

# Environmental Impact Assessment of the Proposed Pure Source Mine Project, Free State Province: Economic Specialist Study for Final Scoping Report

Final Report

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Prepared for: Shango Solutions

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## 1 INTRODUCTION

Monte Cristo Commercial Park (Proprietary) Limited (Wholly owned by the Van Wyk Land Corporation (Pty) Ltd “VLDC” Group) (the applicant) proposes to establish an open pit mine, a processing plant and associated infrastructure approximately 20 km north-east of Parys in the Free State Province. The project is referred to as the Pure Source Mine. Shango Solutions have been appointed as the lead consultant to conduct the necessary environmental impact assessment (EIA) process for the proposed project.

This report contains the economic specialist study which is an input to the Final Scoping Report that forms part of the overall EIA process. It was prepared by Dr Hugo Van Zyl and James Kinghorn of Independent Economic Researchers (see professional profiles and declaration of independence in Appendix 1 and Appendix 2).

While it is difficult to be sure of all relevant impacts before commencing with the assessment of the project, the study brief anticipated a need to address the following issues and impacts:

- Broad level review of the need and financial viability/risks associated with the project based primarily on information from the client.
- Degree of fit with local, district and provincial economic development visions and plans.
- Impacts associated with project expenditure on direct and indirect employment and household incomes along with macroeconomic impacts.
- Opportunity costs of the proposed land use drawing on the inputs of the agricultural specialist.
- Impacts associated with environmental impacts that cannot be mitigated and have economic implications. This is likely to focus on potential negative impacts on neighbouring land owners and on other enterprises. It is expected that impacts on tourism and on property values would be a key focus.

Note that economic impacts often have significant social elements and vice versa – it is thus important to read this report in conjunction with the social specialist study (USSS, 2018).

## 2 PROJECT DESCRIPTION<sup>1</sup>

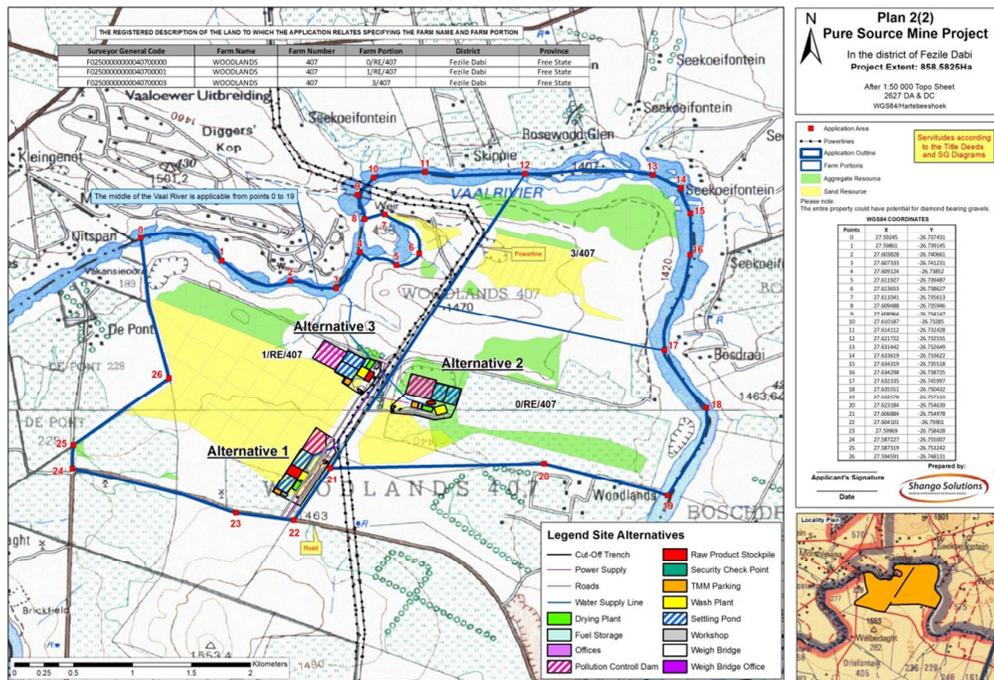
### 2.1 Location

The mining area is located approximately 15 km northwest of the town of Sasolburg, in the Free State Province, South Africa. The project area consists of (i) the Remaining extent (Re), (ii) the Remainder (of portion 1) and (iii) Portion 3 of the farm Woodlands 407, and covers an area of approximately 858 ha. The project is referred to as the Pure Source Mine. A regional road S171 connecting to the R42 borders the property along the southern boundary. The mining right application area or project area lies on the abovementioned portions of the farm Woodlands 407, previously covered by the Prospecting Right FS 30/5/1/1/2/608 PR as indicated on the locality map (Figure 2-1).

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<sup>1</sup> Summarised from the Mining Work Programme commissioned by the applicant (MCCP, 2018a).

Figure 2-1 Locality map



## 2.2 Resource particulars

Quaternary age sands and aggregates represent the mining target. These sands are unconsolidated and unconformably overlie sediments of the Transvaal Supergroup. The secondary commodity of interest is the unconsolidated, quaternary gravels, which potentially contain alluvial diamonds.

Uses and demand for the sand products and aggregates can be summarised as follows:

- The South African refractory industry requires a very pure silica sand with very little impurities. The users of refractory sand have very stringent quality criteria and only specific sands can be upgraded to produce refractory sand.
- Plaster sand is sought-after in the building industry. This sand has a specific size distribution and requires the clay content to be removed.
- Building sand has the lowest quality requirements in terms of chemical make-up and sizing and is consequently in lower demand than plaster sand.
- A local market for screened silica sand exists throughout the country for recreational uses such as for equestrian and golf courses.
- Glass sand is very fine-grained sand with detailed specifications, which is supplied to the glass making industry.
- The aggregate mining aims to produce G4 to G7 materials. These are utilised in the local civil construction and building supply industries.

## **2.3 Infrastructure Requirements**

Key infrastructure requirements can be summarised as follows:

### **2.3.1 Power Supply**

The mine will require power supply from the national grid for the beneficiation plant and workshops, for which an application has been made to Eskom. There is an 11 kV line on the southern boundary of the project area from which power will be obtained for the plant area. It is anticipated that the electrical requirement, once the plant is in full production, will be 2500kVA or 2.5MVA. This will supply the washing plant, drying plant, workshops and offices and ancillary uses.

### **2.3.2 Water Supply**

Water for mining and beneficiation will be sourced from ground water, or extraction from the Vaal River, pursuant to the obtaining of the relevant water use licence. The estimated annual water requirements are:

- 500 million litres for sand mining
- 300 million litres for aggregate and diamond mining
- 10 million litres for dust suppression

It is estimated that the supply of water required for the plant and wash-down operations would be approximately 800-1 000 m<sup>3</sup>/hr (800 000-1 000 000 lt/hr), therefore a water recycling plant will be required to reduce the water consumption to 80 – 100 m<sup>3</sup>/hr. A small volume of water will also be required for the workshops, offices and change house. It will be necessary to apply for both, an Integrated Water Use License (IWULA) and an Integrated Waste Water Management (IWWMA).

### **2.3.3 Access Roads**

The S171 regional road forms the southern boundary of the project area and a gravel road connects this to the proposed mine main entrance on the southeastern boundary. An access road will have to be built from the gate to the plant area. The road building material can be sourced from an existing gravel pit on the farm, which is located adjacent to the mining area.

### **2.3.4 Offices, Workshops and Change Houses**

The offices, workshops and change house will be established adjacent to the plant infrastructure, and as per industry standard will be of a portable nature.

## **2.4 Timeframes and scheduling of mining phases**

Due to the nature of the project, the construction phase and the operational phase will run concurrently during the initial years. For the purposes of this assessment, the construction phase has been defined as running for the first two years of the project. Key elements of the construction phase will include the construction of the following:

- Dams
- Wash plant for sand mining
- Rotary wash plant for alluvial diamond mining

- Clean and dirty water management infrastructure (pollution control dam, settling ponds, storm water runoff structures, water pipeline network as well as pump stations)
- Change houses and an administrative block
- Topsoil and run-of mine stockpiles
- Haul roads
- Workshops
- Conveyors
- Portable chemical ablation facilities
- Fencing
- Security gate
- Stockpiling and berms

In terms of operational phase elements, the development plan is to initially establish a silica sand pit in the southeastern corner of the main silica sand deposit and the western section of the northern silica sand deposit. These areas will be mined while the plant and the additional surface infrastructure is being constructed. Thereafter, the mine will ramp up to steady state production of sand by the 3rd year after commencement of mining. Aggregate production will initially commence on a limited scale and thereafter ramp up as demand increases. The mining of diamonds will commence immediately, as soon as the silica sand overburden is sufficiently removed to facilitate access to the diamondiferous gravels.

The quality of the sand to be mined is likely to remain constant over the life of the mine and the decline in production at the end of the life of the mine will be due to the depletion of the resource. Due to the superficial nature of the deposit, a gradual tapered reduction in production will take place towards the end of the life of mine.

### **3 APPROACH AND METHODOLOGY**

The approach adopted involved the following steps in line with accepted EIA practice:

1. Describe the existing context within which the project would be established.
2. Identify economic impacts and issues.
3. Assess economic impacts without mitigation.
4. Formulate and recommend mitigation measures.
5. Re-assess economic impacts with mitigation

Guidance on the approach was taken from the Department of Environmental Affairs and Development Planning (Western Cape) guidelines on economic specialist input to EIA processes (van Zyl et al., 2005). This included guidance on the appropriate level of detail required for the assessment in order that it be adequate for informing decision-making without going into superfluous detail (i.e. superfluous detail in this report as well as superfluous detail when the briefs of other specialist studies forming part of the EIA are taken into account).

Details on the approaches used to assess impacts are contained in the individual sections dealing with the impacts.

#### **3.1 Assumptions and limitations**

The following assumptions and limitations apply to this study:

- This assessment is part of the Scoping Phase and, as such, is to be regarded as **highly preliminary** and subject to revision particularly with respect to impact significance ratings. It is a desk-top assessment and was done without the benefit of comments from stakeholders to guide it (many stakeholders will get their first chance to become familiar with the project once the draft scoping report is made available to them allowing them to be able to comment on it and have adequately informed discussions). All aspects of the assessment will be re-visited for the Impact Assessment Phase.
- All technical, financial (i.e. business plan and costs) and other information provided by the applicant, the applicant's project team, other specialists and official sources is assumed to be correct unless there is a clear reason to suspect incorrect information.
- The degree of detail achievable in the assessment of impacts that rely on the findings of other specialist studies is reliant on the degree of detail contained in those specialist studies.
- The quantification of economic impacts in order to inform the assessment of the significance of impacts was not possible, nor considered necessary, for all impacts. Where possible, quantification focused on impacts considered to be most important in the overall assessment. Assessments of impact significance made without quantification (and based on a consideration of the likely magnitudes of impacts and/or expert judgements) are, however, considered adequate for decision-making unless otherwise specified.
- Alternative mine sites, along with the question of whether the minerals could be extracted from other areas, were not part of the study brief.
- The findings of the assessment reflect the best professional assessment of the authors drawing on relevant and available information within the constraints of time and resources thought appropriate and made available for the assessment. See Appendix 3 for the disclaimer associated with this report.

#### **4 DESCRIPTION OF THE AFFECTED ENVIRONMENT**

The significance of impacts is often highly dependent on the economic environment or context within which they occur. For example, job creation or losses in a small local community with a stagnating economy and high unemployment will be far more significant than it would be in a larger community with a healthy economy. In order to offer such baseline information to the impact assessment this section describes the socio-economic environment.

The main information sources used were Census 2001 and 2011 data (StatsSA, 2002; 2012), The Fezile Dabi District Municipality Integrated Development Plan (IDP) and Rural Development Plan (RDP) (FDDM, 2016; DRDLR, 2016) and the Ngwathe Local Municipality IDP (NLM, 2018).

The proposed site is situated within Ward 7 of the Ngwathe Local Municipality, which forms part of the Fezile Dabi District Municipality of the Free State Province. Although the site lies fully within the Ngwathe Local Municipality, it lies on the border of two other local municipalities: the Emfuleni Local Municipality (within the Sedibeng District Municipality of Gauteng Province) and the JB Marks Local Municipality (within the Dr Kenneth Kaunda District Municipality of the North

West Province). Data are thus presented for Emfuleni Local Municipality and for Tlokwe City Council (which has since been merged into the JB Marks Local Municipality), as well as for the Vaal Barrage Area, Vaal Oewer and Lindequesdrif.

#### 4.1 Current land uses

The project has been proposed to take place on the farm Woodlands 407, which was previously covered by a prospecting right. Current land use on the site is varied, consisting mainly of agriculture, game farming and one tourist accommodation establishment. Game farming occurs on the central and northern portions of the property. On the eastern border, next to the river, there is an accommodation establishment called Goosebay Canyon Cabin, consisting of cabins and a camp site. The previous growing season saw around 170 ha of maize cultivated on the project site (M. Cocks, Monte Christo, pers. com.). There are also several farm dams on the property, some houses and a transmission line which crosses the property.

Land use in the wider area consists largely of a mixture of agricultural, mining and residential properties. Residential properties are particularly concentrated along the riverside, as well as smallholdings which are characterised by a combination of agriculture, residential and tourism uses.

#### 4.2 Demographics

According to Statistics South Africa, the Fezile Dabi District had a population of around 448 000 in 2011 (see Table 4-1). The Ngwathe Local Municipality had a population of 120 500 in the same year, which was up from 118 810 in 2001, implying an annual growth rate of 1.4% during this period. Emfuleni Local Municipality had a population of 721 663 in 2011, up from 657 949 in 2001 and thus with an annual growth rate of 9.7% during the period. According to the Community Survey, by 2016, Ngwathe Local Municipality's population had fallen to 118 907 while the Emfuleni Local Municipality had continued to grow to 733 445.

**Table 4-1 Population numbers in the wider study area (2011)**

Population Group	Free State	Fezile Dabi District	Ngwathe Local Municipality	Ngwathe Ward 7	Emfuleni Local Municipality	Vaal Barrage Area	Vaal Oewer	Tlokwe City Council	Lindequesdrif
Black African	2 405 533	420 054	104 221	9 743	616 095	418	427	116 011	582
Coloured	83 844	9 215	3 180	39	8 356	6	6	11 003	58
Indian or Asian	10 398	1 516	350	6	7 078	-	-	1 544	-
White	239 026	55 867	12 445	2	86 948	183	264	33 539	498
Other	6 790	1 383	325	7	3 186	-	-	665	9
<b>Total</b>	<b>2 745 591</b>	<b>488 035</b>	<b>120 521</b>	<b>9 797</b>	<b>721 663</b>	<b>607</b>	<b>697</b>	<b>162 762</b>	<b>1 147</b>

Source: StatsSA, 2012

#### 4.3 Employment and sectors

The Free State Province had an unemployment rate of 33% in 2011. This is similar to the rate for the Fezile Dabi District (34%), as well as for the Ngwathe Municipal area and the Emfuleni Municipal area (both 35%). Ngwathe's Ward 7, where the project site is located, had an exceptionally high unemployment rate in 2011 at 55%. The places with the lowest unemployment rates in the wider area were the Vaal Barrage Area (8%) and Lindequesdrif (7%).

**Table 4-2 Unemployment in the wider study area (2011)**

Employment status	Free State	Fezile Dabi District	Ngwathe Local Municipality	Ngwathe Ward 7	Emfuleni Local Municipality	Vaal Barrage Area	Vaal Oewer	Tlokwe City Council	Lindequesdrif
Employed	649 661	117 732	25 635	1 428	202 543	286	270	51 667	469
Unemployed	313 793	60 344	13 920	1 760	107 554	24	79	14 253	36
<b>% Unemployed</b>	<b>33%</b>	<b>34%</b>	<b>35%</b>	<b>55%</b>	<b>35%</b>	<b>8%</b>	<b>23%</b>	<b>22%</b>	<b>7%</b>

Source: StatsSA, 2012

#### 4.4 Income levels

The distribution of per household annual income level is quite consistent across the wider study area, with the highest proportion of households falling in either the R9 601 to R19 600 category or the R19 601 to R38 200 category in 2011. The Vaal Barrage area does have a higher proportion of households (35%) in the R19 601 to R38 200 category, and also a lower proportion of households (5%) earning no income at all.

**Table 4-3 Household incomes in the wider study area (2011)**

Annual household income	Free State	Fezile Dabi District	Ngwathe Local Municipality	Ngwathe Ward 7	Emfuleni Local Municipality	Vaal Barrage Area	Vaal Oewer	Tlokwe City Council	Lindequesdrif
No income	12%	12%	13%	17%	18%	5%	17%	18%	7%
R 1 - R 4800	6%	5%	5%	10%	5%	2%	4%	3%	1%
R 4801 - R 9600	9%	8%	9%	16%	7%	4%	12%	5%	4%
R 9601 - R 19 600	21%	21%	24%	24%	15%	21%	14%	15%	29%
R 19 601 - R 38 200	21%	22%	23%	20%	17%	35%	21%	19%	25%
R 38 201 - R 76 400	13%	13%	12%	9%	14%	18%	6%	14%	13%
R 76 401 - R 153 800	8%	8%	7%	3%	10%	5%	6%	11%	9%
R 153 801 - R 307 600	6%	6%	4%	1%	8%	4%	8%	8%	7%
R 307 601 - R 614 400	3%	3%	2%	1%	4%	2%	9%	5%	4%
R 614 001 - R 1 228 800	1%	0.9%	0.5%	-	1.2%	1.7%	2.3%	1.6%	-
R 1 228 801 - R 2 457 600	0.3%	0.3%	0.2%	0.04%	0.3%	1.7%	0.7%	0.4%	0.5%
R 2 457 601 or more	0.2%	0.2%	0.1%	0.1%	0.2%	0.4%	-	0.5%	-

Source: StatsSA, 2012

#### 4.5 Education levels

Differences in education levels across the wider study area are somewhat correlated with differences in income levels. The proportion of people who had achieved Grade 12 in 2011 was particularly low for Ngwathe's Ward 7 at 10% while it was higher for the Vaal Barrage Area at 27%. Similarly, the proportion of people who had not received any schooling was 17% for Ngwathe's Ward 7 and only 6% for the Vaal Barrage Area.

**Table 4-4 Highest education levels achieved in the wider study area (2011)**

Highest education level obtained	Fezile Dabi District	Ngwathe Local Municipality	Ngwathe Ward 7	Emfuleni Local Municipality	Vaal Barrage Area	Vaal Oewer	Tlokwe City Council	Lindequesdrif
No schooling	8%	9%	17%	6%	6%	10%	8%	10%
Some primary	22%	25%	27%	17%	18%	18%	19%	18%
Completed Primary	5%	5%	5%	4%	3%	4%	5%	4%
Some Secondary	28%	28%	28%	32%	32%	31%	26%	33%
Grade 12	18%	17%	10%	23%	27%	21%	22%	20%
Higher	4%	3%	1%	6%	3%	7%	8%	4%
Other	0.4%	0.4%	0.1%	0.7%	0.8%	0.4%	0.5%	1.1%
Not Applicable	14%	13%	13%	11%	10%	8%	11%	10%

Source: StatsSA, 2012

#### 4.6 Access to services

Access to toilet facilities provides a rough indication of services availability. The proportion of households with flush toilet facilities varied across the wider study area, being highest in the Emfuleni Local Municipality (90%) and lower in Ngwathe Local Municipality (77%), especially in Ward 7 (40%), where the majority of respondents used a bucket toilet (55%). Vaal Oewer also had a lower proportion of households with access to a flush toilet (54%). Note that according to the latest Community Survey the situation had improved somewhat by 2016, with 95% of Emfuleni's and 82% of Ngwathe's households having access to a flush toilet.

**Table 4-5 Toilet facilities in the wider study area (2011)**

Toilet Facility	Free State	Fezile Dabi District	Ngwathe Local Municipality	Ngwathe Ward 7	Emfuleni Local Municipality	Vaal Barrage Area	Vaal Oewer	Tlokwe City Council	Lindequesdrif
None	3%	2%	2%	3%	1%	2%	5%	7%	5%
Flush toilet	67%	80%	77%	40%	90%	82%	54%	84%	67%
Chemical toilet	1%	0%	0%	0%	0%	1%	-	0%	1%
Pit toilet with ventilation (VIP)	9%	3%	6%	2%	1%	0%	14%	2%	6%
Pit toilet without ventilation	14%	8%	4%	0%	6%	12%	26%	5%	18%
Bucket toilet	5%	6%	11%	55%	1%	1%	1%	1%	1%
Other	1%	2%	1%	0%	1%	2%	0%	1%	1%

Source: StatsSA, 2012

#### 4.7 Economic growth and development plans/priorities

In terms of outlining future economic development goals, the Fezile Dabi IDP is most instructive. According to this plan, the District Municipality government intends to support economic development that is inclusive and balanced. The IDP identifies the following objectives with regards to Local Economic Development (FDDM, 2016: 108-121):

- “To create an environment that stimulates local economic growth
- To support development of emerging farmers in the district
- To promote & enhance the SMME sector in the district
- To promote opportunities for increased inclusivity in the economy
- To facilitate Integrated Early Childhood Development service delivery
- To nurture the development of people's potential through arts & culture
- To plan, coordinate & support sports amongst the youth
- To promote & develop the tourism sector in FDDM”

## 5 IDENTIFICATION OF IMPACTS AND ISSUES

The following impacts and issues were identified as relevant for assessment based on the guidelines for economic specialist input (van Zyl et al., 2005) as well as information on the nature of the project and the receiving environment:

1. Compatibility with planning guidance
2. Financial viability and associated risks
3. Impacts associated with project expenditure
4. Impacts in terms of economic development contributions

5. Impacts from tax, royalties and regulatory fee payments
6. Impacts on property values
7. Impacts on tourism

These impacts are discussed and assessed in the following sections. Highly preliminary and tentative impact significance ratings are provided as these are required notwithstanding the level of detail and confidence achievable during scoping phase assessment.

Note that impacts on property values and on tourism represent the main impacts associated with potential opportunity costs from mining within the scope of this report. Impacts on agriculture are also potentially important but are not assessed in this report as they are dealt with in a separate agricultural specialist study.

## **6 ASSESSMENT OF IMPACTS**

This section provides an assessment of the impacts identified above and suggests management actions to avoid or reduce negative impacts or to enhance positive benefits.

### **6.1 Compatibility with planning guidance**

A potentially important informant of economic desirability is whether the proposed project complements key planning documents and other relevant guidance. Key economic planning guidance is contained primarily in Integrated Development Plans (IDPs) and associated Spatial Development Frameworks (SDFs) and Rural Development Plans (RDPs) bearing in mind that the basic purpose of SDFs are to specify the spatial implications of IDPs designed to optimise economic opportunities.

Although the project site falls completely within the Ngwathe Local Municipality, it's situation relative to settlements such as Vaal Oewer in the Emfuleni Local Municipality and Lindequesdrif in the JB Marks Local Municipality (formerly known as the Tlokwe City Council Local Municipality) mean that impacts are likely to be felt across three separate local municipalities, each located within three separate district municipalities, each in turn located within three separate provinces. This makes for a relatively complex economic development and planning context. The challenge of reviewing these documents is exacerbated by differences in the degree to which they provide guidance on which kinds of development are supported within their boundaries. With this in mind, the following district and local planning documents were reviewed:

- Free State Provincial SDF (FSP, 2013)
- Fezile Dabi District Municipality IDP and RDP (FDDM, 2016; DRDLR, 2016)
- Ngwathe Local Municipality IDP (NLM, 2018)
- Sedibeng District Municipality SDF (SDM, 2014)
- The Emfuleni Local Municipality SDF (ELM, 2017)
- The Kenneth Kaunda District Municipality IDP and RDP (KKDM, 2017; DRDLR, 2017)
- The JB Marks Municipal IDP (JBMLM, 2018)

Considered as a whole these documents recognise the importance of integrated and diversified economic development that makes optimal use of each area's comparative advantages including their natural and mineral resources and human capital. Emphasis is also placed on the optimal management of economic benefits from any new developments or projects.

The Free State Province's SDF outlines six growth and development pillars, of which the first is "inclusive economic growth and sustainable growth job creation". Within this pillar, the following five drivers have been identified:

1. "Diversify and expand agricultural development and food security
2. Minimise the impact of the declining mining sector and ensure that existing mining potential is harnessed
3. Expand and diversify manufacturing opportunities
4. Capitalise on transport and distribution opportunities
5. Harness and increase tourism potential and opportunities"

The framework thus recognizes the importance of the mining sector and the need to harness existing potential but requires that this objective be pursued in a way that the other drivers, such as the driver focused on harnessing tourism opportunities, are not impeded.

Similar to provincial level guidance, the Fezile Dabi IDP also calls for inclusive and balanced economic development. Specific objectives set out in the IDP that relate to local economic development are as follows (FDDM, 2016: 108-121):

- "To create an environment that stimulates local economic growth
- To support development of emerging farmers in the district
- To promote & enhance the SMME sector in the district
- To promote opportunities for increased inclusivity in the economy
- To facilitate Integrated Early Childhood Development service delivery
- To nurture the development of people's potential through arts & culture
- To plan, coordinate & support sports amongst the youth
- To promote & develop the tourism sector in FDDM"

As no Spatial Development Framework (SDF) was found for Fezile Dabi, the district's Rural Development Plan (RDP) was reviewed to gain insight into planning imperatives. The RDP contains a set of maps showing that the site has some agricultural potential, falls within a wide spanning Tourism Development Area, and that it contains land which forms part of a threatened ecosystem (DRDLR, 2016). Although the Plan recognises the importance of mining to the district, there is no specific mention of which areas are more suitable for mining (this is not surprising given that it is much more difficult to predict where viable mineral deposits might lie in comparison to, for example, which land might be suitable for agriculture).

At the local level, the Ngwathe Local Municipality IDP sets out the following Key Performance Areas (NLM, 2018: 218):

1. "Municipal Transformation and Institutional Development;
2. Good Governance and Public Participation;
3. Municipal Financial Viability;
4. Service Delivery and Infrastructure Development;
5. Local Economic Development and Spatial Rationale"

According to the Ngwathe Local Municipality IDP, the "economy of the region is mainly structured around Agriculture, Mining and Tourism of which the latter is in a developing stage." With regards to mining in the area, the IDP identifies the following as being significant (NLM, 2018: 47):

- “Gravel obtained from several open cast pits for construction or road building purposes
- Bentonite deposits at Koppies
- Granite formations at Parys
- Sand winning along the Vaal River (Parys vicinity)
- Alluvial diamonds are exploited, isolated locations of Vaal River riparian
- Volcanic pipes are mined in the region at Voorspoed (De Beers) and Lace Mines (Private)
- Future exploitation of rich coal deposits in the Koppies vicinity is highly likely”

Some insight into local and regional planning processes can also be gained from a review of the Sedibeng District Municipality SDF, which notes that it is committed to “the “Vaal 21” initiative, which is a cross-border agreement between the municipalities in southern Gauteng and the northern Free State municipalities (Fezile Dabi) to co-operate in the development of a regional economy extending from both banks of the Vaal River.” (SDM, 2014: 111).

The Emfuleni SDF categorises the land on the opposite side of the river to the project site as a combination of ‘existing open space’ and ‘urban residential’ (ELM, 2017: 17), and elsewhere as a combination of ‘intensive agriculture’ and ‘urban residential’ (ELM, 2017: 58). Vaal Oewer, located across these land use categorisations, is described by the Emfuleni SDF as “a sought-after weekend holiday area associated with the recreation value of the Vaal River. Consequently, this predominantly agricultural holdings area is coming under increasing pressure for redevelopment at higher residential densities. Development of this area will not only provide for the development of the Vaal River waterfront, but it will also enable the densification of the corridor that is emerging along the P155 freeway.” (ELM, 2017: 19).

In terms of planned development in the area, the Sedibeng Growth and Development Strategy 2017 is quoted in ELM (2017: 19) as follows:

*“Rural development must be about improving the capacity of the people, specifically enabling the rural poor to prosper and thrive. This requires a multi-pronged approach that helps create vibrant, equitable and sustainable rural communities that contribute to food security for all.”*

The JB Marks Municipal IDP highlights land and housing, job creation, agriculture, rural and economic development as priorities for development in the municipality. Given that the municipality was formed recently through the amalgamation of the Ventersdorp and the Tlokwe Local Municipalities, local government is at present focussed on finalising this process. In the area of Local Economic Development, the municipality seeks to (JBMLM, 2018: 82):

- “Coordinate and implement LED strategies and programmes projects
- Promote and support SMME development
- Promote and market tourism development
- Promote stakeholder participation in the economy
- Promote and attract investment
- Promote and support job creation initiatives”

The Kenneth Kaunda District RDP has a strong focus on the upliftment of the poor through rural development. The suggested pathway for this development is based mostly on tourism and agriculture (KKDM, 2017).

## **Summary**

The findings above are the result of a broad level desktop review of available economic planning guidance for the municipalities in the area. Based on these preliminary findings, it can be concluded that the project could be considered compatible with economic development and associated spatial planning for the area provided environmental impacts can be kept to an acceptable minimum and provided compatibility with conservation planning can be achieved.

## **6.2 Financial viability**

Long term positive economic impacts can only flow from a project that is financially sustainable (i.e. financially viable in the long term with enough income to cover costs).

Discussions with the applicant revealed that the financial viability of the project has been considered at length. Their appraisal followed standard viability and risk assessment methods that have been applied in similar mining projects. In their view, and based on their analysis, the expected rewards of the project outweigh risks making it financially viable to make the necessary investment (M. Koch, Monte Christo, pers com). Note that this view recognises that diamond exploration may prove fruitless. It is nevertheless important to bear in mind that financial sustainability/viability is never a certainty as is the case for virtually all commercial ventures. As a rule, applicants can only assess risks and costs to the degree possible and make an informed decision on whether they are worth taking relative to anticipated financial gains. The available information provides no reason to anticipate financial failure which would argue against the project.

## **6.3 Impacts associated with project expenditure**

The project would result in spending injections that would lead to increased economic activity best measured in terms of impacts on employment and associated incomes focusing on the local area and region.

All expenditures will lead to linked direct, indirect and induced impacts on employment and incomes. Taking employment as an example, impacts would be direct where people are employed directly on the project in question (e.g. jobs such as construction workers), indirect - where the direct expenditure associated with a project leads to jobs and incomes in other sectors (e.g. purchasing building materials maintains jobs in that sector) and induced where jobs are created due to the expenditure of employees and other consumers that gained from the project. Direct impacts are the most important of these three categories as they are the largest and more likely to be felt in the local area. Their estimation also involves the lowest level of uncertainty. The quantification of indirect and induced impacts is a far less certain exercise due to uncertainty surrounding accurate multipliers particularly at a local and regional level. This uncertainty makes it inadvisable to quantify indirect employment unless an in-depth analysis of this aspect is absolutely essential to decision making. Potential direct employment and income impacts are consequently

quantified in this report and likely indirect impacts are borne in mind qualitatively when providing overall impact ratings.

### **6.3.1 Construction phase impacts**

#### *6.3.1.1 Project construction expenditure/investment*

Construction expenditure would constitute a positive injection of new investment. The preliminary estimates outlined in the MRP indicate that a total of between R90 million and R130 million would be capital expenditure over a ten-year period. It is unclear exactly how much of this would be spent within the first two years (the defined construction period), but at this stage it is probably safe to conclude that up to 50% of the total amount would be spent during this time.

The project has the potential to have a relatively significant positive impact on commercial activity in the local area and region during construction given its size and the expenditure associated with it. During the construction phase the building construction, civil and other construction and specialist industrial machinery sectors would benefit. The wholesale and retail trade and construction materials sectors would also stand to gain due to indirect linkages.

Given that the local area includes industrial areas (both Vanderbijlpark and Sasolburg are within 45km of the project site), the majority of construction expenditure is likely to occur locally, thus supporting economic activity in the surrounding area. The nature of the spending is also aligned with the types of economic activity which characterise the nearby industrial centres.

#### *6.3.1.2 Employment during construction*

The applicant has indicated that their internal workforce will be used to accomplish construction phase objectives (M. Cocks, Monte Chisto, pers com). There are 13 workers on site at present working in agriculture and at the tourist accommodation. Given that this number will increase to around 25 workers by the project's second year, the number of Pure Source staff involved in construction will be somewhere between 13 and 25 workers. It is likely that additional support will be needed, and opportunities for additional temporary contractor staff will probably range between about 15 to 30 individuals, with a range of skill levels being required.

It is anticipated that the vast majority if not all of the workers required for the construction phase will be sourced from the local area which, as mentioned in the previous sub-section, includes industrial centres such as Vanderbijlpark and Sasolburg along with Parys and settlements such as Vaal Oewer and Lindequesdrif.

#### *6.3.1.3 Indirect opportunities during construction*

In addition to the above direct employment and associated income opportunities, temporary indirect opportunities would be associated with the project. These would stem primarily from expenditure by the applicant in the local area and region as well as expenditure by workers hired for the construction phase.

## 6.3.2 Operational phase impacts

### 6.3.2.1 Project expenditure/investment during operations

The key operational phase impacts associated with the project would flow from expenditure on operations at the mine and plant. Once the mine is fully operational, expenditure should be between R65 million and R83 million per annum over 28 years of operation (see table below).

**Table 6-1: Estimated operational expenditure per annum**

Spending category	Amount
Mining	R 32,000,000 - R 40,000,000
Processing	R 26,000,000 - R 34,000,000
Labour	R 7,000,000 - R 9,000,000
<b>Total</b>	<b>R 65,000,000 - R 83,000,000</b>

For the reasons outlined in the previous section it is predicted that the majority of operational expenditure will accrue to businesses and individuals in the wider local area, which includes Parys, Vanderbijlpark and Sasolburg.

### 6.3.2.2 Employment during operations

The table below outlines the operational phase employment opportunities that that would be associated with the project. These were calculated by taking the labour costs estimated in the SLP, dividing them by the number of workers in each respective category, and multiplying this amount (the cost-to-company per worker in each category) by 0.85, based on the assumption that workers will earn 85% of the cost-to-company of their employment. It is anticipated that by the third year of the project, a total of 48 jobs would be associated with operations resulting in total salary payment to internal staff of R5 million to R8 million annually. Bear in mind that 13 direct jobs are associated with agriculture and tourist accommodation on the site at present.

**Table 6-2: Operational employment**

	Year 1	Year 2	Year 3 onwards
<b>Employee skill level</b>			
Senior Management	2	2	2
Professionally qualified and experienced specialists, mid-management	2	2	2
Skilled technical and academically qualified workers, junior management	2	3	7
Semi-skilled and discretionary decision making	16	18	37
<b>Total</b>	<b>22</b>	<b>25</b>	<b>48</b>

As with the construction phase, it is anticipated that the majority of these jobs will accrue to people from the wider local area.

In addition to the internal workforce, the project will make use of outside contractors in the form of specialised services as well as general services. Specialists will include the following (MCCP, 2018a: 61):

- Geologists
- Environmental specialists
- Surveyors
- Safety and Training Officers
- Community/SLP officers

Once full production has been reached, the applicant anticipates that around R780 000 will be spent per annum on specialised services. Staffing needed in the form of general services could include the following (MCCP, 2018b: 61):

- Food – catering
- Construction – building material and building
- Transportation – for samples, material, waste and workers
- Garden services – upkeep of the mining facilities
- General maintenance of grounds, plumbing, electricity
- Laundry for mining clothing
- Scrap yard for old worn out equipment (salvaging)
- Recycling
- PPE overalls – dress makers
- Security services
- Water treatment
- Water recycling
- Equipment renting and maintenance

#### *6.3.2.3 Indirect opportunities during operations*

In addition to the above direct employment and associated income opportunities indirect opportunities would be associated with the operational phase of the project. These would stem primarily from increased expenditure by the applicants and their employees in the local area and region.

#### **6.3.3 Mitigation**

The applicant's procurement processes, hiring and training of staff and other measures outlined in the social and labour plan (SLP) should act as a departure points when considering benefit enhancement. These are discussed in more detail in Section 6.4. The social specialist study (USSS, 2018) also provides more details on appropriate benefit enhancement measures associated with project expenditure, especially where employment is concerned.

#### **6.3.4 Preliminary impact significance rating**

An assessment of the significance of the combined impacts of project-related expenditure based on the findings above is presented in Table 6-3. Impacts with mitigation, based on this preliminary scoping stage of assessment, should be of a low significance during construction. Impacts during

operations would have a moderate significance rating with mitigation given the size of the expenditure injection and the number of potential employment opportunities involved.

**Table 6-3: Assessment of the impacts associated with project expenditure**

Phase	Significance before mitigation	Significance after mitigation
Construction	Low	Low to Moderate
Operational	Low to Moderate	Moderate

#### 6.4 Economic development contributions

This section will focus on impacts resulting from the applicant’s economic development contributions. These are a particularly important part of the overall benefits resulting from expenditure and revolve around the applicant’s strategies for human resources, procurement and corporate social responsibility. As such the section draws heavily on the applicant’s Social and Labour Plan (SLP).

In accordance with the Mineral and Petroleum Resources Development Act, and in line with the principles set out in the latest version of the Mining Charter, the applicant has committed to achieving the following objectives, as outlined in the SLP (MCCP, 2018b: 9):

- “Promote employment;
- Contribute to the transformation of the mining industry;
- Ensure that holders of mining rights contribute towards the socioeconomic development of the areas in which they are operating.”

The applicant intends to achieve these objectives in three ways outlined in the SLP. Firstly, through the creation of employment opportunities and through a Skills Development Plan, the applicant seeks to promote employment. Secondly, through an Enterprise Development Strategy, small, medium and micro-sized enterprises (SMMEs) in the surrounding area will be supported and encouraged to grow. Lastly, and with the largest number of potential recipients, as part of the commitment to contributing to the socioeconomic development of the area surrounding the proposed mine, the applicant is in the process of formulating a Local Economic Development Programme.

##### 6.4.1 Skills development

The applicant’s intentions to contribute to the development of the workforce are outlined in a Skills Development Plan which has the following objectives (MCCP, 2018b: 18):

- “improve the quality of life of employees;
- expand employees’ prospects for work enhancement at Pure Source;
- enhance safety, productivity and the competitiveness of the employees;
- improve the levels of return on the investment in education and training;
- encourage the use of the workplace as an active learning environment;
- allow new employees to gain relevant work experience;
- advance the employment prospects of employees through education and training; and

- utilise the Workplace Skills Plan as a vehicle to align skills development with both business growth strategies and employment equity plans.”

If the abovementioned objectives are met this will contribute to the development of skills which will allow employees to add a greater share of value to the production process whilst giving them a better chance at securing future employment.

In addition to the above, the applicant intends to develop the skills of people outside of its workforce through an internship and bursary plan focussed on members of the local community. The SLP indicates that one external bursary, one study assistance package, and two internships will be offered at any given time between 2020 and 2023.

The SLP also outlines transformation related goals in an Employment Equity Plan which are focussed on maintaining existing levels of diversity within the workforce (MCCP, 2018b).

#### **6.4.2 Local economic development**

With regards to the proposed project’s LED Programme, the SLP notes that:

*“Pure Source has chosen to follow a "bottom-up" approach to Local Economic Development (LED), whereby projects are envisaged, initiated, and sustained by local community members. All projects have been designed in line with the Ngwathe Local Municipality's IDP priorities, and the projects have been proposed on this basis. In this way, the community will build its own skills base and have ownership of projects from the outset. Pure Source thus aims to capacitate the community to achieve and continue its own development goals.” (MCCP, 2018b: 54)*

The applicant thus intends for the LED Programme to be guided by the Ngwathe Local municipality’s LED priorities. The SLP outlines some of the ways in which the applicant aims to support existing local socio-economic development initiatives (MCCP, 2018b: 54):

- Integrates the mine's SLP into the Ngwathe Local Municipality 's IDP through serving on the local LED Forum and through consultation with the LED manager for the municipality;
- Assists in implementing LED projects and/or programmes identified in the IDPs, in partnership with local government, business and affected communities;
- Undertakes and support identified sustainable development initiatives in surrounding and affected communities;
- Provide HDSA's who possess the required technical ability with a preferred supplier status in all three levels of procurement, namely:
  - capital goods;
  - consumables; and
  - services”

The amounts which the applicant intends to spend on the programmes outlined above are shown in **Table 6-4**. The amounts are highly preliminary estimates based on conservative cash flow calculations shown in the MWP (MCCP, 2018a). Once the project has reached full production, spending on economic development contributions, including LED, HR development and management of downscaling, is estimated to be between R820 000 and R1 380 000 per year.

**Table 6-4: Annual planned expenditure on social and labour plan-related costs**

Spending category	Amount
Local Economic Development	R 20 000 - R 30 000
Human Resource Development	R 350 000 - R 700 000
Management of Downscaling	R 450 000 - R 650 000
<b>Total</b>	<b>R 820 000 - R 1 380 000</b>

These estimates will be revisited in the assessment phase particularly in light of the draft Mining Charter which sets targets for local benefit sharing.

#### **6.4.3 Mitigation**

No mitigation is recommended for the impacts predicted to result from economic development contributions at scoping phase. The SLP appears to be aligned with local government's published planning imperatives and seeks to optimise benefits resulting from the applicant's participation in the local economy.

#### **6.4.4 Preliminary impact significance rating**

Impacts resulting from the applicant's local economic development contributions are predicted, at this preliminary scoping stage of assessment, to have a moderate significance and no mitigation was recommended at this stage. See Table 6-5 for details.

**Table 6-5: Assessment of impacts associated with the economic development contribution**

Phase	Significance before mitigation	Significance after mitigation
Construction	N/A	N/A
Operational	Low to Moderate	Moderate

### **6.5 Impacts from tax, royalty and regulatory fees payments**

The nature of the project should ensure that it makes a relatively significant contribution to the national fiscus. Payments towards direct taxes, royalties and regulatory fees (including payments towards mine health and safety regulations, national skills fund contributions as well as environmental monitoring and auditing) are key variables for the measurement of these benefits. Estimates of benefits in this regard are provided in this section. It should be noted that these estimates are the result of geological surveys and market analyses contained in the MWP<sup>2</sup>. They are highly preliminary and do not include amounts which may be associated with the discovery of diamonds.

Preliminary calculations estimate that payments towards taxes, royalties and regulatory fees should be in the range of R2.5 million and R3.6 million annually once full production is reached. A breakdown of these estimates is provided in Table 6-6.

<sup>2</sup> Predicting market prices is unavoidably difficult. As such the MWP only forecasts prices for the first 10 years of the project. These prices were projected a further 20 years to calculate very rough estimates of these variables.

**Table 6-6: Estimates of payments towards taxes, royalties and regulatory fees**

Spending category	Amount
Company tax	R 700 000 - R 1 200 000
Royalties	R 450 000 - R 600 000
Regulatory fees	R 1 400 000 - R 1 800 000
<b>Total</b>	<b>R 2 550 000 - R 3 600 000</b>

### **6.5.1 Mitigation**

No mitigation measures are recommended.

### **6.5.2 Preliminary impact significance rating**

An assessment of the significance of impacts resulting from company tax, royalty and regulatory fee contributions of the project based on the findings above is presented in the table below. Impacts, at this preliminary scoping stage of assessment, would be low positive at a national level with no mitigation recommended.

**Table 6-7: Assessment of the impacts associated with taxes, royalties and regulatory fees**

Phase	Significance before mitigation	Significance after mitigation
Construction	N/A	N/A
Operational	Low	Low to Moderate

## **6.6 Impacts on property values**

Economic theory suggests that property values capture not only the physical characteristics and productive potential of properties, but also the environmental and social characteristics of their surroundings. The project’s environmental and social impacts thus have the potential to impact on property values.

In order to gauge the potential impacts of the proposed project on existing property values, the existing property context surrounding the site was first considered. Then the results of the other specialist studies were scrutinised for information on impacts that could lead to welfare changes reflected in property value effects. The individual factors that could impact negatively on property values (primarily visual, air quality, noise and water quality) were first considered in isolation before making an overall assessment of their combined impact. Positive impacts could stem from the increased commercial activity and job creation associated with the project which should play a role in boosting demand for houses with potential impacts on values.

Assessment is focused on the operational phase as impacts on property values should take their lead from longer term impacts and not temporary impacts during construction over roughly two years.

## **6.6.1 The surrounding property context**

### *6.6.1.1 Vaal Oewer*

Vaal Oewer is located directly across the Vaal River from the north-western border of the project site. As per the information outlined in Section 4, the settlement consists of around 700 people (according to the 2011 census) living in an area which spans just under 3 km. There is a cluster of informal housing located on the western border of the settlement. The settlement has grown somewhat in the past 14 years. A count of structures revealed that there were around 170 in 2004 and closer to 270 in 2018. The settlement is around 25km from Vanderbijlpark and 35km from Sasolburg and thus falls within commuting distance of these towns.

Property in Vaal Oewer ranges in value. At the time of this study there was a R315 000, 850 m<sup>2</sup> plot of land with a good view of the river, as well as a cheaper, R180 000, 836 m<sup>2</sup> erf without river views for sale. Houses ranged from around R659 000 for a 2-bedroom house on a 734 m<sup>2</sup> erf to R5.5 million for a 7-bedroom house on 1500 m<sup>2</sup> erf. There were also larger properties in the vicinity of Vaal Oewer, for example a 37 ha property, situated 2km to the east of the settlement, on sale for R3.75 million.

### *6.6.1.2 Lindequesdrif*

Lindequesdrif is a collection of mostly residential small holdings situated along the Vaal River, starting directly across the river from the western border of the project site and running downstream for about 8 km. There are also several plots of land which are set back from the river and which appear to have a more agricultural focus.

At the time of this study the asking prices for properties ranged in value from around R165 000 for a 2.4 ha plot of undeveloped land to R420 000 for a 1 bedroom house, to R12.5 million for a 2 ha riverside property with 2 modern 3 bedroom houses built near the river. Riverside properties appeared to be substantially more valuable than those set back from the river. For example, there was a 4.3 ha agricultural holding, set back from the river, on sale for R550 000.

### *6.6.1.3 Vaal Barage*

The Vaal Barage area is comprised of smaller suburbs such as Windsor on Vaal, Ebner on Vaal, Lochvaal and Miravaal. The western border of this area is situated roughly 5 km to the east of and upstream from the project site.

Houses in Windsor on Vaal are generally on erfs of around 2.1 ha. There were at the time of this study two for sale, one 6-bedroom and one 9-bedroom, for R11 million each. There were similar properties in Ebner on Vaal, such as an 8-bedroom house on sale for just under R11 million, but the area also had cheaper properties such as 2.1 ha properties with multiple houses, set back from the river, valued at around R1.8 million.

### *6.6.1.4 Surrounding farm residences*

The value of agricultural land in the wider study area is primarily driven by its productive potential. Farm values are also, generally to a lesser degree, driven by other 'lifestyle' factors which essentially determine how pleasant it is to live on the land. These can include visual appearance, noise levels, pollution levels, etc.

### **6.6.2 Risks to property values**

The key potential sources of negative impacts on property values in the area are visual, air quality, noise and terrestrial and riverine biodiversity impacts. The likely property value implications of the specialist studies dealing with these aspects are summarised below and an assessment of risks per area is presented. Note that the emergence of negative social impacts also presents a risk for property values. These are assessed in the social specialist study which found that the project would lead to positive impacts associated with job creation and possible socio-economic spin-offs. The combined significance of these impacts was rated as high. Negative impacts anticipated to result from the project include those associated with a potential influx of job seekers, as well as impacts resulting from an altered sense-of-place. Combined negative impacts were rated as having a low significance (USSS, 2018).

The visual assessment notes that “[t]he following visual receptors have been identified within a 5 km radius of the Project area (Pirie, 2018: 7):

- Residential areas, particularly those located along the Vaal River;
- Farm houses; and
- Main roads within the area, particularly the N1 highway.”

Visual impacts would result from the following activities:

- “Removal of vegetation for infrastructure and open pit mining
- Vehicular and heavy machinery movement
- Erection of mine Infrastructure
- Open pit mining
- Development of dumps”

The assessment concludes that impacts from open pit mining will be high negative without mitigation and medium negative with mitigation.

From a property value perspective, dust levels are a particular concern as the presence of dust can impact on living conditions limiting outdoor activities (e.g. braais) and resulting in the need for increased cleaning. According to the scoping report produced by the air quality specialists, impacts relating to mining and processing activities are likely to result mainly from increased particulates (dust), but other pollutants such as combustion products from vehicle tail-pipe emissions and dryer stack(s) are also considered to be a concern. The severity of anticipated air quality impacts was not estimated (Grobler and Bornman, 2018).

The report produced by the noise specialist as part of the scoping phase was a baseline assessment and, as such, did not estimate the severity of impacts resulting from the proposed development. Key findings in respect of estimating impacts on property values are as follows (Grobler, 2018: iv):

- “NRs [Noise Receptors]:
  - Include places of residence and areas where members of the public may be affected by noise generated by proposed activities.
  - NRs within a 2 km radius of the proposed operations include several residences on the both banks of the Vaal river to the west and east of the proposed operations, as well as the residential area of Vaal Oewer to the north of the operations.

- On average, noise impacts are expected to be slightly more notable to the south of the project activities. Terrain may affect noise propagation between sources and NRs by acting as noise barriers.”

Negative impacts on the freshwater environment have the potential to effect property values, given that reduced water quality will likely lessen the appeal of properties in the vicinity of the river. With regards to overall freshwater impacts, the key preliminary finding of the riverine ecology scoping report is that impacts would be low with mitigation (Tate, 2018).

There is also some potential for property values to change due to the project’s impacts on terrestrial biodiversity. The biodiversity assessment reveals that the project has been proposed on land which is ecologically sensitive (Adams and Erasmus, 2018: 7):

*According to the Free State Terrestrial CBA Plan, the project area is comprised of three identified areas: Critical Biodiversity Area2, Ecological Support Area1 and Ecological Support Area2... All of these areas will have a high or moderately-high biodiversity value. Three areas across the central portion are considered CBA2s. These areas coincide with areas which are considered to be rocky ridges and or wetland areas (both high biodiversity areas) based on desktop analyses.*

The biodiversity assessment has rated impacts on biodiversity, flora and fauna as moderate to high with mitigation. These impacts have the potential to put downward pressure on certain property values (for example where properties have views over what is currently relatively in-tact natural vegetation).

In addition to the negative impacts which can stem from the above, the project also has the potential to place upward pressure on property prices. Property values in any given area are significantly driven by demand for housing which, in turn, is directly linked to economic opportunities and jobs in the area. The proposed project therefore has the potential to increase demand and associated values for housing and property.

It is difficult to predict the degree to which the project would contribute to property demand thereby supporting value increases. There is, for example, no formula that can be used to link new project expenditure and jobs to property demand. Notwithstanding measurement constraints, it stands to reason that the relatively small scale of the project would not contribute substantially to property demand thereby supporting only marginal value increases if any at all.

### **6.6.3 Mitigation**

Impacts on property values are primarily dependent on how the applicant’s operations are designed, constructed and operated to minimise negative biophysical and social impacts and enhance positive ones. The measures recommended in other specialist reports to minimise negative impacts (primarily visual, air quality, noise, water quality, traffic and social measures) and enhance positive impacts would thus also reduce impacts on property values and should be implemented.

### **6.6.1 Preliminary impact significance rating**

Based on a consolidated consideration of impacts outlined above, un-mitigated impacts on property values have, at this preliminary scoping stage of assessment, been given a high negative

significance rating (see Table 6-8 below). Negative risks could be reduced to an overall medium significance provided that appropriate (mostly air quality, visual, noise and social) mitigation measures are put in place.

**Table 6-8: Assessment of the significance of impacts on property values**

Phase	Significance before mitigation	Significance after mitigation
Construction	Moderate	Low
Operational	High	Moderate

## 6.7 Impacts on tourism

Tourism plays an important role in the economy of the local area and wider region and has the potential to play an increasingly prominent role as a driver of economic development. It is thus important to consider the potential impacts of the proposed project on this sector.

In order to assess tourism impacts, information on current tourism use and potential future use focusing on the wider area surrounding the site was gathered. Visual, air quality, noise and water quality impacts combined with a loss of conservation worthy land were are likely to be the key concerns for tourism. Sources of positive impacts would stem from increased potential for business-related visitors. After outlining the tourism context, pertinent information from other specialist studies was examined and an assessment of impacts was made below.

### 6.7.1 The tourism context

In the SWOT analysis which forms part of Ngwathe Local Municipality’s IDP, ‘Tourism for Economic Development’ is listed as one of seven of the municipality’s strengths (NLM, 2018). Towns mentioned specifically where tourism is discussed in the report include Parys, Vredefort, Koppies and Heilbron, of which Parys is the closest to the study site, situated around 20 km to the south-west. Parys and the surrounding area have a broad range of attractions including river rafting, golf, quad biking, art and antique galleries and beauty spas, all of which appeal to those seeking recreation and relaxation<sup>3</sup>. Also of interest is the oldest and largest known meteorite impact site on earth, which extends from Welkom to Johannesburg. The central part of the impact crater is located near Vredefort, roughly 35 km to the south-west of the project site, and is known as the Vredefort Dome, as it is a 90km wide dome-shaped geological formation. The Vredefort Dome is a UNESCO World Heritage Site<sup>4</sup>.

Tourism also plays an important role in the area immediately surrounding the project site. Many of the riverside properties adjacent to the site have been developed into establishments which offer accommodation as well as fishing and other forms of riverside recreation.

#### 6.7.1.1 Tourism facilities and accommodation establishments

Desktop research revealed that there are at least 18 tourism establishments situated within 2km of the project site boundaries. The establishments identified thus far are shown in Figure 6-1.

<sup>3</sup> See [www.parys.co.za](http://www.parys.co.za) for details.

<sup>4</sup> See [www.vredefortdome.org](http://www.vredefortdome.org) for details.

**Figure 6-1 Tourism establishments within 2km of the project site boundaries**



There is also a private game reserve called *The Savannah Africa* situated roughly 6 km to the south-west of (and thus downstream from) the project site border. The reserve offers accommodation, game drives, hiking trails and river paddles.

A review of property for sale in the area revealed that there was one tourism establishment for sale in Vaal Oewer. The establishment, marketed as a lodge, consisted of 11 units of various types with “access to pristine Riverside areas for walks, fishing, bird-watching, Swimming pool, Braai areas, Lapa’s, Boathouses, Wharf Complex, carpools and comfortable accommodation and lots more.” The property was being advertised for R5.45 million<sup>5</sup>. There was also a function venue for sale in Lindequesdrif with a function hall suited for 120 people, river frontage with kitchen, catering and braai facilities, several cottages, a main house with 4 bedrooms, as well as the original farmhouse also with 4 bedrooms, a swimming pool, a warehouse, 4 garages and staff quarters being advertised for R6.5 million<sup>6</sup>.

### **6.7.2 Sources of risks and opportunities for tourism**

As mentioned in Section 6.6.2, the visual specialist assessment identifies residences along the Vaal River, within 5km of the project site, as receptors of visual impacts resulting from the project. As

<sup>5</sup> See <https://www.property24.com/for-sale/vaaloewer/vanderbijlpark/gauteng/3628/106404304>

<sup>6</sup> See <https://www.property24.com/for-sale/lindequesdrif/potchefstroom/north-west/3601/106730949>

some of these residences are tourism establishments, it can be inferred that they are also sensitive to visual impacts. The visual study concludes that impacts from mining activities are likely to be high without mitigation and medium with mitigation.

Negative impacts on air quality have the potential to impact on the experience of tourists particularly if significant direct nuisance is caused by dust. With regards to overall air quality impacts, the air quality specialist study did not assign significance ratings, but did point out that there would likely be an increase in particulate matter and other forms of pollution such as combustion products from the operation of vehicles and dryer stacks.

Noise impacts have the potential to impact on tourism if they are significant and impact negatively on tourism receptors and tourist experiences. The noise specialist study identifies a number of receptors particularly nearby residences along the Vaal River that include tourism establishments.

Negative impacts on the freshwater environment have the potential to impact on the experience of tourists particularly if the Vaal River is impacted on given its importance as an attraction. With regards to overall freshwater impacts, the key preliminary finding of the riverine ecology scoping report is that impacts would be low with mitigation (Tate, 2018).

The project's impacts on terrestrial biodiversity, as discussed in Section 6.6.2, have the potential to impact negatively on tourism in the area. The biodiversity assessment reveals that the project has been proposed on land which is considered to be high in biodiversity (Adams and Erasmus, 2018). Impacts on biodiversity, flora and fauna have been given preliminary ratings of moderate to high significance with mitigation.

The proposed project has some potential to result in increased tourism to the area as a result of increased business tourism. Experience indicates that a number of technical, management and sales staff generally associated with the companies involved in a project of this nature are required to periodically visit the project site to conduct business. These staff generally fall into middle to higher income brackets and in the event that they have travelled significant distances there is some chance that they could require accommodation and potentially make use of other tourist facilities and services such as restaurants and retail outlets. Given the relatively close proximity of the project site to urban centres where business visitors are likely to come from, these impacts are anticipated to be of minor significance.

### **6.7.3 Mitigation**

Impacts on tourism are primarily dependent on how project operations are designed, constructed and executed to minimise negative biophysical and social impacts and enhance positive impacts. The measures recommended in other specialist studies to minimise negative impacts (primarily visual, air quality, noise, water quality, botanical, rehabilitation and social measures) and enhance positive impacts would thus also reduce impacts on tourism and should be implemented. These measures are not repeated here.

Serious consideration should be given to funding tourism enhancement projects in collaboration with local tourism stakeholders as part of the mine's future Social and Labour Plan (SLP) contributions. This is a particular need given limited concerted efforts in this regard in the local area. Assistance could, for example, encompass tourism planning, promotion, capacity building, enterprise development and the provision of tourist facilities.

With regard to rehabilitation, if one takes a sample of mines throughout South Africa, it is clear that rehabilitation effort and success can be highly variable even if all mines are required to abide by the same regulations (see van Zyl et al., 2012). This variability can be seen when comparing both operating and closed mines. It therefore stands to reason that, with regards to minimising impacts, much will depend not only on how the applicant’s EMP is conceived but critically and how it is implemented in partnership with the relevant authorities and other stakeholders. Rehabilitation needs to be rigorously applied and adequately funded both concurrently and at closure, especially to minimise visual scarring and other tourism risks.

**6.7.4 Preliminary impact significance rating**

Based on a consolidated consideration of the risks and opportunities described above, unmitigated impacts on tourism, at this preliminary scoping stage of assessment, have been given a high negative significance rating during operations (see Table 6-9). It should, however, be possible to reduce these impacts to a moderate level of significance provided that appropriate mitigation measures are put in place.

Some disturbance and nuisance would be experienced during construction. This would include the potential for increased dust and noise. Impacts should, however, be low provided the construction phase is well managed and the mitigation measures suggested by the other specialist studies forming part of the EIA are implemented.

**Table 6-9: Assessment of the impacts on tourism**

Phase	Significance before mitigation	Significance after mitigation
Construction	Moderate	Low
Operational	High	Moderate

**7 CONCLUSIONS**

Preliminary assessment indicates that the project has the potential to result in significant benefits provided it proves adequately financially viable. These benefits would primarily be in the form of increased jobs and incomes from project spending, contributions to local economic development initiatives and contributions in terms of taxes, royalties and regulatory fees. In addition, benefit enhancement measures are available to maximise benefits particularly for the local area.

The project would also be associated with significant risks and achieving an acceptable level of risk would be particularly dependent on extensive mitigation. Significant attention will need to be paid to mitigating air quality, visual, noise, social, as well as riverine and terrestrial biodiversity impacts as these have the potential to lead to economic impacts including reduced residential amenity (as reflected in property values) and impacts on tourism. Adequate financial provisions for unforeseen mine closure along with rigorous ongoing rehabilitation would also be key to risk reduction and need to be taken into account when refining project costs.

The Impact Assessment Phase will allow for more detailed assessment of all impacts and would be informed by the plan of study below.

## 8 PLAN OF STUDY – IMPACT ASSESSMENT PHASE

The Impact Assessment Phase will focus on addressing the primary limitation of the Scoping Phase, namely the preliminary nature of the assessment that was possible. The impact categories in this report remain valid. More detailed assessment with therefore focus on the following impact categories:

1. Compatibility with planning guidance
2. Financial viability and associated risks
3. Impacts associated with project expenditure
4. Impacts in terms of economic development contributions
5. Impacts from tax, royalties and regulatory fee payments
6. Impacts on property values
7. Impacts on tourism

In addition, in keeping with MPRDA Regulation 50 (c) and (d), an assessment of the best practicable environmental option or land use for the site (eco-tourism vs. agriculture vs. mining) would be conducted using cost-benefit analysis. Note that the mining option for the site may be nuanced and could essentially take the form of mining as the primary land use on parts of the site whilst some agriculture and eco-tourism continues on other parts not being mined. The eco-tourism option would also need to be more clearly defined prior to analysis.

The cost-benefit analysis will quantify benefits and costs in monetary terms to the extent possible. This will require more detailed financial and other information from the applicant. It will also require that the negative externalities that may be associated with mining be quantified as much as possible and reasonable with a focus on their values after mitigation. These externalities stemming from air quality, noise and visual impacts, for example, should be best valued using property values impacts modelling. The cost of mitigation itself, including for all rehabilitation and financial provisions for pre-mature mine closure, will also need to be included in the cost-benefit analysis.

Important primary and secondary data sources that will be utilised to inform the assessment include:

- Observations during a field trip to the wider area and site.
- Meetings, telephonic interview and email correspondence with key stakeholders, stakeholder groups and persons with relevant local knowledge.
- The relevant literature and other studies focused on the impacts being considered.
- Planning and policy documents.
- The findings of the other specialist studies forming part of the EIA to the extent that they are relevant in assessing economic impacts.
- Data from the applicant.

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## 10 APPENDICES

### Appendix 1: Author profiles

The report was compiled by Dr. Hugo van Zyl and Mr James Kinghorn.

Dr. van Zyl holds a PhD in economics from the University of Cape Town. He has nineteen years of experience focusing on the analysis of projects and policies with significant environmental and development implications and has been involved in project appraisals of infrastructure projects, industrial and mining developments, mixed use developments, renewable energy projects, conservation projects and eco-tourism initiatives throughout Southern Africa. He has lead, participated in and co-ordinated research in economic impact assessment, environmental resource economics and project appraisal and has contributed specialist input to over 60 environmental assessments. Dr. van Zyl is also the lead author of the Western Cape Department of Environmental Affairs and Development Planning guidelines on economic specialist input into EIAs (van Zyl et al., 2005).

James Kinghorn holds a masters degree in environmental and resource economics from Rhodes University. He has three years of research experience in the field of environmental economics, which has included project appraisal at national, regional and local levels. Mr Kinghorn's list of contributions towards EIAs includes inputs to the assessment of proposed mines, mineral processing facilities, renewable energy facilities and agricultural developments.

## Appendix 2: Specialist Declaration

I, Dr Hugo van Zyl, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I 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;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- 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 have no vested interest in the proposed activity proceeding;
- 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;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study 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:



Name of Specialist: Dr Hugo van Zyl

Date: 05/10/2018

I, Mr James Kinghorn, as the appointed independent specialist, in terms of the 2014 EIA Regulations, hereby declare that I:

- I act as the independent specialist in this application;
- I 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;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- 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 have no vested interest in the proposed activity proceeding;
- 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;
- I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- all the particulars furnished by me in this specialist input/study 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:



Name of Specialist: Mr James Kinghorn

Date: 05/10/2018

### **Appendix 3: Disclaimer**

The primary role of this study is to inform the decision-making processes being undertaken by the relevant environmental authorities with regards to the proposed project. Due care and diligence has been applied in the production of the study. However, ultimate responsibility for approving, denying or requiring changes to the proposed project application rests with the relevant environmental authorities (and other government bodies where relevant) who also bear responsibility for interrogating and determining how assessment information from this economic specialist study along with other information is to be used to reach their decisions. Independent Economic Researcher and/or its employees can therefore not be held responsible or liable for any consequences of the decisions made by the relevant environmental authorities with regard to the proposed project. This includes any financial, reputational or other consequences that such decisions may have for the applicant, the Environmental Assessment Practitioner responsible for conducting the Environmental Impact Assessment process or for the environmental authorities themselves.