Veld	2 x OHL (Leslie); R547 N; Coal conveyor



Photograph 3.22: Houses in Brendan Village seen from across the broad open strip separating the settlement from the R547N to the west



Photograph 3.23: Entrance to SASOL's Simunye Shaft premises and 132 kV lines entering Zandfontein substation, seen from the access road (S) to Brendan Village (distant background).



Photograph 3.24: Mine dumps on portions of 4 properties south of Zandfontein substation



Photograph 3.25: 400 kV corridor crossing R547N in the northern portion of Springbokdraai 277/3, looking north.

Properties along R50

For the purpose of discussion, properties along the R50 have been grouped together in this section and are not discussed in sections dealing with properties along the R547N or R547S. This section is only affected by the common alignment (Figure 3.5). This section affects six properties, belonging to at least two different land owners (Table 3.2). All the properties are traversed by the R50, and some also by the R547N or R547S. An overhead line corridor (2-4 lines) traverses the extreme eastern portion of the site properties. The portions of these properties affected by the proposal are not currently affected by any lines. What appears to be vacant servitudes within the project corridor are associated with both properties.



Figure 3.5: Overview of properties (yellow outlines) affected by Impumelelo grid connection proposal alignment portion along R50. The common alignment section is indicated in pink. Also indicated are local roads (red), coal conveyor belt corridors (black), existing overhead power lines (orange), and contiguous cropping areas on affected properties (green fill).

Table 3.2: Properties affected by Impumelelo WEF grid corridor Alternative 1, Alternative 2 and common (C) alignments along the R50 (N to S)

PROPERTY	OWNER	KM ¹²	RES ¹³	LAND USE	EXISTING ¹⁴
Springbokdraai 277/2	De la Rey, Mr Mattheus	1.7 (C) (outlier)	Springbokdraai (1.3 km)	Grazing (livestock) Dryland cropping; Irrigated cropping	2 x 400 kV lines; R547 (N)
Springbokdraai 277/3		0.59 (C) 1.7 (C)	Springbokdraai (230 m)		2 x 400 kV lines; R50; R547 (N)
Springbokdraai 277/5	Unknown	1.2 (C)	n.a.	Grazing (livestock) Dryland cropping; Irrigated cropping	R50
De Bank of Vaalbank 280/1	Unknown	0.68 (C)	n.a.	Grazing (livestock) Dryland cropping; Irrigated cropping	R50
De Bank of Vaalbank 280/2	Louwrens, Mr Jacobus	0.35 (C) 0.1 (C)	Vaalbank x 2 (180 m)	Grazing (livestock); Dryland cropping; Irrigated cropping	4 x 400 kV lines; R547 (S); R50
De Bank of Vaalbank 280/RE	Unknown	0.43 (C)	n.a.	Grazing (livestock) Dryland cropping; Irrigated cropping	4 x 400 kV lines R547 (S)

¹² Approximate linear distance over which property is affected by corridor.

¹³ Distances given are to rationalized central line of assessment corridor.

¹⁴ Shading indicates Impumelelo WEF site properties.

Dwellings are located on Springbokdraai 277/2 and 277/3, and on De Bank or Vaalbank ('Vaalbank') 280/2 (two yards). The farmstead on Springbokdraai 277/3 is located <300 m to the south and east of the proposed alignment, and one of the two on Vaalbank 180 m (south) (Photographs 3.26 and 3.27).



Photograph 3.26: Cropping area to the east of Springbokdraai farm yard (277/3, background) south of the R547N



Photograph 3.27: Dwellings on Vaalbank 280/2 SW of the R547S-R50 intersection, approximately 170 m south of the R547S

This section is characterized by large sale centre-pivot irrigated cropping between the R50 and the Waterval River. The balance of the relevant properties is used for dryland cropping and/ or grazing (Photographs 3.28 and 3.29).



Photograph 3.28: Centre-pivot irrigated cropping to the east of the R50 on Vaalbank 280/1, SASOL Secunda in the background



Photograph 3.29: Portion of the R50 between Vaalbank and Springbokdraai flanked by rangeland and fields used for dryland cropping (left middle ground), looking north.

Properties along the R547 south

This section is only affected by the common alignment. With the exception of Roodebank 323/20 (affected by Impumelelo mine conveyor line corridor), none of the (affected portions of the) relevant properties are currently affected by overhead lines or mining infrastructure (Figure 3.6).

This line segment affects six properties which are owned by at least three land owners (Table 3.3). One of the land owners, Mr Klopper is also the owner of some of the Impumelelo WEF site properties. No farmsteads are located within 1 km of this alignment section. Two sizeable clusters of farm labourers' dwellings are located on Vaalbank 277/4 and Roodebank 323/20, both associated with the respective nearby farmsteads on adjacent properties, viz. Vaalbank (see above) and Roodebank (see below). The cluster on Vaalbank is located 30 m from the proposed alignment, and that on Roodebank approximately 380 m (Photograph 3.30). The cluster on Roodebank is located approximately the same distance from the Impumelelo mine coal conveyor corridor. The route-adjacent portions of the properties in this section are used for dryland cropping and grazing (Photograph 3.31).



Figure 3.6: Overview of properties (yellow outlines) affected by Impumelelo grid connection proposal alignment portion along R547S. The common alignment section is indicated in pink. Also indicated are local roads (red), coal conveyor belt corridors (black), existing overhead power lines (orange), and contiguous cropping areas on affected properties (green fill).

Table 3.3: Properties affected by Impumelelo WEF grid corridor Alt 1, Alt 2 and common (C) alignments along the R547S (N to S)

PROPERTY	OWNER ¹⁵	KM ¹⁶	RES ¹⁷	LAND USE	EXISTING
De Bank of Vaalbank 280/4	Unknown	0.74 (C)	Cluster labour (30 m)	Grazing (livestock)	R547 S
Leeuwpan 532/21	Unknown	3.8 (C)	n.a.	Dryland cropping; Grazing (livestock)	R547 S
De Bank of Vaalbank 280/6	Urquhart, Mr Dion	1.3 (C)	Kingsley (1.4 km)	Dryland cropping; Dryland cropping	R547 S
Leeuwpan 523/16	Klopper, Mr Lucas	0.58 (C)	n.a.	Dryland cropping	R547 S
Roodebank 323/16	Urquhart, Mr Dion	2.3 (C)	n.a.	Dryland cropping; Grazing (livestock)	R547 S
Roodebank 323/20	Urquhart, Mr Archibald	0.57 (C)	Cluster labour (380 m)	Dryland cropping; Grazing (livestock)	2 x OHL (SASOL) Coal conveyor; R547 S

¹⁵ Shading indicates Impumelelo site property owners.

¹⁶ Approximate linear distance over which property is affected by corridor.

¹⁷ Distances given are to rationalized central line of assessment corridor.



Photograph 3.30: Sizeable farm labourer dwelling cluster on Vaalbank 280/4 north of the R547S.



Photograph 3.31: Dryland cropping on Vaalbank 280/6 (Kingsley) adjacent to the east of the R547, SASOL Secunda in the background.

Properties along Impumelelo coal conveyor corridor

This alignment section is only affected by the common alignment. Only the limited portions of the relevant properties would be affected (Figure 3.7). All the relevant properties are affected by or border onto the Impumelelo mine coal conveyor corridor and the 2 associated overhead power lines and conveyor line-adjacent roads. The proposed line would essentially affect the same portions of the relevant properties.

This section affects 12 properties, owned by at least 4 landowners (Table 3.4). One of the landowners, Mr Klopper, is also the owner of some of the Impumelelo WEF site properties. Dwellings on 2 properties are located within 1 km of the proposed alignment, namely on Wolvenfontein 534/18 (Wolvenfontein, 840 m) and 534/20 (Roodebank, 390 m). As indicated, the proposed alignment would affect these properties in more or less the same place as the existing coal conveyor corridor. Land use consists of dryland cropping and grazing. Cropping areas are located to the north and south of the coal conveyor line but concentrated along the R547S/ conveyor line intersection (Photographs 3.32 and 3.33).

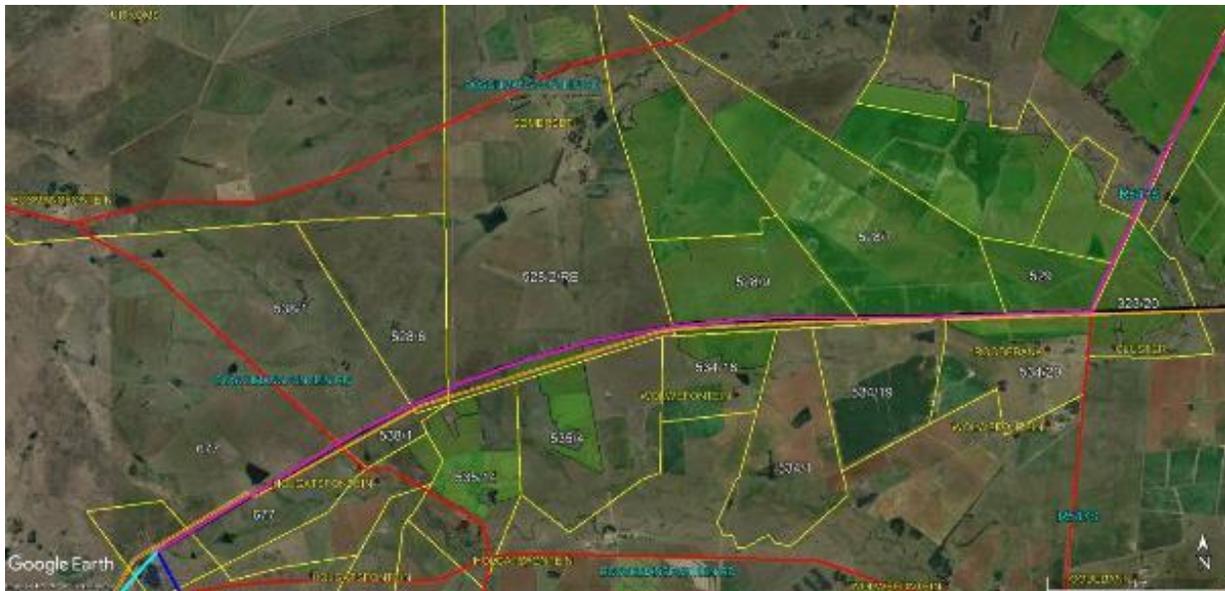


Figure 3,7: Overview of properties (yellow outlines) affected by Impumelelo grid connection proposal alignment portion along Impumelelo mine conveyor belt corridor. Alt 1 alignment only indicated in dark blue, Alt 2 only in light blue, and common alignment sections in pink. Also indicated are local roads (red), coal conveyor belt corridors (black), existing overhead power lines (orange), and contiguous cropping areas on affected properties (green fill).

Table 3.4: Properties affected by Impumelelo WEF grid corridor Alt 1, Alt 2 and common (C) alignments along the Impumelelo mine coal conveyor (clockwise from Raskop 538/1)

PROPERTY ¹⁸	OWNER ¹⁹	KM ²⁰	RES ²¹	LAND USE	EXISTING
Raskop 538/1	Unknown	0.91 (C)	n.a.	Grazing (livestock)	2 x OHL (SASOL); Coal conveyor
Kaalspruit 528/6	Urquhart, Mr Archibald	0.45 (C)	n.a.	Grazing (livestock)	2 x OHL (SASOL); Coal conveyor
Kaalspruit 528/2/RE	Louwrens, Mr Jacobus	2.6 (C)	Somerset (2.4 km)	Dryland cropping; Grazing (livestock)	2 x OHL (SASOL); Coal conveyor
Kaalspruit 528/9	Urquhart, Mr Dion	2.1 (C)	n.a.	Dryland cropping	2 x OHL (SASOL); Coal conveyor
Kaalspruit 528/7		1.6 (C)	n.a.	Dryland cropping	2 x OHL (SASOL); Coal conveyor
Uitspan 529	Klopper, Mr Lucas	0.95 (C) 0.57 (C)	n.a.	Dryland cropping	Coal conveyor; R547 S
Wolvenfontein 534/20	Urquhart, Mr Archibald	1.6 (C)	Roodebank (390 m)	Dryland cropping; Grazing (livestock)	2 x OHL (SASOL); Coal conveyor
Wolvenfontein 534/19		1.5 (C)	n.a.	Dryland cropping; Grazing (livestock)	Coal conveyor

¹⁸ Shading indicates WEF site property.

¹⁹ Shading indicates Impumelelo site property owners.

²⁰ Approximate linear distance over which property is affected by corridor.

²¹ Distances given are to rationalized central line of assessment corridor.

PROPERTY ¹⁸	OWNER ¹⁹	KM ²⁰	RES ²¹	LAND USE	EXISTING
Wolvenfontein 534/1	Klopper, Mr Lucas	0.40 (C)	n.a.	Dryland cropping; Grazing (livestock)	Coal conveyor
Wolvenfontein 534/18		1.3 (C)	Wolvenfontein (840 m)		Coal conveyor
Holgatsfontein 535/4	Unknown	1.7 (C)	n.a.	Dryland cropping; Grazing (livestock)	Coal conveyor
Holgatsfontein 535/14	Unknown	0.76 (C) (outlier)	n.a.	Dryland cropping; Grazing (livestock)	Coal conveyor



Photograph 3.32: Dryland maize cropping on Farm 529 (Klopper) immediately the north of the Impumelelo mine coal conveyor corridor, looking west from R547S



Photograph 3.33: Dryland maize cropping on Kaalspruit 528/7 to the west of the R547 S, looking north from the Impumelelo coal conveyor corridor

Sasol Impumelelo Mine to WEF substation alternatives

This section of the portion is affected by portions of Alternatives 1 and 2 and the common alignment (Figure 3.8). Apart from the SASOL property and Mahemsfontein 544/RE, none of the properties are currently affected by overhead lines.



Figure 3.8: Overview of properties (yellow outlines) affected by Impumelelo grid connection proposal alignment portion between Impumelelo mine and WEF substation Alternative. Alt 1 alignment in dark blue, Alt 2 in light blue, and common alignment in pink. Also indicated are local roads (red), coal conveyor belt corridors (black), existing overhead power lines (orange), contiguous cropping areas on affected properties (light green fill) and properties used for commercial hunting (dark green)

This section affects 13 properties which are owned by six land owners (Table 3.5). Six of the properties form part of the Impumelelo WEF site. Inhabited farmsteads are located on Mahemsfontein (190 m, Alt 2) and Platfontein (100 m, Alt 1). Mahemsfontein is leased out for residential purposes, and Platfontein is inhabited by a caretaker labourer (Photograph 3.34). Both structures on Holgatsfontein game farm are located within 1 km distance of the proposed alignment (Alt 1), with the chalet on Platkop 543/11 located 400 m away.

Table 3.5: Properties affected by Impumelelo WEF grid corridor Alt 1, Alt 2 and common (C) alignments from Impumelelo mine to WEF substation Alts (clockwise from Raskop 677)

PROPERTY ²²	OWNER ²³	KM ²⁴	RES ²⁵	LAND USE	EXISTING
Raskop 677	SASOL mining	1.7 (2)	n.a.	Impumelelo mine	2 x OHL (SASOL); Coal conveyor
Holgatsfontein 535/19	De Vos, Mr Piet-Nel	0.48 (1) 0.38 (2) 0.41 (C)	n.a.	Impumelelo mine	2 x OHL (SASOL); Coal conveyor
Holgatsfontein 535/18	Kotze, Mr Jan	0.64 (1)	Holgatsfontein (1.4 km)	Impumelelo mine	
Holgatsfontein 535/16	De Vos, Mr Piet-Nel	0.75 (1)	n.a.	Dryland cropping; Grazing (livestock)	
Holgatsfontein 535/15	Botha, Mr Janko	0.70 (2)	n.a.	Commercial hunting; Game farming	No currently affected by overhead lines
Holgatsfontein 535/6		0.04 (1)	Holgatsfontein (860 m)		
Platkop 543/11		2.8 (1) 0.47 (C)	Chalet (400 m)		
Mahemsfontein 544/RE	Van Jaarsveld, Mr Dawie	1.7 (2)	Ruins + Uninhabited	Dryland cropping; Grazing (livestock)	WEF site; SS Alt 2 site; 2 x 400 kV lines
Mahemsfontein 544/8		1.4 (2)	Mahemsfontein (190 m)	Dryland cropping; Grazing (livestock)	WEF site; Farmstead leased out
Mahemsfontein 544/7		0.44 (2)	n.a.	Dryland cropping; Grazing (livestock)	WEF site
Platkop 543/5	Klopper, Mr Lucas	0.73 (1) 0.89 (2) 0.86 (C)	Ruin	Dryland cropping; Grazing (livestock)	WEF site SS Alt 1 site
Platkop 543/9		0.57 (C)	n.a.	Grazing (livestock)	WEF site
Platkop 543/4		2.8 (1) 1.8 (2) 0.30 (C)	Platkop (100 m)	Grazing (livestock)	WEF site; Only caretaker resident

²² Shading indicates WEF site property.

²³ Shading indicates Impumelelo site property owners.

²⁴ Approximate linear distance over which property is affected by corridor.

²⁵ Distances given are to rationalized central line of assessment corridor.



Photograph 3.34: Farmstead on Platkop (Klopper) seen from the Mahemsfontein road. Only a caretaker currently lives on Platkop. Note the Impumelelo mine infrastructure in background.

The SASOL Raskop 677 property and adjacent ones largely consist of veld used for grazing. Cropping activities are confined to the area between the two WEF substation alternatives and concentrated on portions of Mahemsfontein (van Jaarsveld). Limited residential receptors are located in the area (Photographs 3.35 and 3.36).



Photograph 3.35: Maize stubble on Mahemsfontein 544/8 (yard on background) adjacent to the north/west of the Mahemsfontein gravel road



Photograph 3.36: Area to the east of Mahemsfontein road (right) on Mahemsfontein 544/RE north of WEF substation Alt 2 which would be affected by line Alt 2, cropping areas in middle distance

Four contiguous properties along the Mahemsfontein road south of Impumelelo mine are used for game farming and commercial hunting (including trophy hunting). The Holgatsfontein game farm operation is owned by Mr Janko Botha and consists of Holgatsfontein 535/6 and 535/15, and Platkop 543/10 and 543/11. The properties comprise an area of approximately 1 600 ha and activities consists of game farming, game harvesting for the commercial hunting (meat and trophy hunting). Hunting takes place year-round. Two accommodation facilities for hunters are located on the property, namely a large chalet on 543/11, and a small cluster of chalets on Holgatsfontein 535/6 (Photograph 3.37). Mr Botha is based on a farm located in the broader study area. Labour is based on this main farm. Approximately 27 permanently employed labourers are associated with the game farming operation (albeit as part of larger farming operations). The hunting operation is sensitive to restrictions imposed by people presence and infrastructure. As Buffalo are hunted, large calibre rifles with long ranges are used. Current restrictions are associated with the Mahemsfontein gravel road and Impumelelo mine.



Photograph 3.37: Chalet used by hunters and game pens (auctioning) on Platkop (Holgatsfontein game farm) looking east from the Mahemsfontein Road

3.1.2 Relationship to receptors

As indicated, the bulk of the alignment follows established infrastructure corridors. Key receptors are dwellings/ accommodation located within 1 km of the alignment, potentially affected existing dryland and irrigated cropping areas, and properties used for commercial hunting (Figure 3.9).

Residential receptors within 1 km of the alignment are located on 11 properties, of which 9 are located within 500 m (Table 3.6). Brendan Village (470 m) is already affected by overhead lines, Zandfontein substation and SASOL Simunye Shaft infrastructure. Of the rural receptors, the farmsteads on Roodebank (534/20) and its associated labour cluster (323/20) are already affected by the coal conveyor line and associated overhead lines, while the farmsteads on Platkop and Mahemsfontein are inhabited by a caretaker (Platfontein) and tenant (Mahemsfontein). Key receptors are associated with Vaalbank (2 farmsteads and a large farm labourer residential cluster on either side of the R547S), and Springbokdraai 277/3. The farm labourers' houses on Vaalbank 280/4 are located approximately 30 m north of the common alignment, and the nearest farmstead 170 m to the south. The Springbokdraai farmstead is located approximately 210 m east of the R50 and 260 m south of the R547N. None of the Vaalbank or Springbokdraai dwellings are currently affected by nearby overhead lines.

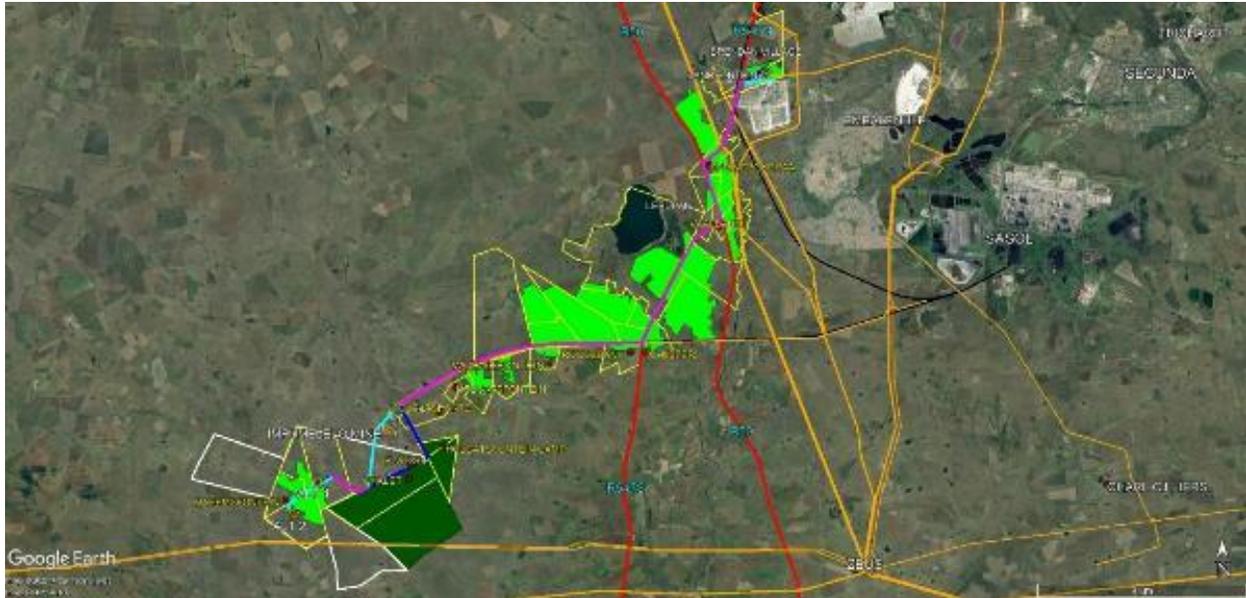


Figure 3.9: Overview of key properties (yellow outlines) in relation to Impumelelo grid connection proposal: Alt 1 only (dark blue), Alt 2 only (light blue), and common alignment sections (pink). Also indicated are key roads (red), coal conveyor belt corridors (black), existing overhead power lines (orange). Sensitive receptors are contiguous cropping areas (light green fill), commercial hunting properties (dark green), and residential/ tourism receptors located within 1 km of the alignment (labelled)

Table 3.6: Summary of key properties affected by Impumelelo WEF grid corridor Alt 1, Alt 2 and common (C) alignments

PROPERTY ²⁶	OWNER ²⁷	KM	RES ²⁸	LAND USE ²⁹	EXISTING ³⁰
Zandfontein 130/5	Govan Mbeki LM	1.2 (1)	Brendan Village (470 m) ³¹	Dryland cropping	2 x 400 kV; R547 N
Zandfontein 130/19	Unknown	Point (C) (outlier)	Leslie ENGEN (530 m)	n.a.	2 x OHL (Leslie); R547 N (Coal conveyor)
Zandfontein 130/2/RE	SASOL [?]	0.16 (C) 1.2 (1)	n.a.	Dryland cropping	Zandfontein SS; 2 x 132 kV lines; 2 x OHL (Leslie); R547 N; (Coal conveyor)
Springbokdraai 277/3	De la Rey, Mr Mattheus	0.59 (C) 1.7 (C)	Springbokdraai (230 m)	Irrigated cropping	2 x 400 kV lines; R50; R547

²⁶ Shading indicates WEF site property.

²⁷ Shading indicates Impumelelo site property owners.

²⁸ Dark shading indicates inhabited dwellings or tourism receptors located within 500 m of the corridor, and light shading 500 m – 1 km.

²⁹ Only properties on which cropping areas are affected by corridor included.

³⁰ Shading indicates Impumelelo WEF site properties.

³¹ Distance from centre of rationalized assessment corridors.

PROPERTY ²⁶	OWNER ²⁷	KM	RES ²⁸	LAND USE ²⁹	EXISTING ³⁰
Springbokdraai 277/5	Unknown	1.2 (C)	n.a.	Irrigated cropping	R50
De Bank of Vaalbank 280/1	Unknown	0.68 (C)	n.a.	Irrigated cropping	R50
De Bank of Vaalbank 280/2	Louwrens, Mr Jacobus	0.35 (C) 0.1 (C)	Vaalbank x 2 (180 m)	Irrigated cropping	4 x 400 kV lines; R547 S; R50
De Bank of Vaalbank 280/RE	Unknown	0.43 (C)	n.a.	Irrigated cropping	4 x 400 kV lines; R547
De Bank of Vaalbank 280/4	Unknown	0.74 (C)	Cluster labour (30 m)	n.a.	R547 S
Leeuwan 532/21	Unknown	3.8 (C)	n.a.	Dryland cropping	R547 S
De Bank of Vaalbank 280/6	Urquhart, Mr Dion	1.3 (C)	Kingsley (1.4 km)	Dryland cropping	R547 S
Leeuwan 523/16	Klopper, Mr Lucas	0.58 (C)	n.a.	Dryland cropping	R547 S
Roodebank 323/16	Urquhart, Mr Dion	2.3 (C)	n.a.	Dryland cropping	R547 S
Roodebank 323/20	Urquhart, Mr Archibald	0.57 (C)	Cluster labour (380 m)	Dryland cropping	2 x OHL (SASOL) Coal conveyor R547 S
Kaalspruit 528/2/RE	Louwrens, Mr Jacobus	2.6 (C)	Somerset (2.4 km)	Dryland cropping	2 x OHL (SASOL) Coal conveyor
Kaalspruit 528/9	Urquhart, Mr Dion	2.1 (C)	n.a.	Dryland cropping	2 x OHL (SASOL) Coal conveyor
Kaalspruit 528/7		1.6 (C)	n.a.	Dryland cropping	2 x OHL (SASOL) Coal conveyor
Uitspan 529	Klopper, Mr Lucas	0.95 (C) 0.57 (C)	n.a.	Dryland cropping	Coal conveyor; R547 S
Wolvenfontein 534/20	Urquhart, Mr Archibald	1.6 (C)	Roodebank (390 m)	Dryland cropping	2 x OHL (SASOL) Coal conveyor
Wolvenfontein 534/18	Klopper, Mr Lucas	1.3 (C)	Wolvenfontein (840 m)	Dryland cropping	Coal conveyor
Holgatsfontein 535/4	Unknown	1.7 (C)	n.a.	Dryland cropping	Coal conveyor
Holgatsfontein 535/14	Unknown	0.76 (C) (outlier)	n.a.	Dryland cropping	Coal conveyor
Holgatsfontein 535/01	Unknown	n.a.	Holgatsfontein (570 m)	Dryland cropping	Not affected by corridor
Holgatsfontein 535/15	Botha, Mr Janko	0.70 (2)	n.a.	Game farming	Not currently affected by line infrastructure
Holgatsfontein 535/6		0.04 (1)	Holgatsfontein (860 m)		
Platkop 543/11		2.8 (1) 0.47 (C)	Chalet (400 m)		
Mahemsfontein 544/RE	Van Jaarsveld, Mr Dawie	1.7 (2)	Ruins + Uninhabited	Dryland cropping	WEF site; SS Alt 2 site; 2 x 400 kV lines

PROPERTY ²⁶	OWNER ²⁷	KM	RES ²⁸	LAND USE ²⁹	EXISTING ³⁰
Mahemsfontein 544/8		1.4 (2)	Mahemsfontein (190 m)	Dryland cropping	WEF site
Mahemsfontein 544/7		0.44 (2)	n.a.	Dryland cropping	WEF site
Platkop 543/5	Klopper, Mr Lucas	0.73 (1) 0.89 (2) 0.86 (C)	Ruin	Dryland cropping	WEF site SS Alt 1 site
Platkop 543/4		2.8 (1) 1.8 (2) 0.30 (C)	Platkop (100 m)	n.a.	WEF site

Cropping areas on 25 properties are directly affected by the proposal, five of which also used for large scale centre-pivot irrigated cropping. All the relevant cropping areas are affected in liminal portions only (e.g., along existing roads, coal conveyor line, fences). The relevant properties are also affected over relatively short distances. Footprint losses are likely to be minimal, but may impact on fence lines, farm roads and irrigation infrastructure. Contiguous cropping areas are concentrated along the Mahemsfontein Road between the project substations to the north of the Impumelelo coal conveyor line, the R547S, and between the R50 and the 400 kV corridor to its east. Smaller dryland cropping areas are located to the south of Brendan Village. An alignment to the south of the coal conveyor line and west of the R50 would therefore be preferable for the relevant sections.

Game farming and commercial hunting is associated with the 4 Holgatsfontein game farm properties, 3 of which are affected by the Alternative 2 assessment corridor. The chalet on Platkop 543/11 and farmstead on Holgatsfontein 535/6 are used to accommodate hunting parties. The chalet is located approximately 400 m south of the alignment, and the Holgatsfontein farmstead approximately 860 m to its east. Alternative 2 would affect 543/11 along the Mahemsfontein Road, while only a small portion of the extreme western portion of 535/6 would be affected. The alignment across 535/15 would affect the westernmost portion of the property, 130 m and closer to its boundary with Impumelelo mine.

SECTION 4: ASSESSMENT OF KEY SOCIAL ISSUES

4.1 INTRODUCTION

Section 4 provides an assessment of the key social issues identified during the study. The identification of key issues was based on:

- Review of project related information.
- Review of key policy and planning documents.
- Site visit to the study area and comments submitted by key stakeholders.
- Experience/ familiarity of the authors with the area and local conditions.
- Experience with similar projects.

The assessment section is divided into the following sections:

- Assessment of compatibility with relevant policy and planning context (“planning fit”).
- Assessment of social issues associated with the construction phase.
- Assessment of social issues associated with the operation phase.
- Assessment of the “no development” alternative.
- Assessment of cumulative impact on sense of place.

4.2 ASSESSMENT OF POLICY AND PLANNING FIT

The findings of the SIA indicate that investment in renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy and associated energy distribution infrastructure is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure.

4.3 CONSTRUCTION PHASE SOCIAL IMPACTS

Potential positive impacts

- Creation of employment, skills development, and business opportunities.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Impact on local farmers and farming operations.
- Noise, dust and safety impacts of construction related activities and vehicles.
- Increased risk of veld fires.

4.3.1 Creation of local employment, skills development, and business opportunities

The construction phase is expected to extend over a period of approximately 12 months and create in the region of 50 employment opportunities. Approximately 80% of the jobs will be low-skilled, 15% semi-skilled and 5% skilled. Most of the low and semi-skilled employment opportunities would benefit community members from local towns in the area. A percentage

of the wage bill will be spent in the local economy which will also create opportunities for local businesses in the local towns in the area.

The capital expenditure will create opportunities for local engineering and construction companies. Implementing the enhancement measures listed below can enhance these opportunities. The local service sector will also benefit from the construction phase. These benefits will be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers. However, given the relatively small scale of the project and short duration of the construction phase these benefits will be limited.

Table 4.1: Impact assessment of employment, skills development, and business creation opportunities during the construction phase

Nature: Creation of employment and business opportunities during the construction phase		
	Without Mitigation	With Enhancement
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Medium (4)
Reversibility	N/A	N/A
Probability	Probable (3)	Highly probable (4)
Significance	Low (18)	Moderate (32)
Status	Positive	Positive
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Opportunity to up-grade and improve skills levels in the area.		

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

Recommended enhancement measures

In order to enhance local employment and business opportunities associated with the construction phase the following measures should be implemented:

Employment

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.
- Where feasible, efforts should be made to employ local contractors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.
- Before the construction phase commences the proponent should meet with representatives from the MM to establish the existence of a skills database for the area. If such a database exists, it should be made available to the contractors appointed for the construction phase.

- The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.
- Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.
- The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.

Business

- The proponent should liaise with the DM with regards the establishment of a database of local companies, specifically BBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.

Note that while preference to local employees and companies is recommended, it is recognised that a competitive tender process may not guarantee the employment of local labour for the construction phase.

4.3.2 Impact of construction workers on local communities

The presence of construction workers can pose a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks. This risk is linked to potentially risky behaviour, mainly of male construction workers, including:

- An increase in alcohol and drug use.
- An increase in crime levels.
- The loss of girlfriends and/or wives to construction workers.
- An increase in teenage and unwanted pregnancies.
- An increase in prostitution.
- An increase in sexually transmitted diseases (STDs), including HIV.

Given the relatively short duration of the construction phase and small number of construction workers, namely ~ 50, the potential impact on the local community is likely to be negligible.

Table 4.2: Assessment of impact of the presence of construction workers in the area on local communities

Nature: Potential impacts on family structures and social networks associated with the presence of construction workers		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Very Low (1)
Reversibility	With rehabilitation/mitigation (3)	With rehabilitation/mitigation (3)
Probability	Low Probability (2)	Low Probability (2)
Significance	Low (18)	Low (14)
Status	Negative	Negative
Can impact be mitigated?	Yes, to some degree. However, the risk cannot be entirely eliminated	
Mitigation: See below		
Residual impacts: Impacts on family and community relations that may, in some cases, persist for a long period of time. Also, in cases where unplanned / unwanted pregnancies occur or members of the community are infected by an STD, specifically HIV and or AIDS, the impacts may be permanent and have long term to permanent residual/cumulative impacts on the affected individuals and/or their families and the community.		

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

Recommended enhancement measures

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.
- Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories.
- The proponent should consider the option of establishing a Monitoring Committee (MC) for the construction phase that representatives from local landowners, farming associations, and the local municipality. This MC should be established prior to commencement of the construction phase and form part of the SEP.
- The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP.
- The proponent and the contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP.

- The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site.
- The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.
- No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.3.3 Risk to safety, livestock, and farm infrastructure

The presence of and movement of construction workers on and off the site poses a potential safety threat to local farmers and farm workers on and in the vicinity of the site. In addition, farm infrastructure, such as fences and gates, may be damaged and stock losses may also result from gates being left open. The presence of construction workers on the site also increases the exposure to local farming operations to the outside world, which, in turn, increases the potential risk of stock theft.

The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by careful planning and managing the movement of construction workers on the site during the construction phase. The mitigation measures to address these risks are outlined below.

Table 4.3: Assessment of risk to safety, livestock, and damage to farm infrastructure

Nature: Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Reversible with compensation (3)	Reversible with compensation (3)
Probability	Probable (3)	Low Probability (2)
Significance	Moderate (30)	Low (16)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No, provided losses are compensated for.		

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

Recommended mitigation measures

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.

- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- All farm gates must be closed after passing through.
- Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site.
- The proponent should establish a MC and CoC for workers (see above).
- The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities (see below).
- The proponent should implement a Grievance Mechanism that provides local farmers with an effective and efficient mechanism to address issues related to report issues related to damage to farm infrastructure, stock theft and poaching etc.
- The Environmental Management Plan (EMP) must outline procedures for managing and storing waste on site, specifically plastic waste that poses a threat to livestock if ingested.
- Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.
- Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the CoC. All dismissals must be in accordance with South African labour legislation.
- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.

4.3.4 Nuisance impacts associated with construction related activities

Construction related activities, including the movement of heavy construction vehicles of and on the site, has the potential to create dust, noise and safety impacts and damage to local roads. Given the relatively small number of construction workers and the short construction period the traffic related impacts are likely to be limited. The impacts will be largely local and can be effectively minimised and mitigated.

Table 4.4: Assessment of the impacts associated with construction related activities

Nature: Potential noise, dust and safety impacts associated with construction related activities and movement of traffic to and from the site		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Low (2)	Low (2)
Reversibility	Reversible (1)	Reversible (1)
Probability	Probable (3)	Low Probability (2)
Significance	Low (21)	Low (12)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: If damage to local roads is not repaired then this will affect the other road users and result in higher maintenance costs. The costs will be borne by road users who were not responsible for the damage.		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The potential impacts associated with heavy vehicles can be effectively mitigated. The mitigation measures include:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.
- Timing of construction activities should be planned to avoid / minimise impact on key farming activities, including planting and harvesting operations.
- The proponent should establish a MC to monitor the construction phase and the implementation of the recommended mitigation measures. The MC should be established before the construction phase commences, and should include key stakeholders, including representatives from local farmers and the contractor(s). The MF should also address issues associated with damage to roads and other construction related impacts.
- Ongoing communication with land owners and road users during construction period. This should be outlined in the SEP.
- The proponent should implement a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads.
- Implementation of a road maintenance programme throughout the construction phase to ensure that the affected roads maintained in a good condition and repaired once the construction phase is completed.
- Repair of all affected road portions at the end of construction period where required.

- Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers.
- All vehicles must be roadworthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.

4.3.5 Risk of veld fires

The presence on and movement of construction workers on and off the site and construction related activities such as welding etc., increases the risk of veld fires which pose a risk to livestock, farm infrastructure and crops. The loss of grazing also poses a threat to local livelihoods that are dependent on livestock farming. The risk of veld fires is higher during the dry, windy winter months of May through to November.

Table 4.5: Risk posed by veld fires to livestock, farm infrastructure and grazing

Nature: Potential loss of livestock and grazing and damage to farm infrastructure associated with increased incidence of grass fires		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Reversible with compensation (3)	Reversible with compensation (3)
Probability	Probable (3)	Low Probability (2)
Significance	Moderate (30)	Low (16)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No, provided losses are compensated for.		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The mitigation measures include:

Recommended mitigation measures

The mitigation measures include:

- Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.
- Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.

- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.
- Smoking on site should be confined to designated areas.
- Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy winter months.
- Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.
- Contractor should provide fire-fighting training to selected construction staff. As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.
- No construction staff, with the exception of security staff, to be accommodated on site overnight.

4.3.6 Impacts associated with loss of farmland

The activities associated with the construction phase and establishment of the proposed project and associated infrastructure will result in the disturbance and loss of land available for grazing. The impact on farmland associated with the construction phase can be mitigated by minimising the footprint of the construction related activities and ensuring that disturbed areas are fully rehabilitated on completion of the construction phase. In addition, the landowner will be compensated for the loss of land.

Based on the findings of the SIA cropped areas on 25 properties are affected by the assessment corridor. In all instances, liminal portions of properties would be affected, and in almost all instances the areas affected are associated with existing corridors. As such the footprint losses are likely to be minimal, but may impact on fence lines, farm roads and irrigation infrastructure (6 properties along R50). Landowners indicated that the costs associated with repairing and or moving infrastructure should be covered by the developer.

The affected landowners also indicated that an alignment within the assessment corridor located to the south of the coal conveyor line and west of the R50 would be preferable for the shared section of the Alternative 1 and 2. The owners of the WEF-site properties did not raise concerns regarding the potential impact on cropping areas on Mahemsfontein 544/RE, 544/7, 544/8 (van Jaarsveld) and 543/5 (Klopper pers. com.).

Table 4.6: Assessment of impact on farmland due to construction related activities

Nature: The activities associated with the construction phase, such as establishment of access roads and the construction camp, movement of heavy vehicles and preparation of foundations for the project etc. will damage farmlands and result in a loss of farmlands for grazing / crops.		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (1)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Reversible with compensation and rehabilitation (3)	Reversible with compensation and rehabilitation (3)
Probability	Highly Probable (4)	Probable (3)
Significance	Moderate (40)	Low (24)
Status	Negative	Negative
Can impact be mitigated?	Yes	Yes
Mitigation: See below		
Residual impacts: If damage to and or loss of productive land is not avoided and or minimised can impact on viability of farming operations and livelihoods.		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

The potential impacts associated with damage to, and loss of farmland can be effectively mitigated. The aspects that should be covered include:

- An alignment within the assessment corridor located to the south of the coal conveyor line and west of the R50 for the shared section of the Alternative 1 and 2 should be investigated.
- The loss of high-quality agricultural land should be avoided and or minimised by careful micro-siting of the final layout of the proposed transmission line.
- The costs associated with repairing and or moving infrastructure affected by the transmission line should be covered by the developer.
- The recommendations of the agricultural / soil assessment should be implemented.
- Affected landowners should be consulted about the timing of construction related activities in advance.
- The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be minimised.
- An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase.
- All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase.
- The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. The specifications for the rehabilitation

programme should be drawn up by the Environmental Consultants appointed to manage the EIA.

- The implementation of the Rehabilitation Programme should be monitored by the ECO.

4.4 OPERATIONAL PHASE SOCIAL IMPACTS

The following key social issues are of relevance to the operational phase:

Potential positive impacts

- Provide energy infrastructure to support the use of renewable energy to produce green hydrogen and ammonia.
- Creation of employment, skills development, and procurement opportunities.
- Generate income for landowners.

Potential negative impacts

- The visual impacts and associated impact on sense of place.
- Impact of maintenance activities on farming activities and operations.

4.4.1 Provide energy infrastructure to support the use of renewable energy

The proposed power line is essential for the operation of the Impumelelo WEF. The aim of the project is to generate renewable energy for nearby mining and industrial operations. The proposed project, including the grid infrastructure, will therefore create opportunities to improve energy security in South Africa by generating alternative energy sources and reduce the carbon footprint associated with current energy generation.

South Africa's energy crisis, which started in 2007 and is ongoing, has resulted in widespread rolling blackouts (referred to as load shedding) due to supply shortfalls. The load shedding has had a significant impact on all sectors of the economy and on investor confidence. The mining and manufacturing sector have been severely impacted and will continue to be impacted until such time as there is a reliable supply to energy. The Minister of Mineral Resources and Energy, Gwede Mantashe, indicated in February 2023 that the cost of load shedding was estimated at R1 billion a day³². The South African Reserve Bank indicated in February 2023 that stage 3 and stage 6 loadshedding cost the South African economy between R204 million and R899 million a day³³.

A survey of 3 984 small business owners in 2019 found that 44% said that they had been severely affected by load shedding with 85% stating that it had reduced their revenue, with 40% of small businesses losing 20% or more of revenue during due to load shedding period³⁴.

³² <https://www.citizen.co.za/news/load-shedding-cost-economy-billion/>

³³ <https://businesstech.co.za/news/energy/662515/stage-6-load-shedding-costs-south-africa-r900-million-a-day-sarb/>

³⁴ "[How does load shedding affect small business in SA?](#)". The Yoco Small Business Pulse (3: Q1 2019):

Table 4.7: Provide energy infrastructure to support the use of renewable energy

Nature: Development of energy infrastructure to support the use of renewable energy.		
	Without Mitigation³⁵	With Mitigation³⁶
Extent	Local, Regional and National (4)	Local, Regional and National (4)
Duration	Long term (4)	Long term (4)
Magnitude	Medium (3)	Medium (3)
Reversibility	N/A	N/A
Probability	Highly Probable (4)	Definite (5)
Significance	Moderate (44)	Moderate (55)
Status	Negative	Positive
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Overall reduction in CO ₂ emission, reduction in water consumption for energy generation, contribution to the development of the renewable energy sector in South Africa and benefit for economic development and investment.		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

Should the proposed grid connection infrastructure be approved the proponent should:

- Maximise the number of employment opportunities for local community members, where feasible.
- Implement training and skills development programs for members from the local community.
- Maximise opportunities for local content and procurement.

4.4.2 Creation of employment, skills development, and business opportunities

The potential employment, skills development and business-related opportunities associated with the power line and substation will be limited and confined to periodic maintenance and repairs. The potential socio-economic benefits are therefore likely to be limited. There is limited opportunity to enhance the potential opportunities.

³⁵ Assumes power line is not established.

³⁶ Assumes power line is established.

Table 4.8: Impact assessment of employment, skills development, and business creation opportunities

Nature: Creation of employment, skills development and business opportunities associated with the operational phase		
	Without Mitigation	With Enhancement
Extent	Local and Regional (1)	Local and Regional (1)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Low (2)
Reversibility	N/A	N/A
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Low (28)	Low (28)
Status	Positive	Positive
Reversibility	N/A	
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Creation of permanent employment and skills and development opportunities for members from the local community and creation of additional business and economic opportunities in the area		

Recommended enhancement measures

The enhancement measures listed in Section 4.3.1, i.e., to enhance local employment and business opportunities during the construction phase, also apply to the operational phase.

4.4.3 Generate income for affected landowners

The proponent will enter into a lease/servitude agreement with the affected landowners for the use of the land for the establishment of the proposed transmission line and preferred substation. The additional income would assist to reduce the risks to their livelihoods posed by climate change and fluctuating market prices for livestock, crops, and farming inputs, such as fuel, feed etc. The additional income would improve economic security of farming operations, which in turn would improve job security of farm workers and benefit the local economy.

Table 4.9: Assessment of benefits associated with income generated for affected farmer(s)

Nature: The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.		
	Without Mitigation	With Enhancement
Extent	Local and Regional (1)	Local and Regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Medium (3)
Reversibility	N/A	N/A
Probability	Probability (3)	Definite (5)
Significance	Low (21)	Moderate (45)
Status	Positive	Positive
Reversibility	N/A	
Can impact be enhanced?	Yes	
Enhancement: See below		
Residual impacts: Support for local agricultural sector and farming		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended enhancement measures

Implement agreements with affected landowners.

4.4.4 Visual impact and impact on sense of place

The proposed transmission line and associated substations has the potential to impact on the areas existing rural sense of place. However, the potential impact on the areas sense of place is likely to be limited given the location of the alignment within an area that has been impacted by existing transmission lines, coal mining and associated mining dumps and coal conveyor belt and the Secunda industrial complex. This was confirmed during the site visit. None of the affected landowners or adjacent owners interviewed raised concerns regarding the potential impact on the areas sense of place.

Table 4.10: Visual impact and impact on sense of place

Nature: Visual impact associated with the proposed grid infrastructure and the potential impact on the area’s sense of place.		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (2)
Duration	Long term (4)	Long term (4)
Magnitude	Medium (3)	Low (2)
Reversibility	Reversible (1)	Reversible (1)
Probability	Probable (3)	Probable (3)
Significance	Medium (33)	Low (27)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: Potential impact on current rural sense of place		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

Recommendations of the VIA should be implemented.

4.4.5 Impact on land uses and farming operations

The concerns related to the potential impact on land uses and farming operations are confined to the southwestern sections of Alternative 1 and 2 associated with connecting to the on-site substations. Based on the findings of the SIA the key sensitive land use affected by the grid infrastructure are the game farming activities on the Holgatsfontein Game Farm (Holgatsfontein 535/6). Two accommodation facilities are located on Holgatsfontein Game Farm, with a chalet located 400 m from the Mahemsfontein Road, just outside the assessment corridor. The owner’s key concern is not related to impact on sense of place, potential restrictions on game farming and hunting activities. Hunting activities along the section of the farm located along the Mahemsfontein Road is already affected by safety related restrictions. The owner, Mr Botha, indicated that Alternative 2 would be the preferred option. However, Alternative 1 may be acceptable if steps were taken to avoid / minimise footprint impacts (Botha, pers. comm).

The owner of Platkop 543/4 indicated that Alternative 2 was not acceptable as the north-south section traverse his property and would result in fragmentation and increased security risks (Klopper – pers. comm). The relevant portion of Platkop 543/4 is used for grazing. The property forms part of the WEF site.

Table 4.11: Assessment of impact on land uses and farming operations

Nature: Potential impact on land uses and farming operations		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (2)
Duration	Long Term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Recoverable with compensation paid for impact on land uses and farming operations (3)	Recoverable with compensation paid for stock losses and damage to farm infrastructure etc. (3)
Probability	Probable (3)	Probable (3)
Significance	Moderate (30)	Low (27)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No, provided losses are compensated for.		

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

Recommended mitigation measures

- Proponent should liaise with owner of Holgatsfontein 535/6 (Mr Botha) to identify a suitable alignment for Alternative 1 within the assessment corridor.
- Affected property owners should be notified in advance of the timing and duration of maintenance activities.
- Property owners should be compensated for damage to farm property and or loss of livestock or game.
- Movement of traffic and maintenance related activities should be strictly contained within designated areas associated with transmission lines and substations.

4.4.6 Impact on farming operations during maintenance³⁷

The presence on and movement of maintenance workers on and off the site poses a potential risk to farming operations. Farm fence and gates may be damaged and stock losses may also result from gates being left open. The presence of maintenance workers on the site also increases the exposure of their farming operations and livestock to the outside world, which, in turn, increased the potential risk of stock theft and crime.

The key issues raised are linked to the construction phase but are also valid for the maintenance phase. These include:

³⁷ The impacts are similar to the impacts associated with construction phase.

- Impact of maintenance related activities and movement of maintenance vehicles on the cropped areas and the veld.
- Farm gates left open by maintenance contractors and Eskom employees.
- Damage to farm fences. The damage to farm fences poses the same risks to farming operations as leaving farm gates open.
- Lack of awareness amongst contractors of the impacts that their activities can have on farming operations.

Based on experience with maintenance of the existing Eskom power lines this is an issue that will need to be addressed. The potential risks (safety, livestock, and farm infrastructure) can be effectively mitigated by ensuring the maintenance teams take care to ensure that gates are kept closed and affected property owners are kept informed about timing of maintenance operations. Mitigation measures to address these risks are outlined below.

Table 4.12: Assessment of risk to farming operations and damage to farm infrastructure

Nature: Potential risk to safety to farming operations and livestock associated with the presence of maintenance workers on the site		
	Without Mitigation	With Mitigation
Extent	Local (2)	Local (2)
Duration	Short term (2)	Short term (2)
Magnitude	Medium (3)	Low (2)
Reversibility	Recoverable with compensation paid for stock losses and damage to farm infrastructure etc. (3)	Recoverable with compensation paid for stock losses and damage to farm infrastructure etc. (3)
Probability	Highly Probable (4)	Probable (3)
Significance	Moderate (40)	Low (27)
Status	Negative	Negative
Can impact be mitigated?	Yes	
Mitigation: See below		
Residual impacts: No, provided losses are compensated for.		

Assessment of No-Go option

There is no impact as the current status quo would be maintained.

Recommended mitigation measures

- Affected property owners should be notified in advance of the timing and duration of maintenance activities.
- Maintenance teams must ensure that all farm gates must be closed after passing through.
- Property owners should be compensated for damage to farm property and or loss of livestock or game associated maintenance related activities.
- Movement of traffic and maintenance related activities should be strictly contained within designated areas associated with transmission lines and substations.

- Strict traffic speed limits must be enforced on the farm.
- No maintenance workers should be allowed to stay over-night on the affected properties.

4.5 CUMULATIVE IMPACT ON SENSE OF PLACE

The Scottish Natural Heritage (2005) describes a range of potential cumulative landscape impacts associated with wind farms on landscapes. These issues raised in these guidelines as to what defines a cumulative impact are also regarded as pertinent to transmission lines. The relevant issues identified by Scottish Natural Heritage study include:

- Combined visibility (whether two or more transmission lines) will be visible from one location).
- Sequential visibility (e.g. the effect of seeing two or more two or more transmission lines) along a single journey, e.g. road or walking trail).
- The visual compatibility of different two or more transmission lines in the same vicinity.
- Perceived or actual change in land use across a character type or region.
- Loss of a characteristic element (e.g. viewing type or feature) across a character type caused by developments across that character type.

The areas sense of place has been impacted by existing transmission lines, mining operations and the Secunda industrial complex. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking) does therefore exist. However, the cumulative impact on the areas sense of place is likely to be low. In this regard the areas sense of place has been impacted by existing transmission lines, mining operations and the Secunda industrial complex. None of the landowners interviewed raised concerns regarding the potential visual impact on the areas sense of place.

Table 4.13: Cumulative impacts on sense of place and the landscape

Nature: Visual impacts associated with the establishment of associated grid infrastructure and the potential impact on the area’s rural sense of place and character of the landscape.		
	Overall impact of the proposed project considered in isolation	Cumulative impact of the project and other projects in the area
Extent	Local (2)	Regional (2)
Duration	Long term (4)	Long term (4)
Magnitude	Low (2)	Low (2)
Reversibility	Reversible (1)	Reversible (1)
Probability	Probable (3)	Highly Probable (4)
Significance	Low (27)	Moderate (40)
Status	Negative	Negative
Can impacts be mitigated?	Limited	
Mitigation: See below		

Assessment of No-Go option

There is no impact as it maintains the current status quo.

Recommended mitigation measures

- Recommendations of the VIA and SIA should be implemented.

4.6 ASSESSMENT OF NO-DEVELOPMENT OPTION

The proposed power line is essential for the operation of the Impumelelo WEF. The aim of the project is to generate renewable energy for nearby mining and industrial operations. The proposed project, including the grid infrastructure, will therefore create opportunities to improve energy security in South Africa by generating alternative energy sources and reduce the carbon footprint associated with current energy generation. This would reduce the carbon footprint of the operations at Secunda, which in turn would also contribute to reducing South Africa's carbon footprint.

The No-Development option would represent a lost opportunity for South Africa to improve energy security and reduce its carbon footprint. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost.

Table 4.14: Assessment of no-development option

Nature: The no-development option would result in the lost opportunity for South Africa to produce green hydrogen and ammonia and reduce its carbon footprint.		
	Without Mitigation³⁸	With Mitigation³⁹
Extent	Local-National (3)	Local-National (3)
Duration	Long term (4)	Long term (4)
Magnitude	Medium (3)	Medium (3)
Reversibility	Reversible (1)	Reversible (1)
Probability	Highly Probable (4)	Highly Probable (4)
Significance	Moderate (44)	Moderate (44)
Status	Negative	Positive
Can impact be mitigated?	Yes	
Enhancement: See below		
Residual impacts: Improved energy security and benefit for economic development and investment, reduction in CO ₂ emission and reduction in water consumption for energy generation.		

Recommended enhancement measures

The proposed grid infrastructure should be developed, and the mitigation and enhancement measures identified in the SIA and other specialist studies should be implemented.

³⁸ Assumes power line is not developed.

³⁹ Assumes power line is developed.

SECTION 5: KEY FINDINGS AND RECOMMENDATIONS

5.1 INTRODUCTION

Section 5 lists the key findings of the study and recommendations. These findings are based on:

- A review of key planning and policy documents pertaining to the area.
- Site visit and semi-structured interviews with interested and affected parties.
- A review of social and economic issues associated with similar developments.
- A review of relevant literature on social and economic impacts.
- The experience of the authors with other renewable energy projects in South Africa

5.2 SUMMARY OF KEY FINDINGS

The key findings of the study are summarised under the following sections:

- Fit with policy and planning.
- Construction phase impacts.
- Operational phase impacts.
- Cumulative impacts.
- Decommissioning phase impacts.
- No-development option.

5.2.1 Policy and planning issues

The development of renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of and investment in renewable energy and associated energy distribution infrastructure is supported by the National Development Plan (NDP), New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure. The development of the proposed power line, substation and associated infrastructure is therefore supported by key policy and planning documents.

5.2.2 Construction phase impacts

The key social issues associated with the construction phase include:

Potential positive impacts

- Creation of employment and business opportunities.

The construction phase for the grid infrastructure will extend over a period of 6-12 months and create approximately 40-50 employment opportunities. Most of the low and semi-skilled employment opportunities are likely to benefit residents from local towns in the area. Most the beneficiaries are likely to be Historically Disadvantaged (HD) members of the community. This would represent a short term positive social benefit in an area with limited employment opportunities. A percentage of the wage bill will be spent in the local economy which will also create opportunities for local businesses in DM.

The capital expenditure associated with the construction of power line will create opportunities for the local and regional and local economy. The local service sector will also benefit from the proposed development. The potential opportunities for the local service sector would be linked to accommodation, catering, cleaning, transport, and security, etc. associated with the construction workers. However, given the relatively small scale of the development and short construction period the benefits will be limited.

Potential negative impacts

- Impacts associated with the presence of construction workers on local communities.
- Noise, dust, and safety impacts of construction related activities and vehicles.
- Risk of veld fires.
- Risks posed to farming activities by construction workers.

The findings of the SIA indicate that the significance of the potential negative impacts is likely to be negligible. With mitigation they are rated as **Low Negative**. The potential negative impacts associated with the proposed construction of the power line can therefore be effectively mitigated if the recommended mitigation measures are implemented.

Table 5.1 summarises the significance of the impacts associated with the construction phase.

Table 5.1: Summary of social impacts during construction phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Creation of employment and business opportunities	Low (Positive)	Moderate (Positive)
Presence of construction workers and potential impacts on family structures and social networks	Low (Negative)	Low (Negative)
Impact of construction activities and vehicles	Low (Negative)	Low (Negative)
Risk of veld fires	Moderate Negative)	Low (Negative)
Safety risk, stock theft and damage to farm infrastructure associated with presence of construction workers	Moderate Negative)	Low (Negative)

5.2.3 Operational phase impacts

The benefits associated with the Impumelelo WEF are dependent upon being able to connect to the national grid. The key social issues associated with the operational phase include:

Potential positive impacts

- Provide energy infrastructure to support the use of renewable energy.
- Creation of employment, skills development, and procurement opportunities.
- Generate income for landowners.

Potential negative impacts

- The visual impacts and associated impact on sense of place.
- Impact on land uses and farming operations.
- Impact of maintenance activities on farming activities and operations.

The findings of the SIA indicate that the significance of the potential negative impacts is likely be **Low Negative** if the required mitigation measures are implemented. The significance of the impacts associated with the operational phase are summarised in Table 5.2.

Table 5.2: Summary of social impacts during operational phase

Impact	Significance No Mitigation / Enhancement	Significance With Mitigation / Enhancement
Provide energy infrastructure to support the use of renewable energy	Moderate (-) ⁴⁰	Moderate (-) ⁴¹
Creation of employment and business opportunities during maintenance	Low (+)	Low (+)
Generate income for landowners	Low (+)	Moderate (+)
Visual impact and impact on sense of place	Moderate (-)	Low (-)
Impact on land uses and farming operations	Moderate (-)	Low (-)
Safety risk, stock theft and damage to farm infrastructure associated with presence of maintenance workers	Moderate (-)	Low (-)

5.2.4 Cumulative impact on sense of place

There are existing transmission lines associated with the Secunda facility and mines in the area. The potential for cumulative impacts associated with combined visibility (whether two or more power lines will be visible from one location) and sequential visibility (e.g., the effect of seeing two or more power lines along a single journey, e.g., road or walking) does therefore exist. However, the cumulative impact on the areas sense of place is likely to be low. In this regard the areas sense of place is dominated by existing transmission lines, coal mining and the large industrial Secunda facility. None of the landowners interviewed raised concerns regarding the potential visual impact on the areas sense of place.

5.2.5 Assessment of no-development option

The No-Development option would represent a lost opportunity for South Africa to improve energy security in South Africa by generating alternative energy sources and reduce the carbon footprint associated with current energy generation. Given South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a negative social cost. The no-development option is therefore not supported by the findings of the SIA.

⁴⁰ Assumes power line is not developed.

⁴¹ Assumes power line is developed.

5.3 CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The benefits associated with the proposed Impumelelo WEF which include the generation for renewable energy for the mining and industrial sector are dependent upon being able to connect the Impumelelo WEF to these sectors via the establishment of grid connection infrastructure.

The findings of the SIA indicate that the significance of the potential negative social impacts for both the construction and operational phase of the proposed 132 kV Impumelelo overhead power line, substation and associated infrastructure are **Low Negative** with mitigation. The potential negative impacts can therefore be effectively mitigated if the recommended mitigation measures are implemented. The establishment of proposed 132 kV Impumelelo overhead power line and associated infrastructure is therefore supported by the findings of the SIA.

Recommendations

- Based on the findings of the SIA, Alternative 1 is the preferred Alternative.
- Proponent should liaise with owner of Holgatsfontein 535/6 (Mr Botha) to identify a suitable alignment for Alternative 1 within the assessment corridor.
- An alignment within the assessment corridor located to the south of the coal conveyor line and west of the R50 for the shared section of the Alternative 1 and 2 should be investigated.

ANNEXURE A

INTERVIEWS

- Bierman, Mr Gerhard (telephonic 2022-11-17). Platkop 543/2.
- Botha, Mr Janko (telephonic 2022-12-01). Holgatsfontein 535/6 and 535/15; Platkop 543/10 and 543/11.
- Horn, Mr Gideon (telephonic 2022-11-16). Leases Platkop 543/2.
- Kense, Mr Johan (2022-11-24). Hartbeestfontein 522/25.
- Klopper, Mr Lucas (2022-11-23). Platkop 543/4, 543/5, 543/9.
- Van Jaarsveld, Mr Dawie (2022-11-23). Mahemsfontein 544/RE, 544/7, 544/8.

REFERENCES

- National Growth Path Framework (2010).
- The National Development Plan (2011).
- National Infrastructure Plan (2012).
- Mpumalanga Vision 2030 Strategic Implementation Framework (2013-2030)
- Mpumalanga Economic Growth and Development Path (2011).
- Mpumalanga Spatial Development Framework (2019).
- Dipaleseng Municipality Integrated Development Plan (2020-2021).
- Dipaleseng Municipality Spatial Development Framework (2020).
- Dipaleseng Municipality Local Economic Development Strategy (2011).
- Govan Mbeki Municipality Integrated Development Plan (2020-2021).

ANNEXURE B

METHODOLOGY FOR THE ASSESSMENT OF POTENTIAL IMPACTS

Assessment of Impacts and Mitigation

The assessment of impacts and mitigation evaluates the likely extent and significance of the potential impacts on identified receptors and resources against defined assessment criteria, to develop and describe measures that will be taken to avoid, minimise or compensate for any adverse environmental impacts, to enhance positive impacts, and to report the significance of residual impacts that occur following mitigation.

The key objectives of the risk assessment methodology are to identify any additional potential environmental issues and associated impacts likely to arise from the proposed project, and to propose a significance ranking. Issues / aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources and receptors to provide a detailed discussion of impacts. The assessment considers direct⁴², indirect⁴³, secondary⁴⁴ as well as cumulative⁴⁵ impacts.

A standard risk assessment methodology is used for the ranking of the identified environmental impacts pre-and post-mitigation (i.e. residual impact). The significance of environmental aspects is determined and ranked by considering the criteria⁴⁶ presented in **Table 0-1**.

Table 0-1: Impact Assessment Criteria and Scoring System

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action
Impact Duration (D) The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite

⁴² Impacts that arise directly from activities that form an integral part of the Project.

⁴³ Impacts that arise indirectly from activities not explicitly forming part of the Project.

⁴⁴ Secondary or induced impacts caused by a change in the Project environment.

⁴⁵ Impacts are those impacts arising from the combination of multiple impacts from existing projects, the Project and/or future projects.

⁴⁶ The definitions given are for guidance only, and not all the definitions will apply to all the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

CRITERIA	SCORE 1	SCORE 2	SCORE 3	SCORE 4	SCORE 5
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite
Significance (S) is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ $Significance = (Extent + Duration + Reversibility + Magnitude) \times Probability$				
IMPACT SIGNIFICANCE RATING					
Total Score	0 – 30		31 to 60		61 – 100
Environmental Significance Rating (Negative (-))	Low (-)		Moderate (-)		High (-)
Environmental Significance Rating (Positive (+))	Low (+)		Moderate (+)		High (+)

ANNEXURE C

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Tony Barbour's has 28 years' experience as an environmental consultant, including ten years as a consultant in the private sector followed by four years at the University of Cape Town's Environmental Evaluation Unit. He has worked as an independent consultant since 2004, with a key focus on Social Impact Assessment. His other areas of interest include Strategic Environmental Assessment and review work.

EDUCATION

- BSc (Geology and Economics) Rhodes (1984);
- B Economics (Honours) Rhodes (1985);
- MSc (Environmental Science), University of Cape Town (1992)

EMPLOYMENT RECORD

- Independent Consultant: November 2004 – current;
- University of Cape Town: August 1996-October 2004: Environmental Evaluation Unit (EEU), University of Cape Town. Senior Environmental Consultant and Researcher;
- Private sector: 1991-August 2000: 1991-1996: Ninham Shand Consulting (Now Aurecon, Cape Town). Senior Environmental Scientist; 1996-August 2000: Steffen, Robertson and Kirsten (SRK Consulting) – Associate Director, Manager Environmental Section, SRK Cape Town.

LECTURING

- University of Cape Town: Resource Economics; SEA and EIA (1991-2004);
- University of Cape Town: Social Impact Assessment (2004-current);
- Cape Technikon: Resource Economics and Waste Management (1994-1998);
- Peninsula Technikon: Resource Economics and Waste Management (1996-1998).

RELEVANT EXPERIENCE AND EXPERTISE

Tony Barbour has undertaken in the region of 260 SIA's, including SIA's for infrastructure projects, dams, pipelines, and roads. All of the SIAs include interacting with and liaising with affected communities. In addition, he is the author of the Guidelines for undertaking SIA's as part of the EIA process commissioned by the Western Cape Provincial Environmental Authorities in 2007. These guidelines have been used throughout South Africa.

Tony was also the project manager for a study commissioned in 2005 by the then South African Department of Water Affairs and Forestry for the development of a Social Assessment and Development Framework. The aim of the framework was to enable the Department of Water Affairs and Forestry to identify, assess and manage social impacts associated with large infrastructure projects, such as dams. The study also included the development of guidelines for Social Impact Assessment, Conflict Management, Relocation and Resettlement and Monitoring and Evaluation.

Countries with work experience include South Africa, Namibia, Angola, Botswana, Zambia, Lesotho, Swaziland, Ghana, Mozambique, Mauritius, Kenya, Ethiopia, Oman, South Sudan, Senegal, Sudan and Armenia.

ANNEXURE D

The specialist declaration of independence in terms of the Regulations_

I, Tony Barbour _____, declare that -- General

declaration:

I act as the independent specialist in this application;

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;

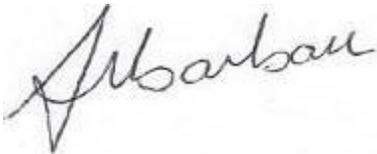
I will comply with the Act, Regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Tony Barbour Environmental Consulting and Research

Name of company (if applicable):

8 November 2022

Date: