

Groundwater Flow and Levels: Pre-mining groundwater in the area sloped away from the Pilanesberg Complex, from south to north. Local groundwater flow was influenced by the presence of non-perennial drainage streams, high ground associated with the Pilanesberg mountain range and localised borehole abstractions. There is a good correlation between the water level and the topography indicating that groundwater levels correlate to the contours of the land (SLR, 2019).

Groundwater Quality: The historic pre-mining data indicated that the water quality in the area varied between Class I (good) and Class III (poor) when compared to the South African National Standards (SANS) 241:2006). Class I is considered to be acceptable for lifetime consumption and is the recommended compliance limit. The overall water quality of the area was characterised by higher-than-average magnesium concentrations and high fluoride concentrations. The latter was expected due to runoff and groundwater through-flow from the neighbouring alkaline Pilanesberg Complex. The pre-mining water in the area had an overall carbonate-magnesium character indicative of recently recharged waters. This means that the groundwater was derived from recent surface water run-off. The carbonate character confirmed the high total hardness content of water in the area. PPM has an on-going groundwater monitoring programme, implemented since 2008 (SLR, 2019).

Groundwater Use: Boreholes are mainly distributed along perennial and non-perennial streams, local dykes and local faults. These are mainly concentrated to the western side of the Pilanesberg Platinum Mine. Hydrocensus data collected and analysed in 2012 and 2014 indicates the following (SLR, 2019):

- More than half of the borehole sites (54%) were not in use at the time of the surveys.
- Approximately 56% were used for monitoring and mostly for mining purposes.
- 29% of boreholes were used for domestic and livestock watering – this indicates that the significance of groundwater use for drinking purposes in this area was less than expected and could be due to the development of new infrastructure which supplies piped water from municipal water supply and/or from the Magalies water scheme to the surrounding villages.
- The remaining portion (15%) was for mining purposes such as dewatering and process water (it should be noted that water abstraction from boreholes for water supply stopped in December 2016).

7.4.1.8 Air Quality

Regional Air Quality: The contribution of various sources of emissions to ambient particulate and gaseous concentrations within the project area include the following (SLR, 2019):

- Stack, vent and fugitive emissions from mining and mineral processing operations.
- Vehicle tailpipe emissions.
- Household fuel combustion.
- Biomass burning (including veld fires).
- Various miscellaneous fugitive dust sources, including agricultural activities, wind erosion of open areas and vehicle-entrainment of dust along paved and unpaved roads.

Emissions from the current Pilanesberg Platinum Mine mining and mineral processing operations were quantified and simulated when the Air Quality Management Plan (AQMP) for the Pilanesberg Platinum Mine was compiled in 2016. Sources of particulate emissions from the current Pilanesberg Platinum Mine operations include vehicle entrainment from unpaved roads, material handling of ROM in the pit and at the ROM stockpile, material handling of waste rock in the pit and at the WRD, crushing and screening of ROM,

wind erosion from the TSF, WRD and other exposed areas and emissions associated with drilling and blasting. The main findings from the AQMP are summarised as follows (SLR, 2019):

- Simulated annual average PM₁₀ concentrations exceeded South African National Ambient Air Quality Standards (NAAQS) to the north-west of the open pit, including at the southern edges of Ngweding.
- Simulated annual average PM_{2.5} concentrations were in compliance with NAAQS at all sensitive receptor locations.
- Simulated dust fallout rates were in exceedance of NDCR limits for non-residential areas in the immediate vicinity of the mining and mineral processing operations, but in compliance with the NDCR limit for residential areas outside the property boundary.
- Simulated nitrogen dioxide and sulphur dioxide concentrations were in compliance with NAAQS for the entire area.

Potential Receptors: Air Quality Sensitive Receptors (AQSR) generally include places of residence and areas where members of the public may be affected by air pollution. There are no permanent potential AQSRs inside the proposed PR area; however, due to the nature of the surrounding land uses (see section 7.4.3.2) (game reserves, livestock grazing and the Pilanesberg National Park), these areas, including residential areas (mainly rural villages) are considered to be AQSRs (Airshed Planning Professionals [Airshed], 2021).

Dust Fallout Data: Monitoring data from Pilanesberg Platinum Mine's air quality monitoring programme generally shows compliance with applicable limits for dust fallout, PM_{2.5} and PM₁₀. Based on the latest available measurement data of PM₁₀ and PM_{2.5} at three locations and sampling of dust fallout at 13 locations, ambient air quality in the area is currently good, with PM₁₀ and PM_{2.5} concentrations in compliance with the NAAQS at all three locations during 2019 and dust fallout below the limit for non-residential locations at all 13 sampling locations during 2020 (SLR, 2019).

7.4.1.9 Noise

Based on the latest available noise measurement data (June 2020), environmental noise levels in the project area are highly variable and significantly influenced by localised sources. Day-time noise levels at the Pilanesberg Platinum Mine were approximately 60 dBA at both the Pilanesberg Platinum Mine mining area and Pilanesberg Platinum Mine residential (Blikkiesdorp) sampling locations, while night-time noise levels ranged between 56 dBA at the Pilanesberg Platinum Mine mining area and 62 dBA at Blikkiesdorp. Day-and night-time noise levels at nearby noise sensitive receptors (NSRs), including villages and residential areas, were highly variable, ranging between 29 dBA at Mathlagame and 53 dBA at Legkraal during the day and between 32.5 dBA at Mathlagame and 50.5 dBA at Ntsana Le Metsing during the night. Overall, the average off-site noise levels were ~43 dBA during the day and 41 dBA during the night (SLR, 2019).

7.4.1.10 Visual

Landscape Character: The landscape character of the project area is defined by relatively flat plains, punctuated by isolated hills and the dominant hills associated with the Pilanesberg National Park in the east. Some of these rocky outcrops have archaeological sites and artefacts of the late iron-age. Current land uses in and adjacent to the site is a combination of mining, grazing, crops, residential and general community activities. The various mining activities stretch in a general arc to the west and north-west of the Pilanesberg National Park and can be seen protruding above the horizon line when viewed from residential and tourist areas (SLR, 2019).

Scenic Quality: The scenic quality is linked to the type of landscapes that occur within an area. Scenic quality ranges from high to low as follows (SLR, 2019):

- High – these include the mountains and *koppies*, water bodies such as farm and irrigation dams, and natural drainage systems.
- Moderate – these include agricultural activities and recreational areas.
- Low – these include towns, communities, roads, railway line, industries and existing mines.

Although the project area is considered to have a low scenic quality, the flat savanna plains and treed hills are considered to have a moderate to high value. As a result, the overall landscape character is considered to evoke an aesthetically pleasing scene with a strong sense of place. Key to these factors is that PPM (and the proposed project) is in close proximity to the Pilanesberg National Park and within the proposed North West Heritage Park Corridor (HPC) (see section 7.4.2.1 for further information) (SLR, 2019).

Visual Receptors: Views of larger and tall structures would originate in (SLR, 2019):

- The Black Rhino Nature Reserve (higher elevations);
- The Pilanesberg National Park (through the *poort* access to the park);
- Along the P5 road running past Legkraal; and
- R565 north of the project area.

Sensitive receptors have been identified as tourists travelling through the broader area and visiting nearby tourist attractions, including the Pilanesberg National Park and Black Rhino Nature Reserve, and heritage attractions, between Pilanesberg National Park and the Madikwe Game Reserve. Other potentially sensitive receptors include residents and visitors of the nearby villages. The visual resource has; however, been altered as a result of mining activities in the area.

7.4.2 Baseline Cultural/Heritage Environment Affected by the Proposed Activity

7.4.2.1 Cultural/Heritage and Palaeontology

Cultural/heritage resources include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

Paleontological resources are fossils, the remains or traces of prehistoric life preserved in the geological (rock stratigraphic) record.

Mining activities and mining-related infrastructure have the potential to impact on heritage/cultural and paleontological resources through the placement of infrastructure and through the related construction and operational activities.

Cultural/Heritage: The Pilanesberg Platinum Mine is located within the proposed North West HPC. The North West HPC is an initiative driven by the North West Parks and Tourism Board (NWPTB), where it is proposed that over 167 000 ha will be incorporated into the corridor over a 20-year period to allow the joining of the Madikwe Game Reserve and the Pilanesberg National Park. This is a piece of land that stretches north of the Pilanesberg towards Dwaalboom and then follows the Dwarsberg Mountain range west before joining the Madikwe Reserve at Molatedi. This forms part of a larger initiative to establish a

significant conservation area in the province approaching 1 000 000 ha. The proposed concept will be to establish a core corridor that would have the potential to be expanded over time to increase the nature-based tourism to the area and thus increase the socio-economic benefits to the area. While the vision of the proposed HPC is supported by a number of stakeholders, there are numerous challenges halting its development. These include, but are not limited to, a lack of investors, numerous private and community landowners within the corridor, existing linear infrastructure, as well as existing and proposed developments, including mining operations (SLR, 2019).

Possible rudimentary stone walled sites may be located within the northern-most section of the proposed PR area. However, the presence of these sites could not be verified as a site visit could not be undertaken due to illegal mining activity being undertaken in the area (Pistorius, J., 2022).

Palaeontology: The Pilanesberg Platinum Mine is located on the RLS and the Western Limb of the BIC. The rocks of the RLS range from ultrabasic pyroxenites and anorthosites in the lower parts, to norite, gabbro and magnetite gabbro in the upper parts. They are of volcanic and plutonic origin and have been metamorphosed so they do not contain any fossils. Overlying much of these rocks are much younger sands and sediments of the Quaternary Kalahari Group. Kalahari sands are young enough for plant and animal life; however, any fossil materials are rare. The sands have mostly been transported by wind or water, thus it follows that they only rarely preserve any fossils. The only possible *in situ*, and therefore scientifically important fossils assemblages in the Quaternary Kalahari Sands, would be those that have been trapped in the tufas of a palaeo-spring or the calcretes and silcretes of a palaeo-pan. Neither feature has been recorded or seen in the project area (Bamford, M., 2022).

The palaeontological sensitivity of the project area is considered to be Moderate, as per SAHRA's paleo sensitivity map. However, this pertains to the Quaternary Kalahari Group which as mentioned previously, have a very low probability of preserving fossils.

7.4.3 Baseline Socio-Economic Environment Affected by the Proposed Activity

7.4.3.1 Socio-Economic

The socio-economic environment on a provincial, district and municipal level are summarised in Table 7-5 (Statistics South Africa [StatsSA], 2016). The socio-economic environment descriptions for the province and district and local municipalities indicate that in the communities surrounding Pilanesberg Platinum Mine's operations, there are significant social and economic challenges. The existing situation indicates that there is a measure of unemployment, informal settlement development, with limited inward migration of people and associated resultant pressure on basic infrastructure and services (education, sanitation, water etc.).

Table 7-5: Socio-Economic Environment of the Province and District and Local Municipalities

Category and Indicator	North West Province	BPDM	MKLM
Demographics			
Municipality Size	105 238.1 km ²	18 489.5 km ²	5 738 km ²
Population Size	3 748 435	1 657 149	243 648
Population Density	35.6 per km ²	89.6 per km ²	42.5 per km ²
Age	<ul style="list-style-type: none"> 0 - 29 years (57%) 30-59 years (34%) 60 years and older (9%) 	<ul style="list-style-type: none"> 0 - 29 years (55%) 30-59 years (37%) 60 years and older (8%) 	<ul style="list-style-type: none"> 0 - 29 years (57%) 30-59 years (32%) 60 years and older (11%)
Gender	<ul style="list-style-type: none"> Female (49%) Male (51%) 	<ul style="list-style-type: none"> Female (47%) Male (53%) 	<ul style="list-style-type: none"> Female (50%) Male (50%)
Race	<ul style="list-style-type: none"> Black African (92%) White (6%) Coloured (2%) 	<ul style="list-style-type: none"> Black African (94%) White (5%) Coloured (1%) 	<ul style="list-style-type: none"> Black African (99%) Other (1%)
Language	<ul style="list-style-type: none"> Setswana (70%) Afrikaans (7%) Sesotho (6%) IsiXhosa (5%) Xitsonga (3%) Others (9%) 	<ul style="list-style-type: none"> Setswana (65%) Xitsonga (6%) IsiXhosa (5%) Afrikaans (5%) Sesotho (4%) Sepedi (4%) Others (11%) 	<ul style="list-style-type: none"> Setswana (87%) IsiZulu (3%) isiXhosa (3%) Others (10%)
Migration	<ul style="list-style-type: none"> South African (97%) <ul style="list-style-type: none"> North West (81%) Gauteng (5%) Limpopo (3%) Free State (2%) Eastern Cape (2%) Others and outside of South Africa (5%) 	<ul style="list-style-type: none"> South African (94%) <ul style="list-style-type: none"> North West (72%) Gauteng (9%) Limpopo (5%) Eastern Cape (4%) Mpumalanga (2%) Others and outside of South Africa (8%) 	<ul style="list-style-type: none"> South African (98%) <ul style="list-style-type: none"> North West (90%) Gauteng (3%) Limpopo (3%) Others and outside of South Africa (4%)
Households			
Household Number	1 248 765	611 145	80 654
Household Type	<ul style="list-style-type: none"> Formal houses (67%) Shacks (18%) Flats in backyards (8%) Others (5%) Traditional dwellings (2%) 	<ul style="list-style-type: none"> Formal houses (58%) Shacks (27%) Flats in backyards (10%) Others (5%) 	<ul style="list-style-type: none"> Formal houses (77%) Shacks (11%) Flats in backyards (7%) Others (5%)
Service Delivery			
Water	<ul style="list-style-type: none"> Piped water inside house or yard (63%) Others (18%) Community stand (10%) Communal tap (9%) 	<ul style="list-style-type: none"> Piped water inside house or yard (66%) Others (22%) Community stand (6%) Communal tap (6%) 	<ul style="list-style-type: none"> Piped water inside house or yard (50%) Community stand (10%) Communal tap (15%) Others (25%)
Electricity	<ul style="list-style-type: none"> Pre-paid or conventional meters (91%) No access (7%) Unmetered (unpaid) (2%) 	<ul style="list-style-type: none"> Pre-paid or conventional meters (90%) No access (8%) Unmetered (unpaid) (2%) 	<ul style="list-style-type: none"> Pre-paid or conventional meters (96%) No access (3%) Other (1%)
Toilets	<ul style="list-style-type: none"> Flush toilet (47%) Pit toilet (47%) 	<ul style="list-style-type: none"> Flush toilet (38%) Pit toilet (56%) 	<ul style="list-style-type: none"> Pit toilet (79%) Flush toilet (16%)

Category and Indicator	North West Province	BPDM	MKLM
	<ul style="list-style-type: none"> Other (3%) No access (3%) 	<ul style="list-style-type: none"> Other (4%) No access (2%) 	<ul style="list-style-type: none"> No access (2%) Other (3%)
Refuse	<ul style="list-style-type: none"> Regular service provider (55%) Own dump (34%) Other (5%) Irregular service provider (3%) None (3%) 	<ul style="list-style-type: none"> Regular service provider (59%) Own dump (27%) Other (6%) Irregular service provider (5%) None (3%) 	<ul style="list-style-type: none"> Regular service provider (77%) Own dump (13%) Irregular service provider (6%) Other (4%)
Economics			
Employment	<ul style="list-style-type: none"> Employed (37%) Other not economically active (40%) Unemployed (17%) Discouraged work seeker (6%) 	<ul style="list-style-type: none"> Employed (42%) Other not economically active (35%) Unemployed (19%) Discouraged work seeker (4%) 	<ul style="list-style-type: none"> Employed (30%) Other not economically active (46%) Unemployed (19%) Discouraged work seeker (5%)
Sector of employment	<ul style="list-style-type: none"> Formal (68%) Informal (15%) Private household (15%) Unsure (2%) 	<ul style="list-style-type: none"> Formal (71%) Informal (14%) Private household (13%) Unsure (2%) 	<ul style="list-style-type: none"> Formal (76%) Informal (14%) Private household (9%) Unsure (1%)
Annual Income	<ul style="list-style-type: none"> Average – R30 000 <ul style="list-style-type: none"> RO – R20 000 (38%) R20 0001 – R150 000 (48%) R150 001 – R600 000 (8%) R600 001 and above (1%) Unspecified (4%) 	<ul style="list-style-type: none"> Average – R30 000 <ul style="list-style-type: none"> RO – R20 000 (34%) R20 0001 – R150 000 (55%) R150 001 – R600 000 (8%) R600 001 and above (1%) Unspecified (2%) 	<ul style="list-style-type: none"> Average – R30 000 <ul style="list-style-type: none"> RO – R20 000 (33%) R20 0001 – R150 000 (58%) R150 001 – R600 000 (5%) R600 001 and above (0%) Unspecified (4%)
Education			
Education Level	<ul style="list-style-type: none"> None (9%) Primary (or some) (18%) Matric (or some secondary) (66%) Tertiary (5%) Unspecified (2%) 	<ul style="list-style-type: none"> None (6%) Primary (or some) (16%) Matric (or some secondary) (71%) Tertiary (4%) Unspecified (3%) 	<ul style="list-style-type: none"> None (7%) Primary (or some) (19%) Matric (or some secondary) (68%) Tertiary (2%) Unspecified (4%)

Source: Community Survey (StatsSA, 2016).

7.4.3.2 Land Use

Mining and Prospecting Rights: The MRs for PGMs and other base metals in the surrounding area are held by PPM (DMRE reference number NW 30/5/1/2/2//320 MR).

To the south of PPM’s MR, on the farm Rooderand 46JQ, MRs are held as follows:

- Remaining extent: Sails Group for PGMs and chrome.
- Portion 1: Itereleng Bakgatla Mineral Resources (Pty) Ltd (IBMR) for PGMs and chrome.
- Portion 2: Sails Group for chrome and Bakgatla/Anglo for PGMs.
- Richtrau No. 123 (Pty) Ltd for PGMs and other base metals on the farm Magazynskraal 3JQ.

PRs held within the surrounding area include:

- Rise Africa Mining and Exploration (Pty) Ltd for vanadium ore on the farm Magazynskraal 3JQ.
- C&L Mining and Resources (Pty) Ltd for PGMs, gold, copper, nickel, chromium, cobalt, pyrite, lead, silver and zinc on the remainder and portions 1 and 2 of the farm Middelkuil 8JQ, the farm Kruidfontein 40JQ and the remainder and portions 1 and 2 of the farm Modderkuil 39JQ.

Land Ownership: Portion 5 of the farm Ruighoek 169JP is owned by a private person (Ralegase Amon and Moloana Moses). The surface right owners and corresponding title deed numbers of the land adjacent to the proposed PR area are listed in Table 7-6.

Table 7-6: Land Ownership Surrounding Project Area

Property Name	Portion Number	Title Deed Reference	Registered Property Owner
Ruighoek 169JP	4	T7959/934	Republic of South Africa
	6	T7961/934	Republic of South Africa
	8	T7962/934	Raboriffe Kgatitswe, Paul Leoang Family Trust, Raborife Edwin Mopale, Mbalu Lilian, Tbagare Ephraim, Masilela Wilhelmina, Setsoamung Piet, Moloto Alexander, Moloto David, Moloto Zecheriah, Tsagane Ephraim, Raborife Rebiditswe Matladille Sibongile, Raborike William, Raborife Spenceley Moshoeshoe, Raborife Jakom Nyakale, Raborife Paul Ratladi
	13	T33057/1945BP	Makhorle Jesse Mahabuke
Schaapkraal 170JP	0	T69373/2008	Bakgatla Ba Kgafela Communal Property Association

Land Claims: The DRDLR (Land Claims Commissioner) in North West was contacted to confirm if there were any land claims on portion 5 of the farm Ruighoek 169JP (i.e. the proposed project area). The Land Claims Commissioner confirmed that a land claim was lodged on the property. However, the portion on which the land claim was lodged is considered to be portion 19 of portion 5 of the farm Ruighoek 169JP. This portion is not located within the project area and is in the process of being registered as a subdivision with the Deeds Office (see Appendix D).

Land Use: Land uses surrounding the project area are as follows:

- **Recreation:** Recreational facilities within the vicinity of the project area include:
 - Pilanesberg National Park located approximately 4 km eastwards, including the following private lodges/park camps which are situated near the north of the Park:
 - Black Rhino Private Game Reserve.
 - Bakgatla Camp.
 - Ivory Tree Lodge.
 - Various lodges and resorts located in the southern section of the Pilanesberg National Park, including:
 - Manyane.
 - Bakubung.
 - Kwa Maritane.
 - Tshukudu.
 - Shepherd's Tree.
 - Sun City, which lies on the southern edge of the Pilanesberg National Park, approximately 28 km south-east.
 - Bakgatla Ba Kgafela Tribal Authority cultural museum and a sports centre based in Saulspoort/Moruleng located 30 km east.
- **Residential:** The residential areas closest to the project area include:
 - Mabeleleng (approximately 4 km east).
 - Tlhatlhanganyane (approximately 7 km east).
 - Makoshong (approximately 4.5 km south-west).
 - Phalane (approximately 7 km south).
 - Mabeskraal (approximately 6 km west).
 - Seolong (approximately 7 km north-west).
- **Mining:**
 - Various mining operations are located and/or planned in the immediate vicinity of the project area and include:
 - Sedibelo Platinum Mine (approved EA, not yet constructed) is situated on the farm Wilgespruit 2JQ, portion 1 of the farm Rooderand 46JQ, farm Legkraal 45JQ and farm Koedoesfontein 42JQ (approximately 16 km north-east).
 - Magazynskraal Platinum Mine (approved EA, not yet constructed) is situated on the farm Magazynskraal 3JQ (approximately 21.5 km north-east).
 - Sails Group mine is situated on portion 2 and the remaining extent of the farm Rooderand 46JQ (approximately 15.5 km north-east).
 - Additional proposed mining interests in the immediate vicinity include:
 - Bakgatla/Anglo interests, situated on portion 2 of Rooderand 46JQ (approximately 20 km north-east).
 - Sails Group (remaining extent of the farm Rooderand 4 JQ) (approximately 15.5 km north-east).
 - Other mining operations located further afield include:
 - Rustenburg Minerals on the farm Groenfontein 138JP (approximately 9 km north-east).
 - Chrome Corporation on the farm Ruighoek 169JP (approximately 5.5 km north-east).
 - Merafe - Xstrata Horizon Mine on the farms Ruighoek 169JP and farm Vogelstruisnek 17JP (approximately 4 km south-east).

- **Third-Party Service Infrastructure:** Power lines (and the associated Eskom servitudes) run along the southern boundary of the farm Wilgespruit 2JQ and along the eastern boundary within the farm Magazynskraal 3JQ. The Sedibelo Substation is located on the eastern boundary of the farm Wilgespruit 2JQ. There is a network of low voltage power lines and telephone lines which service the area. These lines usually follow roads before branching off onto individual properties. A Magalies Water pipeline runs in an east-west direction along the northern boundary of the farm Wilgespruit 2JQ.

Regional and local land use maps depicting the afore-mentioned surrounding land uses are provided in Figure 7-5 and Figure 7-6, respectively.

7.4.3.3 Traffic

There is an existing network of roads that provide access to the Pilanesberg Platinum Mine. These include (SLR, 2019):

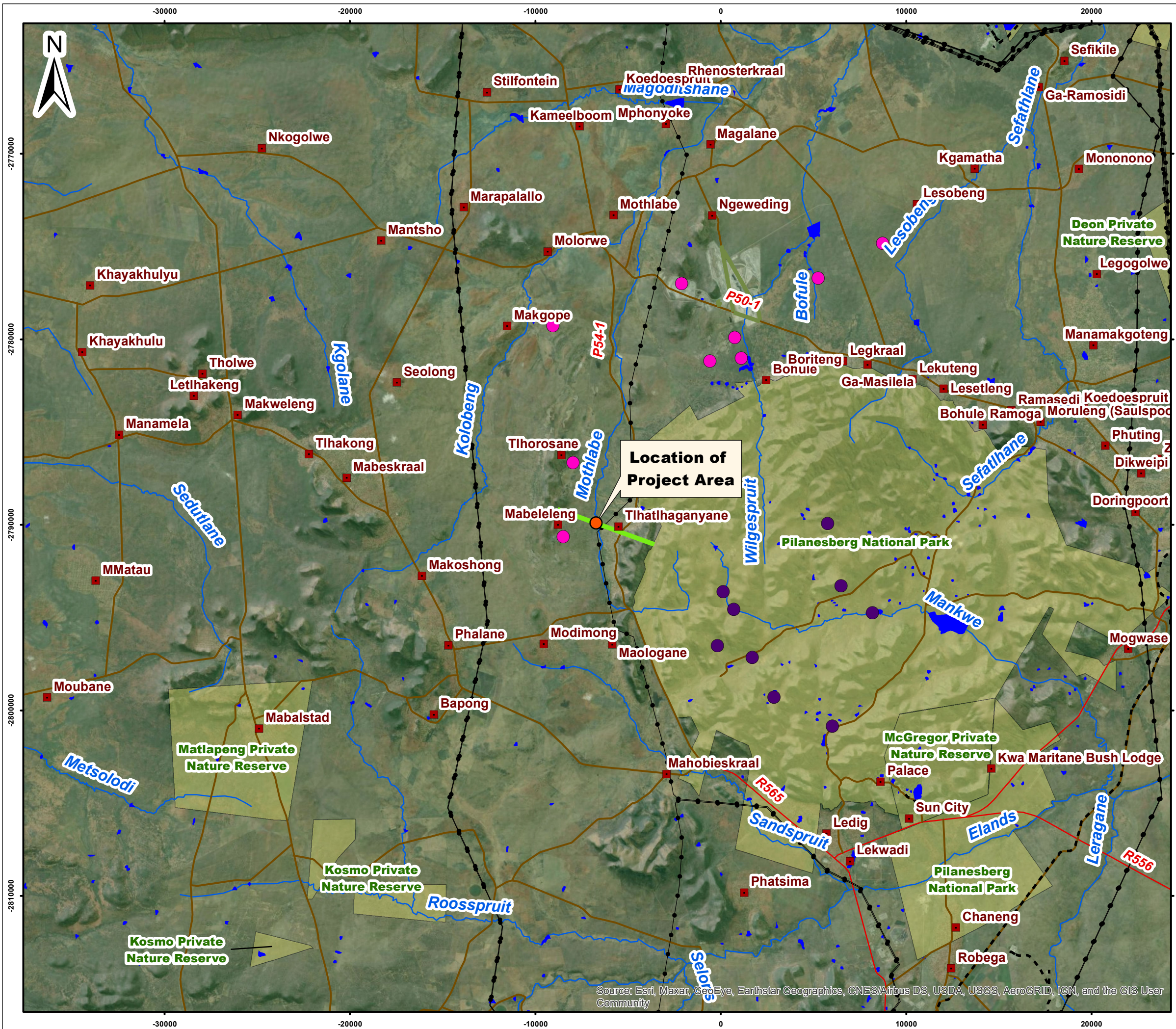
- The regional P54-1 (running adjacent to the western boundary of the Pilanesberg National Park).
- The regional tarred R510 through Saulspoort/Moruleng (running adjacent to the eastern boundary of the Pilanesberg National Park).
- The gravel P50-1 that links the P54-1 and R510 (running along the southern boundary of the Pilanesberg Platinum Mine).
- The D511 gravel road (north-west/south-east alignment that connects the P50-1 to Magong).
- The D531 gravel road (between Motlhabe and Ntswana-le-Metsing).
- The Z536 gravel road running south from Ngweding.

7.4.3.4 Description of Specific Environmental Features and Infrastructure on the Site

The most notable environmental feature associated with the project area is the Thornveld Habitat and Freshwater Habitat, located within the proposed PR area. However, these habitat units have been noted to support only a moderate to moderately low species richness, with no floral or faunal SCC located within the area. The site in general is undeveloped with no infrastructure in existence.

7.4.3.5 Environmental and Current Land Use Map

Regional and local land use maps are provided in Figure 7-5 and Figure 7-6, respectively.



- Legend**
- Towns / Villages
 - Places_of_Interest
 - Mining and Related Interests or Operations
 - Regional Roads
 - Secondary Roads
 - - - Railways
 - Power Line
 - Rivers
 - Dams
 - South African Protected Areas
 - Portion RE/5/169

0 2 4 6 Km
 Scale: 1:200 000 @ A3
 Projection: Transverse Mercator
 Datum: Hartbeeshoek, LO27

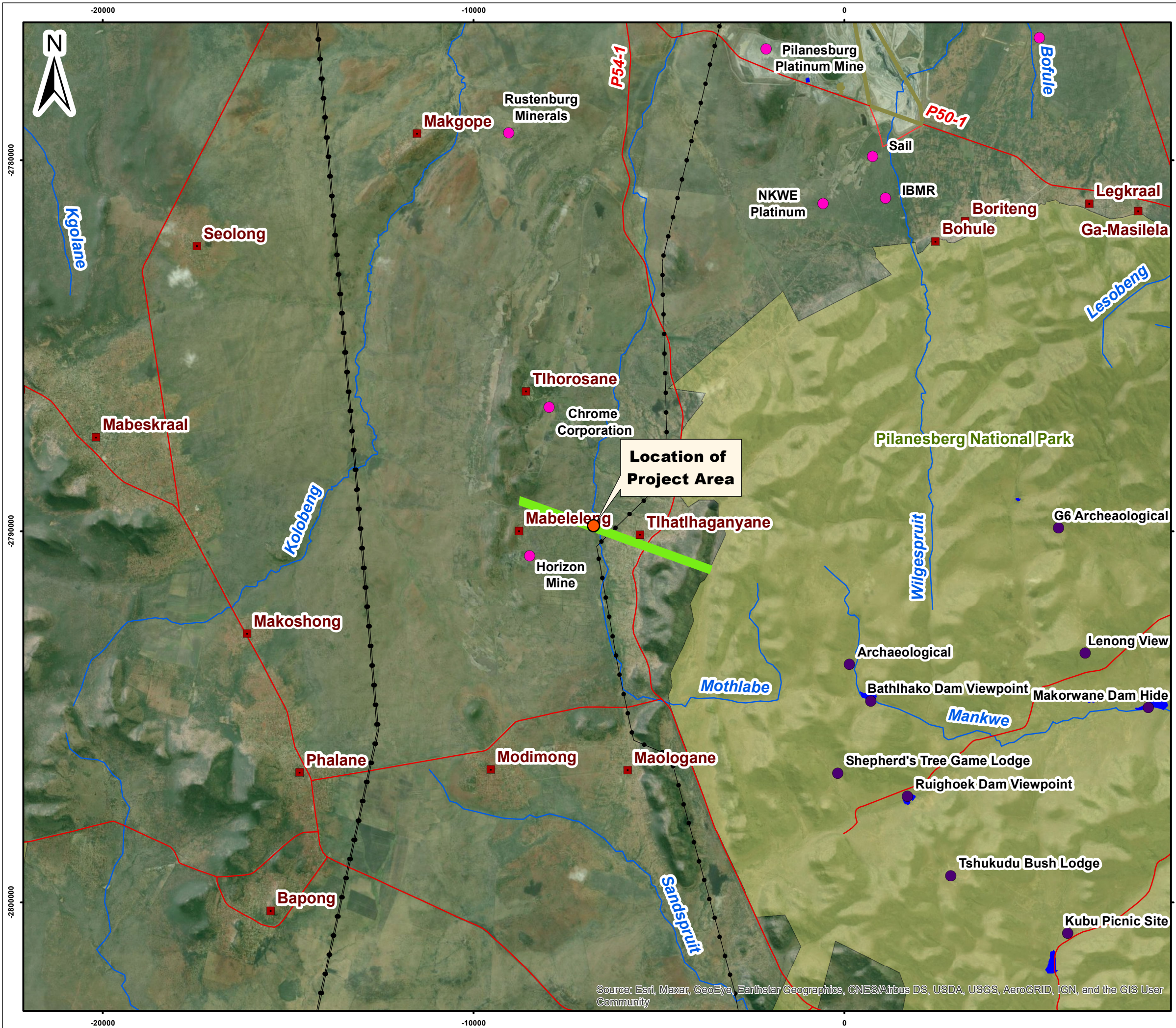
Proposed Prospecting Right on
 Portion 5 of the Farm Ruighoek 169JP

Figure 7-5
 Regional Land Use



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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- Villages
- Places of Interest
- Mining and Related Interests or Operations
- Roads
- Power Line
- Rivers
- Dams
- South African Protected Areas (2020)
- Portion RE/5/169

0 1 2 3 Km
 Scale: 1:100 000 @ A3
 Projection: Transverse Mercator
 Datum: Hartbeeshoek, LO27

Proposed Prospecting Right on
 Portion 5 of the Farm Ruighoek 169JP

Figure 7-6

Local Land Use



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720.19080.00007

2022/04/05

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

7.5 ENVIRONMENTAL IMPACTS AND RISKS OF THE ALTERNATIVES

This section requires a list of potential impacts on environmental and socio-economic aspects that have been identified in respect of each of the main project activities and processes for each of the project phases in terms of the project alternatives. With reference to chapter 6, originally 17 boreholes were proposed to be drilled as part of the proposed project. The layout and number of boreholes was reduced to nine to minimise the impact on local biodiversity. In addition, the boreholes were moved to be further than 100 m from the watercourse (measured from the edge of the watercourse), so as to minimise impact on local aquatic biodiversity resources.

7.6 METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

The method used for the assessment of environmental issues is set out in Table 7-7. Part A provides the definition for determining impact consequence (combining intensity, spatial scale and duration) and impact significance (the overall rating of the impact). Impact consequence and significance are determined from Part B and C. The interpretation of the impact significance is given in Part D.

The assessment methodology enables the assessment of environmental issues including cumulative impacts, the severity of impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated.

Table 7-7: SLR's Impact Assessment Methodology

PART A: DEFINITIONS AND CRITERIA*		
Definition of SIGNIFICANCE		Significance = consequence x probability
Definition of CONSEQUENCE		Consequence is a function of intensity, spatial extent and duration
Criteria for ranking of the INTENSITY of environmental impacts	VH	Severe change, disturbance or degradation. Associated with severe consequences. May result in severe illness, injury or death. Targets, limits and thresholds of concern continually exceeded. Substantial intervention will be required. Vigorous/widespread community mobilization against project can be expected. May result in legal action if impact occurs.
	H	Prominent change, disturbance or degradation. Associated with real and substantial consequences. May result in illness or injury. Targets, limits and thresholds of concern regularly exceeded. Will definitely require intervention. Threats of community action. Regular complaints can be expected when the impact takes place.
	M	Moderate change, disturbance or discomfort. Associated with real but not substantial consequences. Targets, limits and thresholds of concern may occasionally be exceeded. Likely to require some intervention. Occasional complaints can be expected.
	L	Minor (Slight) change, disturbance or nuisance. Associated with minor consequences or deterioration. Targets, limits and thresholds of concern rarely exceeded. Require only minor interventions or clean-up actions. Sporadic complaints could be expected.
	VL	Negligible change, disturbance or nuisance. Associated with very minor consequences or deterioration. Targets, limits and thresholds of concern never exceeded. No interventions or clean-up actions required. No complaints anticipated.

	VL+	Negligible change or improvement. Almost no benefits. Change not measurable/will remain in the current range.
	L+	Minor change or improvement. Minor benefits. Change not measurable/will remain in the current range. Few people will experience benefits.
	M+	Moderate change or improvement. Real but not substantial benefits. Will be within or marginally better than the current conditions. Small number of people will experience benefits.
	H+	Prominent change or improvement. Real and substantial benefits. Will be better than current conditions. Many people will experience benefits. General community support.
	VH+	Substantial, large-scale change or improvement. Considerable and widespread benefit. Will be much better than the current conditions. Favourable publicity and/or widespread support expected.
Criteria for ranking the DURATION of impacts	VL	Very short, always less than a year. Quickly reversible
	L	Short-term, occurs for more than 1 but less than 5 years. Reversible over time.
	M	Medium-term, 5 to 10 years.
	H	Long term, between 10 and 20 years (likely to cease at the end of the operational life of activity).
	VH	Very long, permanent, +20 years (Irreversible, Beyond closure).
Criteria for ranking the EXTENT of impacts	VL	A part of the site/property.
	L	Whole site.
	M	Beyond the site boundary, affecting immediate neighbours.
	H	Local area, extending far beyond site boundary.
	VH	Regional/National

PART B: DETERMINING CONSEQUENCE							
INTENSITY = VL							
DURATION	Very long	VH	Low	Low	Medium	Medium	High
	Long term	H	Low	Low	Low	Medium	Medium
	Medium term	M	Very Low	Low	Low	Low	Medium
	Short term	L	Very low	Very Low	Low	Low	Low
	Very short	VL	Very low	Very Low	Very Low	Low	Low
INTENSITY = L							
DURATION	Very long	VH	Medium	Medium	Medium	High	High
	Long term	H	Low	Medium	Medium	Medium	High
	Medium term	M	Low	Low	Medium	Medium	Medium
	Short term	L	Low	Low	Low	Medium	Medium
	Very short	VL	Very low	Low	Low	Low	Medium
INTENSITY = M							
DURATION	Very long	VH	Medium	High	High	High	Very High
	Long term	H	Medium	Medium	Medium	High	High
	Medium term	M	Medium	Medium	Medium	High	High
	Short term	L	Low	Medium	Medium	Medium	High
	Very short	VL	Low	Low	Low	Medium	Medium

INTENSITY = H							
DURATION	Very long	VH	High	High	High	Very High	Very High
	Long term	H	Medium	High	High	High	Very High
	Medium term	M	Medium	Medium	High	High	High
	Short term	L	Medium	Medium	Medium	High	High
	Very short	VL	Low	Medium	Medium	Medium	High
INTENSITY = VH							
DURATION	Very long	VH	High	High	Very High	Very High	Very High
	Long term	H	High	High	High	Very High	Very High
	Medium term	M	Medium	High	High	High	Very High
	Short term	L	Medium	Medium	High	High	High
	Very short	VL	Low	Medium	Medium	High	High
		VL	L	M	H	VH	
		A part of the site/property	Whole site	Beyond the site, affecting neighbours	Extending far beyond site but localised	Regional/National	
EXTENT							

PART C: DETERMINING SIGNIFICANCE							
PROBABILITY (of exposure to impacts)	Definite/Continuous	VH	Very Low	Low	Medium	High	Very High
	Probable	H	Very Low	Low	Medium	High	Very High
	Possible/frequent	M	Very Low	Very Low	Low	Medium	High
	Conceivable	L	Insignificant	Very Low	Low	Medium	High
	Unlikely/improbable	VL	Insignificant	Insignificant	Very Low	Low	Medium
		VL	L	M	H	VH	
CONSEQUENCE							

PART D: INTERPRETATION OF SIGNIFICANCE	
Significance	Decision guideline
Very High	Potential fatal flaw unless mitigated to lower significance.
High	It must have an influence on the decision. Substantial mitigation will be required.
Medium	It should have an influence on the decision. Mitigation will be required.
Low	Unlikely that it will have a real influence on the decision. Limited mitigation is likely required.
Very Low	It will not have an influence on the decision. Does not require any mitigation
Negligible	Inconsequential, not requiring any consideration.

7.7 POSITIVE AND NEGATIVE IMPACTS OF THE PROPOSED ACTIVITY AND ALTERNATIVES

Location alternatives largely pertain to the location of the boreholes to be drilled as part of the prospecting activities. As mentioned previously, originally 17 boreholes were proposed. The number of boreholes drilled has decreased to nine. The number and location of the proposed boreholes were determined through consultation and review of biodiversity databases to ensure the lowest possible environmental impact on

sensitive environments. The map in Figure 6-1 indicates several borehole locations within close proximity to the Freshwater Habitat unit identified in the project area (see section 7.4.1.5 for more information), which has been identified as being associated with the ephemeral Motlabe River. The preferred alternative includes minimising project impacts in this area.

7.8 POSSIBLE MANAGEMENT ACTIONS THAT COULD BE APPLIED AND THE LEVEL OF RISK

A summary of the issues and concerns raised by I&APs during the BA process will be provided in Section 7.3 in the BAR to be submitted for decision-making.

7.9 MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

Location alternatives were considered as part of the proposed project. As such, this section is not applicable.

7.10 STATEMENT MOTIVATING THE PREFERRED ALTERNATIVE

As mentioned in section 6.1, location alternatives largely pertain to the location of the boreholes to be drilled as part of the prospecting activities. As mentioned previously, originally 17 boreholes were proposed. The number of boreholes to be drilled has been reduced to nine, as well as being moved a further distance from the Motlabe River to minimise impact to the Freshwater Habitat. The number and location of the proposed boreholes have been determined through consultation and review of biodiversity databases to ensure the lowest possible environmental impact on this sensitive environment. The map depicted in Figure 6-1 indicates several borehole locations within close proximity to the Freshwater Habitat unit (refer to section 7.4.1.5 for more information). The preferred alternative includes minimising project impacts in this area.

As mentioned in section 6.2, due to the nature of the proposed project, no technology alternatives were considered.

The proposed project includes prospecting activities to identify additional resources for extraction by PPM. It follows that no activity alternatives have been identified.

8. FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE THROUGH THE LIFE OF THE ACTIVITY

This chapter provides a description of the process that was followed in order to identify the potential biophysical, cultural and socio-economic impacts that are assessed as part of the proposed project.

8.1 DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY IMPACTS

Biophysical, cultural/heritage and socio-economic impacts associated with the proposed project were identified through site visits undertaken by specialists and the associated specialist studies.

As part of the PPP, I&APs (refer to section 7.2) are provided with the opportunity to provide input into the BA process and comment on the proposed project, including the identification of biophysical, cultural/heritage and socio-economic impacts.

8.2 DESCRIPTION OF THE PROCESS UNDERTAKEN TO ASSESS AND RANK THE IMPACTS AND RISKS

A description of SLR's assessment methodology used to assess the severity of identified impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated, is provided in section 7.6.

8.3 A DESCRIPTION OF THE ENVIRONMENTAL IMPACTS AND RISKS IDENTIFIED DURING THE ENVIRONMENTAL ASSESSMENT PROCESS

Descriptions of the biophysical, cultural/heritage and socio-economic impacts in respect of each of the main project activities and phases are provided in Table 8-1. The detailed assessment of these impacts is provided in Appendix D. Impacts that are deemed insignificant once mitigated are included.

Table 8-1: List of Potential Impacts in respect of each Project Activity

Potential Impact	Activity	Phase
Impact on soils due to soil erosion	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Disturbance of original soil profiles	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis 	Operation
Impact on soils due to chemical pollution	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Loss of floral habitat and diversity	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Loss of floral SCC	<ul style="list-style-type: none"> • Site preparation 	Operation

Potential Impact	Activity	Phase
	<ul style="list-style-type: none"> • Soil sampling and analysis • Transport systems • General site management 	
Loss of faunal habitat and diversity	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Loss of faunal SCC	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Sedimentation of surface water resources	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Contamination of surface water resources	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Contamination of groundwater resources	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Reduced air quality	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Increase in disturbing noise levels	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Negative visual impacts	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site management 	Operation
Road disturbance and traffic safety	<ul style="list-style-type: none"> • Transport systems 	Operation
Loss of cultural/heritage resources	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis 	Operation
Loss of palaeontological resources	<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis 	Operation

8.4 ASSESSMENT OF THE SIGNIFICANCE OF EACH IMPACT AND RISK AND AN INDICATION OF THE EXTENT OF WHICH THE ISSUE AND RISK CAN BE AVOIDED OR ADDRESSED BY THE ADOPTION OF MANAGEMENT ACTIONS

The assessment of the significance of potential biophysical, cultural/heritage and socio-economic impacts, including the extent to which impacts can be avoided or mitigated, is included in chapter 9 and Appendix D.

9. ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK

This chapter provides a summary of the assessment results of the identified potentially significant biophysical, cultural/heritage and socio-economic impacts identified for the proposed project.

A summary of the assessment of the identified potentially significant biophysical, cultural/heritage and socio-economic impacts associated with the proposed project is provided in Table 9-1. A full description of the assessment is included in Appendix D.

Table 9-1: Assessment of Significant Impacts and Risks

Activity (refer to Table 3-4)	Potential impact	Aspects affected	Phase	Significance (Unmitigated)	Management actions type	Significance (Mitigated)	Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Impact on soils due to soil erosion	Soils and land capability	Operation	Very Low	<ul style="list-style-type: none"> Vegetation clearance must be limited to only the areas where trenching will be undertaken, and boreholes drilled. Vegetation clearance must be planned for dry seasons, i.e late Autumn, winter and early spring, as far as possible. Following heavy rains, access roads and adjacent areas must be inspected for signs of erosion and rectified if necessary. 	VERY LOW	<ul style="list-style-type: none"> High potential for reversal Low degree for the loss of irreplaceable resources
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis 	Disturbance of original soil profiles	Soils and land capability	Operation	Low	<ul style="list-style-type: none"> Soil removal must be limited to only the areas where trenching will be undertaken. Removed topsoil and underlying soil must be stockpiled separately from underlying parent material. Trenches must not be filled with soils removed from other trenches Rehabilitation of trenches must first include the replacement of rock and parent material, then topsoil. 	VERY LOW	<ul style="list-style-type: none"> High potential for reversal Low degree for the loss of irreplaceable resources
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Impacts on soils due to chemical pollution	Soils and land capability	Operation	Medium	<ul style="list-style-type: none"> Spillages of fuel, lubricants etc. from oil sumps and steering racks of vehicles and equipment must be contained using drip trays filled with plastic sheeting and absorbent material. The use of biodegradable hydraulic fluids, lined sumps for the collection of hydraulic fluids, recovery and treatment of contaminated soils and the safe storage of dried waste mud by burying it in a purpose-built containment area must be implemented. Waste disposal on site must be avoided wherever possible, by segregating, trucking out and recycling waste off-site. Spills kits, to remediate and clean up hazardous leaks and spills, must be kept on site at all times. Spillages of potentially contaminating liquids and solids must be cleaned up immediately. Implement the emergency response procedures as outlined in Table 29-1. 	VERY LOW	<ul style="list-style-type: none"> High potential for reversal Low degree for the loss of irreplaceable resources
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Loss of floral habitat and diversity	Biodiversity	Operation	Medium	<ul style="list-style-type: none"> Planning Phase: <ul style="list-style-type: none"> Minimise the loss of indigenous vegetation through adequate planning by considering the sensitivity map of the Terrestrial Biodiversity Study. All prospecting equipment must be in a good working order, so as to prevent potential spills and leaks. An alien and invasive Plant Management Plan must be compiled for implementation. The following must be taken into consideration in the compilation of the Plan: <ul style="list-style-type: none"> Removal of alien and invasive species must be undertaken during the operation phase and continue through the rehabilitation phase. No alien and invasive plant propagules must be allowed to spread. The Plan must be implemented by a qualified professional. Chemical control of alien and invasive plants must not occur without the input of a certified professional and/or within the Freshwater Habitat. 	LOW	<ul style="list-style-type: none"> High potential for reversal Very Low degree for the loss of irreplaceable resources

Activity (refer to Table 3-4)	Potential impact	Aspects affected	Phase	Significance (Unmitigated)	Management actions type	Significance (Mitigated)	Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated
					<ul style="list-style-type: none"> ○ A Rehabilitation Plan must be compiled for implementation. The following must be taken into consideration in the compilation of the Rehabilitation Plan: <ul style="list-style-type: none"> — The Rehabilitation Plan must consider all phases of prospecting activities indicating rehabilitation actions to be undertaken during prospecting activities and once prospecting has been completed. — Any natural areas disturbed beyond the project footprint must be rehabilitated using indigenous species. — Rehabilitation must be implemented concurrently where possible, and disturbed areas must be rehabilitated as soon as these areas become available. — Rehabilitation must be done in such a way so as to ensure that the habitat that was present prior to project activities is recreated. — Rehabilitation must be implemented to a point where natural processes will allow the ecological functioning and biodiversity of the area to be re-instated. ○ A Dust Management Plan must be designed and compiled for implementation. ● Operation Phase: <ul style="list-style-type: none"> ○ The prospecting footprint must be kept as small as possible to minimise the impact on the surrounding environment. ○ The prospecting footprint must be demarcated so as to ensure that prospecting activities are restricted to those areas. Shade cloth/barrier mesh fencing is considered preferable as this will provide for visual obstruction for faunal species. ○ Appropriate sanitary facilities must be provided for staff and waste must be removed to an appropriate waste disposal site. ○ Removal of vegetation must be restricted to what is absolutely necessary and should remain within the approved project footprint. ○ Existing access roads must be used as far as possible. Any additional road construction must be limited to what is absolutely necessary. ○ Collection of indigenous floral species must not be allowed. ○ All compacted soils must be ripped, profiled and re-seeded as soon as possible. ○ The spread of alien and invasive species must be managed. Any removed alien species must not be allowed to lay on unprotected ground as seeds may disperse upon it. All cleared material must be disposed of at a licenced waste facility that complies with legal standards. ○ Any spills/leaks from plant and equipment must be cleaned up immediately and disposed of at a licensed facility. ○ Upon completion of prospecting activities, no bare areas must remain. Indigenous species must be used to revegetate the disturbed area. ○ No fires must be made on site during operations. ○ No dumping of litter must be allowed on site. 		
<ul style="list-style-type: none"> ● Site preparation ● Soil sampling and analysis ● Transport systems ● General site maintenance 	Loss of floral SCC	Biodiversity	Operation	Medium	<ul style="list-style-type: none"> ● Planning Phase: <ul style="list-style-type: none"> ○ Prior to the commencement of any prospecting activities, a summer season walkthrough of the site must be undertaken by a suitably qualified professional to identify and mark all floral SCC within the project footprint. ○ If floral SCC are encountered within the project footprint, these species must, where possible, be relocated to suitable habitat surrounding the project footprint. ○ Appropriate permits must be obtained prior to the relocation of any floral SCC. ● Operation Phase: <ul style="list-style-type: none"> ○ No collection of floral SCC must be allowed. 	LOW	<ul style="list-style-type: none"> ● High potential for reversal ● Very Low degree for the loss of irreplaceable resources

Activity (refer to Table 3-4)	Potential impact	Aspects affected	Phase	Significance (Unmitigated)	Management actions type	Significance (Mitigated)	Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Loss of faunal habitat and diversity	Biodiversity	Operation	Medium	<ul style="list-style-type: none"> No hunting/trapping/collection of faunal species must be allowed. Barrier fencing must be erected around sections that will be excavated in order to prevent faunal species from accessing the prospecting site. Smaller species of invertebrates and reptiles are likely to be less mobile during colder periods. Should any be observed in the footprint areas during clearing and operational activities, they are to be carefully and safely moved to an area of similar habitat outside of the disturbance footprint. Operational personnel are to be educated about these species and the need for their conservation. Harmless reptiles should be carefully relocated by a suitably nominated person or nominated mine official. For larger venomous snakes, a suitably trained mine official should be contacted to affect the relocation of the species, should it not move off on its own. 	LOW	<ul style="list-style-type: none"> High potential for reversal Very Low degree for the loss of irreplaceable resources
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Loss of faunal SCC	Biodiversity	Operation	Medium	<ul style="list-style-type: none"> Planning Phase: <ul style="list-style-type: none"> Prior to the commencement of any prospecting activities, a walkthrough of the site must be undertaken to identify all faunal SCC within the project footprint. If faunal SCC are encountered within the project footprint, these species must, where possible, be relocated to suitable habitat surrounding the project footprint. Appropriate permits must be obtained prior to the relocation of any faunal SCC. Operation Phase: <ul style="list-style-type: none"> No collection of faunal SCC must be allowed. In the event of the encounter of faunal SCC, an appropriate relocation plan, guided by relevant specialists and provincial authorities, must be compiled and implemented. 	LOW	<ul style="list-style-type: none"> High potential for reversal Very Low degree for the loss of irreplaceable resources
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Sedimentation of surface water resources	Surface water resources	Operation	Very Low	<ul style="list-style-type: none"> Sheet runoff from compacted areas should be slowed down by the strategic placement of berms. It is considered ideal that activities occur within the dry season (low rainfall) to minimise impacts of sedimentation. As much vegetation growth as possible (of indigenous floral species) must be encouraged to protect soils. Temporary stockpiling of excavated material from trenches must be retained alongside trenches, as required for backfilling. Any soil to be stockpiled for longer than a month must be moved to a designated stockpile area which should be located outside the 32 m zone of regulation, as approved by the EO. All soils compacted during the repair and maintenance phase must be ripped and profiled. 	INSIGNIFICANT	<ul style="list-style-type: none"> High potential for reversal Low degree for the loss of irreplaceable resources
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Contamination of surface water resources	Surface water resources	Operation	Very Low	<ul style="list-style-type: none"> The development footprint must remain as small as possible and should only encroach into the freshwater ecosystem if considered absolutely essential. The boundaries of the prospecting area, including contractor laydown areas, must be clearly defined and it must be ensured that all activities remain within defined footprint areas. Edge effects must be carefully controlled. Planning of temporary roads and access routes must avoid freshwater ecosystem areas and be restricted to existing roads which traverses the freshwater ecosystem. Appropriate sanitary facilities must be provided for all phases of the project. All waste must be removed to an appropriate licensed waste facility. All hazardous chemicals, as well as stockpiles, must be stored in sealed containers (where possible) and on bunded surfaces and have facilities constructed to control runoff from these areas. All hazardous storage containers and storage areas must comply with the relevant SABS standards to prevent leakage. No fires should be permitted in or near the project area. An adequate number of waste bins and spill kits must be provided. Implement the emergency response procedures as outlined in Table 29-1. 	INSIGNIFICANT	<ul style="list-style-type: none"> High potential for reversal Low degree for the loss of irreplaceable resources

Activity (refer to Table 3-4)	Potential impact	Aspects affected	Phase	Significance (Unmitigated)	Management actions type	Significance (Mitigated)	Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Reduced air quality	Air quality	Operation	Very Low	<ul style="list-style-type: none"> Dust suppression measures (wet and dry) must be implemented to minimise the dust generated from vegetation clearing, topsoil stockpiling and material handling activities. Vehicle exhaust emissions must be reduced through the use of better-quality diesel. Inspection and maintenance programmes for all plant and equipment must be implemented. 	INSIGNIFICANT	<ul style="list-style-type: none"> High potential for reversal Low degree for the loss of irreplaceable resources
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Increase in disturbing noise levels	Noise	Operation	Very Low	<ul style="list-style-type: none"> Prospecting activities must be limited to the daytime. A grievance mechanism/procedure must be implemented in the event of a noise-related complaint. 	INSIGNIFICANT	<ul style="list-style-type: none"> High potential for reversal Low degree for the loss of irreplaceable resources
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis 	Loss of cultural/heritage resources	Cultural/heritage and palaeontology	Operation	Insignificant	<ul style="list-style-type: none"> Stone walled sites must be avoided by all prospecting activities. An archaeological walk-over of the northern most parts of the project area and all borehole and trenches must be undertaken prior to construction and a report submitted to SAHRA for commenting. SAHRA reserves the right to object to the development pending the results of the walk-down. In the event of the uncovering of a heritage resource, implement the following chance find procedure: <ul style="list-style-type: none"> The person or group (identifier) who identified or exposed the heritage resource or graves must cease all activity in the immediate vicinity of the site. The identifier must immediately inform the senior on-site manager of the discovery. The senior on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped and ensure that the site is secured, and that controlled access is implemented. The senior on-site manager will inform the EO and H&S officers of the chance-find and its immediate impact on the project. The EO will then contact the project archaeologist. If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Elijah Katsetse/Phillip Hine 021 462 4502) must be alerted as per section 35(3) of the NHRA. Based on the comments received from the authorities the project archaeologist will provide the mine with a Terms of References Report and associated costs if mitigation measures must be implemented. In the event of the uncovering of grave, implement the following chance find procedure: <ul style="list-style-type: none"> The project archaeologist must confirm the presence of graveyards and graves and follow the following procedures. Inform the local South African Police Service (SAPS) and traditional authority. The project archaeologist in conjunction with the SAPS and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or of archaeological significance. The project archaeologist will notify the SAHRA BGG Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490). The project archaeologist will provide advice with mitigation measures for the graveyards and graves. In the event of a chance-find, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. 	INSIGNIFICANT	<ul style="list-style-type: none"> No potential for reversal High degree for the loss of irreplaceable resources

Activity (refer to Table 3-4)	Potential impact	Aspects affected	Phase	Significance (Unmitigated)	Management actions type	Significance (Mitigated)	Extent to which the impact can be reversed, avoided or cause irreplaceable loss and the degree to which the impact and risk can be mitigated
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis 	Loss of palaeontological resources	Cultural/heritage and palaeontology	Operation	Insignificant	<ul style="list-style-type: none"> In the event of the uncovering of a paleontological resource on the surface or during prospecting activities, implement the following chance find procedure: <ul style="list-style-type: none"> When excavations begin, the rocks must be given a cursory inspection by the EO or designated person. Any fossiliferous material (plants, insects, bone, coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted. Photographs of similar fossil plants must be provided to the Contractor to assist in recognizing the fossil plants in the shales and mudstones. This information must be built into the EMPr training and awareness plan and procedures. Photographs of the putative fossils must be sent to a palaeontologist for a preliminary assessment. If there is any possible fossil material found by the Contractor/EO/miner workers, then a palaeontologist must visit the site to inspect the selected material and check the dumps, where feasible. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site, a permit from SAHRA must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits. If no good fossil material is recovered, then no site inspections by a palaeontologist will be necessary. A final report by a palaeontologist must be sent to SAHRA once the project has been completed and only if fossils were found. If no fossils are found and the excavations have completed, then no further monitoring is required. 	INSIGNIFICANT	<ul style="list-style-type: none"> No potential for reversal High degree for the loss of irreplaceable resources

10. SUMMARY OF SPECIALIST REPORTING FINDINGS

The aim of this chapter is to list the various specialist studies undertaken for the proposed project, including the main impacts identified and the recommended mitigation measures, which are used to inform the compilation of this BAR.

The relevant specialist studies that were undertaken as part of the proposed project including the impacts identified and recommendations made by the specialists are provided in Table 10-1. All relevant specialist reports have been attached as Appendix E.

Table 10-1: A List of Specialist Studies and Recommendations

Specialist Study	Recommendation of Specialist	Specialist Recommendations have been included in the BAR	Reference to Applicable Section in this Report
Terrestrial Biodiversity Study	<ul style="list-style-type: none"> • Impact: Loss of floral habitat and diversity <ul style="list-style-type: none"> ○ Mitigation: Planning Phase: <ul style="list-style-type: none"> — Minimise the loss of indigenous vegetation through adequate planning by considering the sensitivity map in the Terrestrial Biodiversity Study. — All prospecting equipment (machinery, vehicles etc.) must be in a good working order, so as to prevent potential spills and leaks. — An alien and invasive Plant Management Plan must be compiled for implementation. The following must be taken into consideration in the compilation of the Plan: <ul style="list-style-type: none"> — Removal of alien and invasive species must be undertaken during the operation phase and continue throughout the rehabilitation phase. — No alien and invasive plant propagules must be allowed to spread. — The Plan must be implemented by a qualified professional. — Chemical control of alien and invasive plants must not occur without the input of a certified professional and/or within the Freshwater Habitat. — A Rehabilitation Plan must be compiled for implementation. The following must be taken into consideration in the compilation of the Rehabilitation Plan: <ul style="list-style-type: none"> — The Rehabilitation Plan must consider all phases of prospecting activities indicating rehabilitation actions to be undertaken during prospecting activities and once prospecting has been completed. — Any natural areas disturbed beyond the project footprint must be rehabilitated using indigenous species. — Rehabilitation must be implemented concurrently where possible, and disturbed areas must be rehabilitated as soon as these areas become available. — Rehabilitation must be done in such a way so as to ensure that the habitat that was present prior to project activities is recreated. — Rehabilitation must be implemented to a point where natural processes will allow the ecological functioning and biodiversity of the area to be re-instated. — A Dust Management Plan must be designed and compiled for implementation. ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — The prospecting footprint must be kept as small as possible to minimise the impact on the surrounding environment. — The prospecting footprint must be demarcated so as to ensure that prospecting activities are restricted to those areas. Shade cloth/barrier mesh fencing is considered preferable as this will provide for visual obstruction for faunal species. — Appropriate sanitary facilities must be provided for staff and waste must be removed to an appropriate waste disposal site. — Removal of vegetation must be restricted to what is absolutely necessary and should remain within the approved project footprint. — Existing access roads must be used as far as possible. Any additional road construction must be limited to what is absolutely necessary. — Collection of indigenous floral species must not be allowed. — All compacted soils must be ripped, profiled and re-seeded as soon as possible. — The spread of alien and invasive species must be managed. Any removed alien species must not be allowed to lay on unprotected ground as seeds may disperse upon it. All cleared material must be disposed of at a licenced waste facility that complies with legal standards. — Any spills/leaks from plant and equipment must be cleaned up immediately and disposed of at a licensed facility. — Upon completion of prospecting activities, no bare areas must remain. Indigenous species must be used to revegetate the disturbed area. — No fires must be made on site during operations. — No dumping of litter must be allowed on site. • Impact: Loss of floral SCC <ul style="list-style-type: none"> ○ Mitigation: Planning Phase: <ul style="list-style-type: none"> — Prior to the commencement of any prospecting activities, a summer season walkthrough of the site must be undertaken by a suitably qualified professional to identify and mark all floral SCC within the project footprint. — If floral SCC are encountered within the project footprint, these species must, where possible, be relocated to suitable habitat surrounding the project footprint. — Appropriate permits must be obtained prior to the relocation of any floral SCC. 	X	Chapter 9 and Table 9-1

Specialist Study	Recommendation of Specialist	Specialist Recommendations have been included in the BAR	Reference to Applicable Section in this Report
	<ul style="list-style-type: none"> ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — No collection of floral SCC must be allowed. ● Impact: Loss of faunal habitat and diversity <ul style="list-style-type: none"> ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — No hunting/trapping/collection of faunal species must be allowed. — Barrier fencing must be erected around sections that will be excavated in order to prevent faunal species from accessing the prospecting site. — Smaller species of invertebrates and reptiles are likely to be less mobile during colder periods. Should any be observed in the footprint areas during clearing and operational activities, they are to be carefully and safely moved to an area of similar habitat outside of the disturbance footprint. Operational personnel are to be educated about these species and the need for their conservation. Harmless reptiles should be carefully relocated by a suitably nominated person or nominated mine official. For larger venomous snakes, a suitably trained mine official should be contacted to affect the relocation of the species, should it not move off on its own. ● Impact: Loss of faunal SCC <ul style="list-style-type: none"> ○ Mitigation: Planning Phase: <ul style="list-style-type: none"> — Prior to the commencement of any prospecting activities, a walkthrough of the site must be undertaken to identify all faunal SCC within the project footprint. — If faunal SCC are encountered within the project footprint, these species must, where possible, be relocated to suitable habitat surrounding the project footprint. — Appropriate permits must be obtained prior to the relocation of any faunal SCC. ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — No collection of faunal SCC must be allowed. — In the event of the encounter of faunal SCC, an appropriate relocation plan, guided by relevant specialists and provincial authorities, must be compiled and implemented. 		
Freshwater Ecosystem Study	<ul style="list-style-type: none"> ● Impact: Sedimentation on surface water resources <ul style="list-style-type: none"> ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — Sheet runoff from compacted areas should be slowed down by the strategic placement of berms. — It is considered ideal that activities occur within the dry season (low rainfall) to minimise impacts of sedimentation. — As much vegetation growth as possible (of indigenous floral species) must be encouraged to protect soils. — Temporary stockpiling of excavated material from trenches must be retained alongside trenches, as required for backfilling. Any soil to be stockpiled for longer than a month must be moved to a designated stockpile area which should be located outside the 32 m zone of regulation, as approved by the EO. — All soils compacted during the repair and maintenance phase must be ripped and profiled. ● Impact: Pollution of surface water resources <ul style="list-style-type: none"> ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — The development footprint must remain as small as possible and should only encroach into the freshwater ecosystem if considered absolutely essential. — The boundaries of the prospecting area, including contractor laydown areas, must be clearly defined and it must be ensured that all activities remain within defined footprint areas. Edge effects must be carefully controlled. — Planning of temporary roads and access routes must avoid freshwater ecosystem areas and be restricted to existing roads which traverses the freshwater ecosystem. — Appropriate sanitary facilities must be provided for all phases of the project. — All waste must be removed to an appropriate licensed waste facility. — All hazardous chemicals, as well as stockpiles, must be stored in sealed containers (where possible) and on bunded surfaces and have facilities constructed to control runoff from these areas. — All hazardous storage containers and storage areas must comply with the relevant SABS standards to prevent leakage. — No fires should be permitted in or near the project area. — An adequate number of waste bins and spill kits must be provided. 	X	Chapter 9 and Table 9-1
Soils and Agriculture Study	<ul style="list-style-type: none"> ● Impact: Impact on soils due to soil erosion <ul style="list-style-type: none"> ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — Vegetation clearance must be limited to only the areas where trenching will be undertaken, and boreholes drilled. — Vegetation clearance must be planned for dry seasons, i.e late Autumn, winter and early spring, as far as possible. — Following heavy rains, access roads and adjacent areas must be inspected for signs of erosion and rectified if necessary. 	X	Chapter 9 and Table 9-1

Specialist Study	Recommendation of Specialist	Specialist Recommendations have been included in the BAR	Reference to Applicable Section in this Report
	<ul style="list-style-type: none"> • Impact: Disturbance of original soil profiles <ul style="list-style-type: none"> ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — Soil removal must be limited to only the areas where trenching will be undertaken. — Removed topsoil and underlying soil must be stockpiled separately from underlying parent material. — Trenches must not be filled with soils removed from other trenches — Rehabilitation of trenches must first include the replacement of rock and parent material, then topsoil. • Impact: Impact on soils due to chemical pollution <ul style="list-style-type: none"> ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — Spillages of fuel, lubricants etc. from oil sumps and steering racks of vehicles and equipment must be contained using drip trays filled with plastic sheeting and absorbent material. — The use of biodegradable hydraulic fluids, lined sumps for the collection of hydraulic fluids, recovery and treatment of contaminated soils and the safe storage of dried waste mud by burying it in a purpose-built containment area must be implemented. — Waste disposal on site must be avoided wherever possible, by segregating, trucking out and recycling waste off-site. — Spills kits, to remediate and clean up hazardous leaks and spills, must be kept on site at all times. — Spillages of potentially contaminating liquids and solids must be cleaned up immediately. 		
HIA	<ul style="list-style-type: none"> • Impact: Loss of cultural/heritage resources <ul style="list-style-type: none"> ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — The stone walled sites must be avoided by all developmental activities. — An archaeological walk-over of the northern most parts of the project area and all borehole and trenches must be undertaken prior to construction and a report submitted to SAHRA for commenting. SAHRA reserves the right to object to the development pending the results of the walk-down. — In the event of the uncovering of a heritage resource, implement the following chance find procedure: <ul style="list-style-type: none"> ▪ The person or group (identifier) who identified or exposed the heritage resource or graves must cease all activity in the immediate vicinity of the site. ▪ The identifier must immediately inform the senior on-site manager of the discovery. ▪ The senior on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped and ensure that the site is secured, and that controlled access is implemented. ▪ The senior on-site manager will inform the EO and H&S officers of the chance-find and its immediate impact on the project. The EO will then contact the project archaeologist. ▪ If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Elijah Katsetse/Phillip Hine 021 462 4502) must be alerted as per section 35(3) of the NHRA. ▪ Based on the comments received from the authorities the project archaeologist will provide the mine with a Terms of References Report and associated costs if mitigation measures must be implemented. — In the event of the uncovering of grave, implement the following chance find procedure: <ul style="list-style-type: none"> ▪ The project archaeologist must confirm the presence of graveyards and graves and follow the following procedures. ▪ Inform the local SAPS and traditional authority. ▪ The project archaeologist in conjunction with the SAPS and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or of archaeological significance. ▪ The project archaeologist will notify the SAHRA BGG Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490). ▪ The project archaeologist will provide advice with mitigation measures for the graveyards and graves. ▪ In the event of a chance-find, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. 	X	Chapter 9 and Table 9-1
Desktop PIA	<ul style="list-style-type: none"> • Impact: Loss of palaeontological resources <ul style="list-style-type: none"> ○ Mitigation: Operation Phase: <ul style="list-style-type: none"> — In the event of the uncovering of a paleontological resource on the surface or during prospecting activities, implement the following chance find procedure: <ul style="list-style-type: none"> ▪ When excavations begin, the rocks must be given a cursory inspection by the EO or designated person. Any fossiliferous material (plants, insects, bone, coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted. ▪ Photographs of similar fossil plants must be provided to the Contractor to assist in recognizing the fossil plants in the shales and mudstones. This information must be built into the EMP training and awareness plan and procedures. 	X	Chapter 9 and Table 9-1

Specialist Study	Recommendation of Specialist	Specialist Recommendations have been included in the BAR	Reference to Applicable Section in this Report
	<ul style="list-style-type: none"> ▪ Photographs of the putative fossils must be sent to a palaeontologist for a preliminary assessment. ▪ If there is any possible fossil material found by the Contractor/EO/miner workers, then a palaeontologist must visit the site to inspect the selected material and check the dumps, where feasible. ▪ Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site, a permit from SAHRA must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits. ▪ If no good fossil material is recovered, then no site inspections by a palaeontologist will be necessary. A final report by a palaeontologist must be sent to SAHRA once the project has been completed and only if fossils were found. ▪ If no fossils are found and the excavations have completed, then no further monitoring is required. 		

11. ENVIRONMENTAL IMPACT STATEMENT

The aim of this chapter is to provide a summary of the potential biophysical, cultural/heritage and socio-economic impacts identified as part of the proposed project, as well as their significance.

11.1 SUMMARY OF KEY FINDINGS

This section provides a summary of the findings identified as part of the proposed project and assessed potential impacts on the receiving environment in both the unmitigated and mitigated scenarios. A summary of the potential impacts (as per chapter 9) during the operation phase, associated with the preferred alternative (as per chapter 6), is included in Table 11-1.

The assessment of the proposed project presents the potential for negative impacts to occur (in the unmitigated scenario in particular) on the biophysical, cultural/heritage and socio-economic environments both within the project footprint and in the surrounding area.

With reference to Table 11-1, impacts during operation are able to be managed or mitigated to a level that is considered acceptable, especially given that the impact generating activities associated with the proposed prospecting activities are limited to one year and therefore are short-term. The significance of all these impacts, post mitigation, range from **VERY LOW** to **LOW**, with a number of impacts also being rated as being **INSIGNIFICANT**. Assuming the implementation of management actions, these potential impacts can be prevented or reduced to acceptable levels.

The impact on biodiversity during operation was identified as a key impact, which is largely due to the clearance of indigenous vegetation that will take place prior to trenching and borehole drilling activities starting. No endemic or endangered vegetation is likely in the project area, nor a listed ecosystem to be impacted, thus the impact is not considered to be highly significant. The project footprint is within a terrestrial and aquatic CBA 2, as well as within an aquatic ESA 1; however, with the implementation of mitigation, it is not anticipated that this area will be accessed or disturbed during the proposed project. Associated with vegetation clearing is the potential for impacts on soil resources and related land capability. Impacts identified relate to soil erosion, disturbance of soil profiles and soil chemical pollution. These impacts, while rated Very Low to Medium, before mitigation respectively, can be mitigated to a **VERY LOW** impact significance.

Furthermore, impacts to cultural/heritage resources were identified which include potential impacts on archaeological and palaeontological resources. No paleontological resources have been identified in the project area and none are associated with the underlying geology, while archaeological resources have not been identified within the project area. Notwithstanding, there still exists a small possibility that the proposed project may impact on cultural/heritage resources and the proposed chance find protocols must be implemented to minimise potential impacts.

Socio-economic impacts and benefits may include benefits to the local economy resulting from expenditure during prospecting, employment generation, and skills development and capacity. However, the proposed project is of a short-term duration and only a limited number of job opportunities would be made available. Should viable resource deposits be identified upon conclusion of the prospecting activities, the potential exists for future socio-economic benefits associated with the mining phase. At this stage of the project;

however, the impact is considered to be negligible and was not considered further as part of the assessment.

At decommissioning and closure of the proposed project, the bulk of impacts would cease, and the levels of impact would be negligible provided rehabilitation is undertaken successfully. No impacts arising from the proposed project were noted to have any significant impact post-prospecting and were thus not included as part of the assessment.

The conclusion of the impact assessment is that provided that the EMP is effectively implemented, there would be no significant biophysical, cultural/heritage or socio-economic reason why the proposed project should not proceed.

Table 11-1: Impacts Identified for the Prospecting (Operations) Phase

Aspect	Potential Impact	Cumulative impact significance of the impact	
		Unmitigated	Mitigated
Soil and land capability	Impact on soils due to soil erosion	Very Low	VERY LOW
	Disturbance of original soil profiles	Low	VERY LOW
	Impact on soils due to chemical pollution	Medium	VERY LOW
Biodiversity	Loss of floral habitat and diversity	Medium	LOW
	Loss of floral SCC	Medium	LOW
	Loss of faunal habitat and diversity	Medium	LOW
	Loss of faunal SCC	Medium	LOW
Surface water resources	Sedimentation of surface water resources	Very Low	INSIGNIFICANT
	Contamination of surface water resources	Very Low	INSIGNIFICANT
Groundwater	Contamination of groundwater resources	INSIGNIFICANT	
Air quality	Reduces air quality	Very Low	INSIGNIFICANT
Noise	Increase in disturbing noise levels	Very Low	INSIGNIFICANT
Visual	Negative visual impacts	INSIGNIFICANT	
Traffic	Road disturbance and traffic safety	INSIGNIFICANT	
Cultural/heritage and palaeontological resources	Loss of cultural/heritage resources	INSIGNIFICANT	
	Loss of palaeontological resources	INSIGNIFICANT	

11.2 FINAL SITE MAP

The final preferred alternative site layout map is included in Figure 3-1.

11.3 SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES

The positive and negative impacts and risks of the proposed activity are summarised in section 11.1.

12. IMPACT MANAGEMENT OBJECTIVES AND OUTCOMES FOR INCLUSION IN THE EMPR

Based on the outcome of the impact assessment (refer to chapter 9 and see Appendix D), and where applicable the recommendations from specialists (refer to chapter 10), the proposed management objectives and outcomes are provided in this chapter.

12.1 PROPOSED MANAGEMENT OBJECTIVES AND OUTCOMES FOR ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS

Specific environmental objectives and outcomes to control, remedy or prevent potential impacts from the proposed project are provided in Table 12-1.

Table 12-1: Environmental Objectives and Outcomes

Aspect	Environmental Objective	Environmental Outcome
Soils and Land Capability	To minimise the loss of soil resources and related land capability through physical disturbance, erosion, compaction and soil contamination.	To handle, manage and conserve soil resources in line with the measures identified in the approved EMPr and to ensure that that soil resources are suitable and available to be used as part of rehabilitation and re-establishment of the pre-mining land capability.
Biodiversity	To prevent the unacceptable loss and disturbance to floral and faunal species.	To limit disturbance to vegetation as far as practically possible and to manage alien and invasive species in line with the measures identified in the approved EMPr.
Surface Water Resources	To prevent contamination of surface water resources.	To ensure that surface water quality remains within acceptable limits for both domestic and agricultural purposes.
Air Quality	To prevent air pollution health related impacts.	To ensure that any dust emitted as a result of the proposed project remains within acceptable limits so as to prevent health related impacts.
Noise	To keep noise-generating activities to a minimum.	To ensure no NSRs are disturbed.
Cultural/Heritage and Palaeontology	To minimise the disturbance of cultural/heritage and paleontological resources.	To protect heritage resources where possible. If disturbance is unavoidable, then mitigate impact in consultation with a specialist and the SAHRA and in line with regulatory requirements.

13. ASPECTS FOR INCLUSION AS CONDITIONS OF THE AUTHORISATION

Management actions (refer to chapter 9 and Table 9-1) including monitoring requirements (see chapter 28), should form part of the conditions of the EA. With reference to Regulation 26 of GNR 982 of NEMA, additional conditions that should form part of the EA that are not specifically included in the EMPr include compliance with all applicable environmental legislation, whether specifically mentioned in this document or not, and which may be amended from time to time.

14. ASSUMPTIONS, UNCERTAINTIES, LIMITATIONS AND GAPS IN KNOWLEDGE

This chapter outlines the assumptions, uncertainties, limitations and gaps in knowledge associated with the BA process and the proposed project.

14.1 ENVIRONMENTAL ASSESSMENT LIMIT

The BA process focuses on third parties only and does not assess H&S impacts on employees and contractors because the assumption is made that these aspects are separately regulated by H&S legislation, policies and standards, and that PPM will adhere to these.

14.2 TERRESTRIAL BIODIVERSITY STUDY

The following assumptions and limitations apply to the Terrestrial Biodiversity Study compiled for the proposed project:

- Due to safety concerns pertaining to the presence of illegal miners both within the project area, as well as the greater surrounding areas, access to the site was not permitted during the field assessment. Instead, STS was permitted to access certain POI as deemed safe by the Pilanesberg Platinum Mine security team.
 - These POI considered representative of the study area, were used to infer the potential present ecological state, sensitivity, and the floral and faunal communities that may be associated with the project area.
 - While these POI are useful in extrapolating information for both the floral and faunal communities of the project area, they do not provide an exact indication of the ecological conditions, historic impacts and species communities associated with the project area. Conclusions drawn thereof should make note of this limitation. The Terrestrial Biodiversity Study thus serves as a baseline for planning purposes only.
 - Prior to prospecting, the report should be updated, and a subsequent field assessment of the study area be conducted by a suitably qualified specialist to confirm and/or update the ecological particulars associated with the floral and faunal communities within the project area.
- The biodiversity desktop assessment is confined to the project area and the farm portion. It does not include detailed results of the adjacent properties, although the sensitivity of surrounding areas has been included on the relevant maps.
- As access to the project area itself was not possible during the field assessment, habitat delineations are based on satellite imagery, extrapolated data from the assessed POI, available desktop data and prior field experience in the area and are thus deemed to be an adequate reflection of the habitat types within the study area. Additionally, species compositions for each habitat unit have been extrapolated from nearby POI that were accessed during the field assessment and are considered to be highly representative of the typical species assemblages present within the study area.
- Due to most faunal taxa's nature and habits, it is unlikely that all species would have been observed during a field assessment of limited duration. As such, background data (desktop) and literature studies (previous work undertaken in the area) were used to further infer faunal species composition and sensitivities in relation to the available habitat.
- Some floral and faunal SCC identities will not be made known in the Terrestrial Biodiversity Study (due to the limited field duration and seasonal variation), although their potential to occur on-site will still be assessed. As per the best practice guideline that accompanies the SANBI protocol and the National Web-based Environmental Screening Tool, the name of the certain sensitive species

may not appear in the final EIA report nor any of the specialist reports released into the public domain. It will be referred to as sensitive plants, and its threat status included, e.g., critically endangered sensitive plants.

- Good summer rains preceded the site visit. The grass layer was dense, and in some places, moribund. It follows that this could have obscured small forbs and cryptic species during the site visit.

14.3 FRESHWATER ECOSYSTEM STUDY

The following assumptions and limitations apply to the Freshwater Ecosystem Study compiled for the proposed project:

- According to the site layout, the proposed prospecting activities will be located within the left portion of the proposed prospecting area, avoiding the delineated boundary of the freshwater ecosystems.
- Due to safety concerns pertaining to the presence of illegal miners both within the proposed prospecting area, as well as the greater surrounding areas, access to the site was not possible during the field assessment undertaken in October 2021. Instead, SAS was permitted to access certain POI as deemed safe by the Pilanesberg Platinum Mine security team.
 - These POI were used to infer the potential present ecological state, sensitivity, and ecological service provisioning of the freshwater ecosystems associated with the proposed project area.
 - While these POI are useful in extrapolating information regarding the freshwater ecosystems associated with the proposed prospecting area, they do not provide an exact indication of the ecological conditions, historic impacts and species communities associated with the footprint of the prospecting area itself. As such, any conclusions drawn thereof should make note of this limitation and the Freshwater Ecosystem Study serves as a baseline for planning purposes only.
 - It should be noted that in the event that prospecting indicate that mining is feasible, the Freshwater Ecosystem Study should be appropriately updated with further detailed field work. This will include a subsequent field assessment of the proposed prospecting area which should be conducted by a suitably qualified freshwater specialist to confirm and/or update the ecological particulars associated with the freshwater ecosystems within the proposed project area.
- As access to the proposed prospecting area was not possible during the field assessment in October 2021, the freshwater ecosystem delineations as presented in this report are based on digital satellite imagery, extrapolated data from the assessed POI, available desktop databases, contour lines, topographic maps, historical aerial photographs and prior field experience in the area and are deemed to be an adequate reflection of the freshwater ecosystems within the project area.
- The delineations as presented in the Freshwater Ecosystem Study are regarded as a best estimate of the outermost/temporary zone boundaries based on the site conditions present at the time of assessment.
- Global Positioning System (GPS) technology is inherently inaccurate and some inaccuracies due to the use of handheld GPS instrumentation may occur. If more accurate assessments are required, the freshwater ecosystems will need to be surveyed and pegged according to surveying principles and with survey equipment.

- Due to high levels of disturbance associated with the POI assessed and to extrapolate the reach of the freshwater ecosystems traversing the prospecting area, (impacts associated illegal mining activities) vegetation and topography was not always a reliable indicator of the presence of freshwater ecosystems. As such, in highly disturbed areas, the vegetation and topography indicators were considered less reliable indicators and these areas required subsequent refinement with digital satellite imagery.
- The freshwater ecosystems in the surrounding area are largely non-perennial systems that only become active in response to extreme rainfall events. Given the absence of such events, most areas currently show terrestrial characteristics and as such the delineation of the boundaries of these systems proved difficult in some areas. To mitigate this limitation, digital satellite imagery over time was used to verify these boundaries. Despite this, the delineations as presented in the Freshwater Ecosystem Study are regarded as a best estimate of the boundaries based on the site conditions present, as observed during the site assessment and are deemed accurate enough to guide the authorisation process.
- Wetland, riparian and terrestrial ecosystem zones create transitional areas where an ecotone is formed as vegetation species change from terrestrial to obligate/facultative hydrophytic plant species. Within this transition zone, some variation of opinion on the freshwater ecosystem boundary may occur. However, if the Department of Water Affairs and Forestry (DWAF) (now the DWS) (2008) method is followed, all assessors should get largely similar results.
- With regards to data sources used to provide background information on the sensitivity of the assessed areas, it is important to note that although all data sources provide useful and often verifiable, high-quality data, the various databases used do not always provide an entirely accurate indication of the prospecting area's actual site characteristics at the scale required to inform the EA processes.

14.4 SOILS AND AGRICULTURAL STUDY

The following gaps, limitations and assumptions apply to the Soils and Agricultural Study compiled for the proposed project:

- On-site verification could not be conducted due to the presence of illegal miners in the proposed prospecting right area.
- Following the limitation of no site access, photographic evidence could not be collected of the soil forms present and the current land uses.
- Although land type data was used for the analysis of the terrain and soil properties of the proposed prospecting right area, the land type classification system still refers to the soil forms described in the first edition of the South African soil classification system of 1977. Since then, the classification system has been updated twice and the most recent update of 2018, includes several new soil forms that are not included in the land type descriptions.
- The anticipation and rating of impacts are based on the report author's knowledge and experience on the nature of construction and operation of mining infrastructure. Therefore, it is done as accurately as possible but must not be considered as absolute measures.
- The assessment of the anticipated impacts assumes that the proposed prospecting activities will stay within the confines of the site as depicted in Figure 3-1.
- It was assumed that the prospecting activities will be limited to drilling and trenching.

- It is assumed that the prospecting activities will only have one project phase where vegetation in the area of the trenches are removed, soil and rock material underneath are removed and stockpiled, the mineral samples removed, and the trenches rehabilitated immediately after that.

14.5 DESKTOP CULTURAL/HERITAGE STUDY

The following assumptions and limitations apply to the HIA compiled for the proposed project:

- The findings, observations, conclusions, and recommendations reached in the desktop HIA are based on the author's best scientific and professional knowledge and available information. It is important to note that a site visit was not undertaken to the project area, due to safety concerns. However, the larger project area has been surveyed on several former occasions in the past when heritage surveys were done for various mining companies.
- The author reserves the right to modify aspects of the report including the recommendations when new information becomes available, particularly if this information may have an influence on the reports results and recommendations.

14.6 DESKTOP PALAEOLOGY STUDY

The following assumptions and uncertainties apply to the desktop PIA compiled for the proposed project:

- Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the gabbro, norite, pyroxenites and surface sand and alluvium are typical for the country and do not contain fossil plant, insect, invertebrate and vertebrate material. The sands of the Quaternary period would not preserve fossils.

15. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

The aim of this chapter is to provide a reasoned independent opinion, whether or not the proposed project should proceed or not. This opinion is informed by the outcome of the impact assessment and recommendations made by specialists and I&APs.

15.1 REASONS WHY THE ACTIVITY SHOULD BE AUTHORISED OR NOT

The assessment of the proposed project presents the potential for negative impacts to occur (in the unmitigated scenario in particular) on the biophysical, cultural/heritage and socio-economic environments, both on the project footprint and in the surrounding area. With the implementation of management actions, these potential impacts can be prevented or reduced to acceptable levels. It follows that provided the EMPr is effectively implemented, there is no reason from a biophysical, cultural/heritage or socio-economic standpoint why the proposed project should not proceed.

15.2 CONDITIONS THAT MUST BE INCLUDED IN THE AUTHORISATION

15.2.1 Specific Conditions for Inclusion in the EMPr

Refer to chapter 13.

15.2.2 Rehabilitation Requirements

See chapter 27.

16. PERIOD FOR WHICH AUTHORISATION IS REQUIRED

With specific reference to Table 3-4, the identified project activities relate to all phases of development (pre-operation, operation, decommissioning and closure). With reference to Table 3-3, the proposed work programme is anticipated to be three years in duration. To account for any delays in the work programme, it follows that authorisation is required for five years.

17. UNDERTAKING

We, Kate Hamilton and Rizqah Baker, undertake that:

- The information provided herein is correct.
- Comments and inputs from I&APs have been included and correctly recorded in this report.
- Inputs and recommendations from the specialist reports have been included, where relevant.
- Any information provided to I&APs and any responses to comments or inputs made is correct or was correct at that time.



Signature of Assistant Project Manager and Report Author

29 June 2022

Date



Signature of Project Director, Project Manager and EAP

29 June 2022

Date



Signature of Commissioner of Oaths

29 June 2022

Date

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18. FINANCIAL PROVISION

The aim of this chapter is to provide information pertaining to the methodology considered as part of the closure liability calculation determination.

18.1 METHODOLOGY

18.1.1 Methodology Applied to Liability Model

The following approach was applied by E-Tek to determine the financial provision required for Appendix 4 of GNR 1147 – Final Rehabilitation, Decommissioning and Mine Closure Plan:

- The costing model used was developed to addresses all requirements set out in GNR 1147 – Regulations pertaining to the financial provision for prospecting, exploration, mining or production operations and is aligned with all closure components identified.
- The costing model provides the following output:
 - Executive summary (summary of all closure components and associated costs (where applicable)).
 - Closure components (breakdown of the five main closure components).
- The following information is captured for each closure component where applicable:
 - Reference map (reference map number representing the associated closure component).
 - Geo reference (reference number for each closure component as represented on the reference map).
 - Cost component (name of closure component captured).
 - Quantity (quantity per component captured).
 - Unit (unit of measurement).
 - Unit rate (rate assigned from the rate code aligned to the activity).
 - Liable value (presentation of the total amount liable for per component).
 - Notes (captures any assumptions or dedicated information).

18.1.2 Assessment Methodology

The approach followed by E-Tek with the determination of the closure costs is summarised as follows:

- Review of available information, identification of activities that would need to be decommissioned or rehabilitated at closure.
- Gathering of relevant data which forms the basis of the calculation.
- All proposed activities were assigned with a reference number which can be referenced directly to the costing model.
- The following facilities form part of the financial provision calculation:
 - Proposed and current trenching and drilling.
- A reference map was created indicating the position of the proposed activities in relation to the existing infrastructure.
- Closure criteria were developed as part of the liability assessment.
- Compilation of a Bill of Quantities (BoQ) capturing the quantities and actions relating to the closure of the different closure aspects.
- Unit rates from E-Tek’s database were updated to be aligned with the current market-related rates acquired from local civil and demolition contractors.

18.1.3 Assumptions for the Closure Cost Estimation

The following general and site-specific cost assumptions and qualifications are applicable to the closure cost estimation:

- The closure costs were determined and presented in terms of E-Tek's understanding of the currently applicable requirements of GNR 1147.
- Currency of estimate: South African Rands.
- Based on the output required, a 1–10-year closure forecast was calculated including a Life of Mine cost based on the following timelines:
 - Year 1 – Premature Closure (FY2021).
 - Year 2 – 10 Closure Forecast (FY2022 – FY2030).
- The proposed prospecting activities are proposed to commence in Y2022 whereby rehabilitation will commence immediately and also be complete in Y2022.
- Post closure care and maintenance will continue for a five-year period post rehabilitation.
- Quantities and volumes calculated as part of the closure forecast were obtained from the relevant information and associated drawings.
- Costing was based on current value and no allowance was made for future value escalation as per the legislative requirements.
- It was accepted that all information used to support the costing supplied by Pilanesberg Platinum Mines (Pty) Ltd and specialists was accurate and true. The Financial Provision Report only addresses the decommissioning and reclamation costs, equating to an outside (third-party) contractor establishing on-site and conducting reclamation-related work. Other components such as staffing of the site after decommissioning; the infrastructure and support services (e.g. power supply, etc.) for the staff; as well as workforce matters such as separation packages, re- training /re-skilling, etc. are outside the scope.
- Based on the above, dedicated contractors would be commissioned to conduct the rehabilitation activities on the site. This would, *inter alia*, require establishment and overhead costs for the contractors and hence, the allowance for Preliminary and Generals (P&Gs) in the cost estimate.
- Allowance has been made for third-party contractors and consultants to conduct post-closure care and maintenance work, as well as compliance monitoring.
- The financial provision calculated represents the financial requirements to implement the closure criteria identified and agreed upon as part of the closure plan.
- Weighted percentages for P&Gs and Contingencies have been applied. Value-Added Tax (VAT) is also included as follows:
 - P&G's – 25% Overall Allowance.
 - Contingencies – 10% Overall Allowance.
 - VAT – 15% Overall Allowance.

18.1.4 Components

The following components were identified by E-Tek through the review of the site layout plan and project description and form part of the calculation:

- General surfaces:
 - Boreholes:
 - Cap and seal boreholes.
 - Rehabilitate disturbed footprints.

- Trenches:
 - Fill voids.
 - Shape and level area (making the area free draining).
 - Establish vegetation.
- Post closure monitoring and maintenance:
 - Allowance made for a five-year period.

18.2 CONFIRM THAT THE AMOUNT CAN BE PROVIDED FROM OPERATING EXPENDITURE

The amount required to manage and rehabilitate the environmental disturbance (as a result of prospecting activities) is provided for in the operating costs of the Pilanesberg Platinum Mine.

19. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

19.1 IMPACT ON THE SOCIO-ECONOMIC CONDITIONS OF ANY DIRECTLY AFFECTED PERSON

The impacts associated with socio-economic conditions are discussed in Appendix D. Management actions identified to address any socio-economic impacts are provided in chapter 9 and Table 9-1.

No person will be directly affected by the project given that no I&APs currently reside within the project footprint area and no I&APs undertake any activities (i.e., farming, etc.) within the proposed project footprint. Currently mining activities are being undertaken in the area; however, this is considered to be illegal as no authorisations are in place for this activity. Socio-economic impacts during operation include:

- Contamination of surface water resources (**INSIGNIFICANT**).
- Road disturbance and traffic safety (**INSIGNIFICANT**).
- Air pollution sources that can have a negative impact on ambient air quality (**INSIGNIFICANT**).
- Negative visual impact (**INSIGNIFICANT**).
- Increase in disturbing noise levels (**INSIGNIFICANT**).

19.2 IMPACT ON ANY NATIONAL ESTATE REFERRED TO IN SECTION 3(2) OF THE NHRA

No national estate would be affected by the proposed project.

19.3 SCREENING TOOL

DFFE developed an online screening tool which identifies environmental sensitivities within the project area. The screening report for the proposed project was generated using the DFFE online screening tool and was attached to the NEMA application form as supporting documentation. The screening report recommended specialist studies to be undertaken as part of the BA process. The specialist studies that were identified in the screening tool report are included in Table 19-1, as well as explanations for why they were or were not undertaken as part of the BA process.

Table 19-1: Specialist Studies and Environmental Sensitivities Identified by the Screening Tool

Theme	Sensitivity	Specialist Study	Reason for in/exclusion
Agriculture	High	Soils and Agricultural Impact Study	The proposed project entails the undertaking of prospecting activities over an area of approximately 5 ha. Due to the High agricultural sensitivity, a full Soils and Agricultural Study was deemed appropriate.
Animal Species	High	Terrestrial Biodiversity Impact Study	The proposed project entails the clearance of a maximum of 5 ha of indigenous vegetation that may provide a habitat for animal species and animal SCC. Due to the High animal species sensitivity, as well as the Very High terrestrial sensitivity, a full Terrestrial Biodiversity Impact Study was deemed appropriate.
Aquatic Biodiversity	Very High	Freshwater Ecosystem Impact Study	The proposed PR area is located adjacent to the Mothlabe River. Due to the Very High aquatic biodiversity sensitivity, a full Freshwater Ecosystem Impact Study was deemed appropriate.

Theme	Sensitivity	Specialist Study	Reason for in/exclusion
Archaeological and Cultural Heritage	Low	Desktop HIA	The proposed project entails prospecting activities over a maximum area of approximately 1 ha i.e., exceeding 5 000 m ² in extent. In this regard, the provisions of NHRA must be followed and notification and other relevant information must be submitted to the SAHRA. It follows that a Phase 1 HIA was deemed appropriate.
Landscape/Visual	Unspecified	None	The proposed project is located within and adjacent to an existing mining complex. Due to the scale and duration of the proposed project, no study was deemed necessary.
Noise	Unspecified	None	The proposed project is located within and adjacent to an existing mining complex. Due to the scale and duration of the proposed project, no study was deemed necessary.
Palaeontology	Medium	Desktop Palaeontology Impact Study	According to SAHRA's paleo-sensitivity map, the project area is located within an area of Moderate sensitivity. It follows that a Desktop Palaeontology Impact Study was deemed appropriate.
Plant Species	Medium	Terrestrial Biodiversity Impact Study	The proposed project entails the clearance of approximately 5 ha of indigenous vegetation which may include plant SCC. Due to the Medium terrestrial sensitivity, a full Terrestrial Biodiversity Impact Study was deemed appropriate.
Radioactivity	Unspecified	None	Due to the scale and duration of the proposed project, as well as the fact that no mining will be undertaken no study was deemed necessary.
Terrestrial Biodiversity	Very High	Terrestrial Biodiversity Impact Study	The proposed project entails the clearance of approximately 5 ha of indigenous vegetation. Due to the Very High terrestrial sensitivity, a full Terrestrial Biodiversity Impact Study was deemed appropriate.

20. OTHER MATTERS REQUIRED IN TERMS OF SECTION 24(4)(A) AND (B) OF THE ACT

No other matters are required.

PART B – ENVIRONMENTAL MANAGEMENT PROGRAMME

21. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

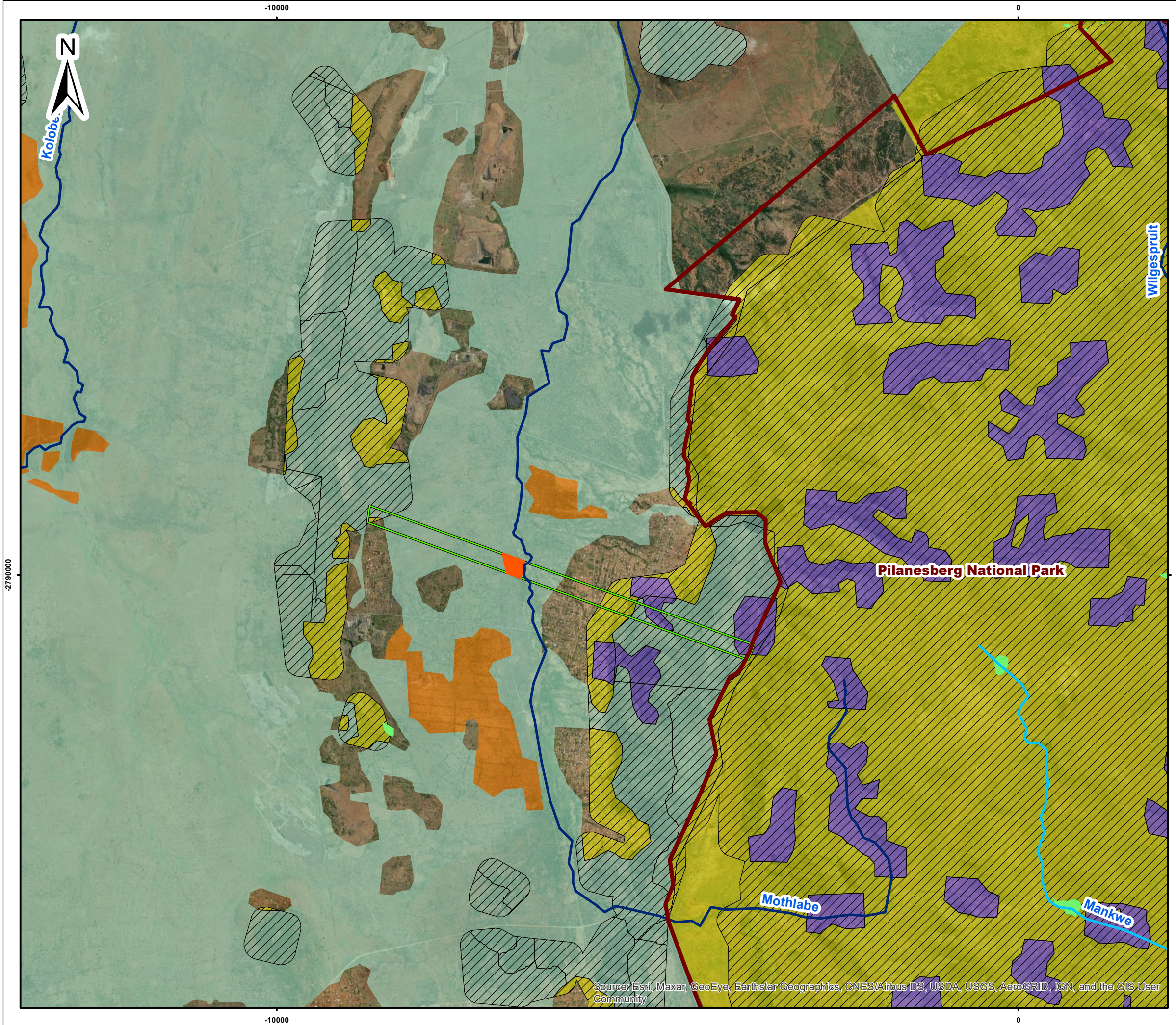
The details of the EAPs who undertook the BA process and prepared this BAR are provided in chapter 1.

22. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

The activities associated with the proposed project that are covered in the EMPr are included in chapter 3 and Table 3-4.

23. COMPOSITE MAP

A composite map of the environmental sensitivities of the project area superimposed on the project footprint is provided in Figure 23-1.



- Legend**
- Prospecting Area
 - Portion RE/5/169
 - South African Protected Areas 2020
 - Rocky Ridges / Important Habitats 2015
 - North West Critical Biodiversity Areas 2015
 - Critical Biodiversity Area 1
 - Critical Biodiversity Area 2
 - Ecological Support Area 1
 - Ecological Support Area 2
 - NFEPA Rivers
 - Class B: Largely Natural
 - Class D: Largely Modified
 - NFEPA Wetlands

0 1 000 Meters
 Scale: 1:50 000 @ A3
 Projection: Transverse Mercator
 Datum: Hartbeeshoek, Lo27

Proposed Prospecting Right on
 Portion 5 of the Farm Ruighoek 169JP

Figure 23-1
Composite Map Of Environmental Sensitivities Superimposed on the Project Footprint



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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

24. DESCRIPTION OF THE IMPACT MANAGEMENT OBJECTIVES, INCLUDING THE MANAGEMENT STATEMENT

This chapter outlines the determination of the closure objectives and provides a list of the management measures specifically identified to mitigate impacts associated with the project activities.

24.1 DETERMINATION OF CLOSURE OBJECTIVES

The closure objectives for the project were determined taking into account the existing environment as described in section 7.4.1, in order to ensure that the closure objectives strive to achieve a condition approximating its natural state as far as possible. Further information pertaining to the closure objectives identified for the proposed project is provided in section 27.1.1.

24.2 VOLUMES AND RATE OF WATER USED FOR MINING

The proposed project will require minimal volumes of water as part of the prospecting activities phase.

24.3 HAS A WATER USE LICENCE BEEN APPLIED FOR?

The proposed project does not trigger any activities in the NWA. It follows that a WUL is not required.

24.4 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES

The assessment of potential impacts associated with the proposed project (prospecting activities and Operation Phase) is provided in chapter 9 and Appendix D. Management actions which will be implemented to avoid, reduce and minimise impacts to acceptable levels are detailed in chapter 9 and Table 9-1.

25. IMPACT MANAGEMENT OUTCOMES AND OBJECTIVES

The purpose of this chapter is to outline the impact management objectives and outcomes for the potential biophysical, cultural/heritage and socio-economic impacts identified for the proposed project.

Table 25-1 provides a description of the outcomes and objectives of the management actions recommended to manage, remedy, control or modify potential impacts associated with the proposed project. The management actions identified to achieve these outcomes and objectives are also provided.

Table 25-1: Description of Impact Management Outcomes and Objectives

Activity (refer to Table 3-4)	Potential Impact	Affected Aspect	Phase	Management Action	Standard to be Achieved (Impact Management Objective and Outcomes)
<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site maintenance 	Impact on soils due to soil erosion	Soil and land capability	Operation	<ul style="list-style-type: none"> • Vegetation clearance must be limited to only the areas where trenching will be undertaken, and boreholes drilled. • Vegetation clearance must be planned for dry seasons, i.e late Autumn, winter and early spring, as far as possible. • Following heavy rains, access roads and adjacent areas must be inspected for signs of erosion and rectified if necessary. 	<ul style="list-style-type: none"> • Objective: To minimise the loss of soil resources and related land capability through physical disturbance, erosion, compaction and soil pollution. • Outcome: The outcome is to handle, manage and conserve soil resources in line with the measures identified in the approved EMPr and to ensure that that soil resources are suitable and available to be used as part of rehabilitation and re-establishment of the pre-mining land capability.
<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis 	Disturbance of original soil profiles	Soil and land capability	Operation	<ul style="list-style-type: none"> • Soil removal must be limited to only the areas where trenching will be undertaken. • Removed topsoil and underlying soil must be stockpiled separately from underlying parent material. • Trenches must not be filled with soils removed from other trenches • Rehabilitation of trenches must first include the replacement of rock and parent material, then topsoil. 	
<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site maintenance 	Impacts on soils due to chemical pollution	Soil and land capability	Operation	<ul style="list-style-type: none"> • Spillages of fuel, lubricants etc. from oil sumps and steering racks of vehicles and equipment must be contained using drip trays filled with plastic sheeting and absorbent material. • The use of biodegradable hydraulic fluids, lined sumps for the collection of hydraulic fluids, recovery and treatment of contaminated soils and the safe storage of dried waste mud by burying it in a purpose-built containment area must be implemented. • Waste disposal on site must be avoided wherever possible, by segregating, trucking out and recycling waste off-site. • Spills kits, to remediate and clean up hazardous leaks and spills, must be kept on site at all times. • Spillages of potentially contaminating liquids and solids must be cleaned up immediately. • Implement the emergency response procedures as outlined in Table 29-1. 	
<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site maintenance 	Loss of floral habitat and diversity	Biodiversity	Operation	<ul style="list-style-type: none"> • Planning Phase: <ul style="list-style-type: none"> ○ Minimise the loss of indigenous vegetation through adequate planning by considering the sensitivity map of the Terrestrial Biodiversity Study. ○ All prospecting equipment must be in a good working order, so as to prevent potential spills and leaks. ○ An alien and invasive Plant Management Plan must be compiled for implementation. The following must be taken into consideration in the compilation of the Plan: <ul style="list-style-type: none"> ▪ Removal of alien and invasive species must be undertaken during the operation phase and continue through the rehabilitation phase. ▪ No alien and invasive plant propagules must be allowed to spread. ▪ The Plan must be implemented by a qualified professional. ▪ Chemical control of alien and invasive plants must not occur without the input of a certified professional and/or within the Freshwater Habitat. ○ A Rehabilitation Plan must be compiled for implementation. The following must be taken into consideration in the compilation of the Rehabilitation Plan: <ul style="list-style-type: none"> ▪ The Rehabilitation Plan must consider all phases of prospecting activities indicating rehabilitation actions to be undertaken during prospecting activities and once prospecting has been completed. ▪ Any natural areas disturbed beyond the project footprint must be rehabilitated using indigenous species. 	<ul style="list-style-type: none"> • Objective: The objective is to prevent the unacceptable loss and disturbance to floral and faunal species. • Outcome: The outcome is to limit disturbance to vegetation as far as practically possible and to manage alien and invasive species in line with the measures identified in the approved EMPr.

Activity (refer to Table 3-4)	Potential Impact	Affected Aspect	Phase	Management Action	Standard to be Achieved (Impact Management Objective and Outcomes)
				<ul style="list-style-type: none"> ▪ Rehabilitation must be implemented concurrently where possible, and disturbed areas must be rehabilitated as soon as these areas become available. ▪ Rehabilitation must be done in such a way so as to ensure that the habitat that was present prior to project activities is recreated. ▪ Rehabilitation must be implemented to a point where natural processes will allow the ecological functioning and biodiversity of the area to be re-instated. ○ A Dust Management Plan must be designed and compiled for implementation. ● Operation Phase: <ul style="list-style-type: none"> ○ The prospecting footprint must be kept as small as possible to minimise the impact on the surrounding environment. ○ The prospecting footprint must be demarcated so as to ensure that prospecting activities are restricted to those areas. Shade cloth/barrier mesh fencing is considered preferable as this will provide for visual obstruction for faunal species. ○ Appropriate sanitary facilities must be provided for staff and waste must be removed to an appropriate waste disposal site. ○ Removal of vegetation must be restricted to what is absolutely necessary and should remain within the approved project footprint. ○ Existing access roads must be used as far as possible. Any additional road construction must be limited to what is absolutely necessary. ○ Collection of indigenous floral species must not be allowed. ○ All compacted soils must be ripped, profiled and re-seeded as soon as possible. ○ The spread of alien and invasive species must be managed. Any removed alien species must not be allowed to lay on unprotected ground as seeds may disperse upon it. All cleared material must be disposed of at a licenced waste facility that complies with legal standards. ○ Any spills/leaks from plant and equipment must be cleaned up immediately and disposed of at a licensed facility. ○ Upon completion of prospecting activities, no bare areas must remain. Indigenous species must be used to revegetate the disturbed area. ○ No fires must be made on site during operations. ○ No dumping of litter must be allowed on site. 	
<ul style="list-style-type: none"> ● Site preparation ● Soil sampling and analysis ● Transport systems ● General site maintenance 	Loss of floral SCC	Biodiversity	Operation	<ul style="list-style-type: none"> ● Planning Phase: <ul style="list-style-type: none"> ○ Prior to the commencement of any prospecting activities, a summer season walkthrough of the site must be undertaken by a suitably qualified professional to identify and mark all floral SCC within the project footprint. ○ If floral SCC are encountered within the project footprint, these species must, where possible, be relocated to suitable habitat surrounding the project footprint. ○ Appropriate permits must be obtained prior to the relocation of any floral SCC. ● Operation Phase: <ul style="list-style-type: none"> ○ No collection of floral SCC must be allowed. 	
<ul style="list-style-type: none"> ● Site preparation ● Soil sampling and analysis ● Transport systems ● General site maintenance 	Loss of faunal habitat and diversity	Biodiversity	Operation	<ul style="list-style-type: none"> ● No hunting/trapping/collection of faunal species must be allowed. ● Barrier fencing must be erected around sections that will be excavated in order to prevent faunal species from accessing the prospecting site. ● Smaller species of invertebrates and reptiles are likely to be less mobile during colder periods. Should any be observed in the footprint areas during clearing and operational activities, they are to be carefully and safely moved to an area of similar habitat outside of the disturbance footprint. Operational personnel are to be educated about these species and the need for their conservation. Harmless reptiles should be carefully relocated by a suitably nominated person or nominated mine official. For larger venomous snakes, a suitably trained mine official should be contacted to affect the relocation of the species, should it not move off on its own. 	

Activity (refer to Table 3-4)	Potential Impact	Affected Aspect	Phase	Management Action	Standard to be Achieved (Impact Management Objective and Outcomes)
<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site maintenance 	Loss of faunal SCC	Biodiversity	Operation	<ul style="list-style-type: none"> • Planning Phase: <ul style="list-style-type: none"> ○ Prior to the commencement of any prospecting activities, a walkthrough of the site must be undertaken to identify all faunal SCC within the project footprint. ○ If faunal SCC are encountered within the project footprint, these species must, where possible, be relocated to suitable habitat surrounding the project footprint. ○ Appropriate permits must be obtained prior to the relocation of any faunal SCC. • Operation Phase: <ul style="list-style-type: none"> ○ No collection of faunal SCC must be allowed. ○ In the event of the encounter of faunal SCC, an appropriate relocation plan, guided by relevant specialists and provincial authorities, must be compiled and implemented. 	
<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site maintenance 	Sedimentation of surface water resources	Surface water resources	Operation	<ul style="list-style-type: none"> • Sheet runoff from compacted areas should be slowed down by the strategic placement of berms. • It is considered ideal that activities occur within the dry season (low rainfall) to minimise impacts of sedimentation. • As much vegetation growth as possible (of indigenous floral species) must be encouraged to protect soils. • Temporary stockpiling of excavated material from trenches must be retained alongside trenches, as required for backfilling. Any soil to be stockpiled for longer than a month must be moved to a designated stockpile area which should be located outside the 32 m zone of regulation, as approved by the EO. • All soils compacted during the repair and maintenance phase must be ripped and profiled. 	<ul style="list-style-type: none"> • Objective: The objective is to prevent pollution of surface water resources. • Outcome: The outcome is to ensure that any pollutants emitted as a result of the proposed project remains within acceptable limits so as to prevent health related impacts.
<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site maintenance 	Contamination of surface water resources	Surface water resources	Operation	<ul style="list-style-type: none"> • The development footprint must remain as small as possible and should only encroach into the freshwater ecosystem if considered absolutely essential. • The boundaries of the prospecting area, including contractor laydown areas, must be clearly defined and it must be ensured that all activities remain within defined footprint areas. Edge effects must be carefully controlled. • Planning of temporary roads and access routes must avoid freshwater ecosystem areas and be restricted to existing roads which traverses the freshwater ecosystem. • Appropriate sanitary facilities must be provided for all phases of the project. • All waste must be removed to an appropriate licensed waste facility. • All hazardous chemicals, as well as stockpiles, must be stored in sealed containers (where possible) and on bunded surfaces and have facilities constructed to control runoff from these areas. • All hazardous storage containers and storage areas must comply with the relevant SABS standards to prevent leakage. • No fires should be permitted in or near the project area. • An adequate number of waste bins and spill kits must be provided. • Implement the emergency response procedures as outlined in Table 29-1. 	
<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site maintenance 	Reduced air quality	Air quality	Operation	<ul style="list-style-type: none"> • Dust suppression measures (wet and dry) must be implemented to minimise the dust generated from vegetation clearing, topsoil stockpiling and material handling activities. • Vehicle exhaust emissions must be reduced through the use of better-quality diesel. • Inspection and maintenance programmes for all plant and equipment must be implemented. 	<ul style="list-style-type: none"> • Objective: The objective is to prevent air pollution health impacts. • Outcome: The outcome is to ensure no NSRs are disturbed.
<ul style="list-style-type: none"> • Site preparation • Soil sampling and analysis • Transport systems • General site maintenance 	Increase in disturbing noise levels	Noise	Operation	<ul style="list-style-type: none"> • Prospecting activities must be limited to the daytime. • A grievance mechanism/procedure must be implemented in the event of a noise-related complaint. 	<ul style="list-style-type: none"> • Objective: The objective is to keep noise-generating activities to a minimum. • Outcome: The outcome is to ensure no NSRs are disturbed.

Activity (refer to Table 3-4)	Potential Impact	Affected Aspect	Phase	Management Action	Standard to be Achieved (Impact Management Objective and Outcomes)
<ul style="list-style-type: none"> Site preparation Civil works Earthworks 	Loss of cultural/heritage resources	Cultural/heritage and paleontological resources	Operation	<ul style="list-style-type: none"> The stone walled sites must be avoided by all developmental activities. An archaeological walk-over of the northern most parts of the project area and all borehole and trenches must be undertaken prior to construction and a report submitted to SAHRA for commenting. SAHRA reserves the right to object to the development pending the results of the walk-down. In the event of the uncovering of a heritage resource, implement the following chance find procedure: <ul style="list-style-type: none"> The person or group (identifier) who identified or exposed the heritage resource or graves must cease all activity in the immediate vicinity of the site. The identifier must immediately inform the senior on-site manager of the discovery. The senior on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped and ensure that the site is secured, and that controlled access is implemented. The senior on-site manager will inform the EO and H&S officers of the chance-find and its immediate impact on the project. The EO will then contact the project archaeologist. If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Elijah Katsetse/Phillip Hine 021 462 4502) must be alerted as per section 35(3) of the NHRA. Based on the comments received from the authorities the project archaeologist will provide the mine with a Terms of References Report and associated costs if mitigation measures must be implemented. In the event of the uncovering of grave, implement the following chance find procedure: <ul style="list-style-type: none"> The project archaeologist must confirm the presence of graveyards and graves and follow the following procedures. Inform the local SAPS and traditional authority. The project archaeologist in conjunction with the SAPS and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or of archaeological significance. The project archaeologist will notify the SAHRA BGG Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490). The project archaeologist will provide advice with mitigation measures for the graveyards and graves. In the event of a chance-find, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. 	<ul style="list-style-type: none"> Objective: The objective is to minimise the disturbance of cultural/heritage and paleontological resources. Outcome: The outcome is to protect heritage resources where possible. If disturbance is unavoidable, then mitigate impact in consultation with a specialist and the SAHRA and in line with regulatory requirements.
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis 	Loss of paleontological resources	Cultural/heritage and paleontological resources	Operation	<ul style="list-style-type: none"> In the event of the uncovering of a paleontological resource on the surface or during prospecting activities, implement the following chance find procedure: <ul style="list-style-type: none"> When excavations begin, the rocks must be given a cursory inspection by the EO or designated person. Any fossiliferous material (plants, insects, bone, coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted. Photographs of similar fossil plants must be provided to the Contractor to assist in recognizing the fossil plants in the shales and mudstones. This information must be built into the EMP training and awareness plan and procedures. Photographs of the putative fossils must be sent to a palaeontologist for a preliminary assessment. If there is any possible fossil material found by the Contractor/EO/miner workers, then a palaeontologist must visit the site to inspect the selected material and check the dumps, where feasible. Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site, a permit from SAHRA must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits. If no good fossil material is recovered, then no site inspections by a palaeontologist will be necessary. A final report by a palaeontologist must be sent to SAHRA once the project has been completed and only if fossils were found. If no fossils are found and the excavations have completed, then no further monitoring is required. 	

26. IMPACT MANAGEMENT ACTIONS

Table 26-1: Description of Impact Management Actions

Activity (refer to Table 3-4)	Potential Impact	Management Action	Timeframe for Implementation	Compliance with Standards
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Impact on soils due to soil erosion	<ul style="list-style-type: none"> Vegetation clearance must be limited to only the areas where trenching will be undertaken, and boreholes drilled. Vegetation clearance must be planned for dry seasons, i.e late Autumn, winter and early spring, as far as possible. Following heavy rains, access roads and adjacent areas must be inspected for signs of erosion and rectified if necessary. 	Operation	<ul style="list-style-type: none"> N/A
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis 	Disturbance of original soil profiles	<ul style="list-style-type: none"> Soil removal must be limited to only the areas where trenching will be undertaken. Removed topsoil and underlying soil must be stockpiled separately from underlying parent material. Trenches must not be filled with soils removed from other trenches Rehabilitation of trenches must first include the replacement of rock and parent material, then topsoil. 	Operation	<ul style="list-style-type: none"> N/A
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Impacts on soils due to chemical pollution	<ul style="list-style-type: none"> Spillages of fuel, lubricants etc. from oil sumps and steering racks of vehicles and equipment must be contained using drip trays filled with plastic sheeting and absorbent material. The use of biodegradable hydraulic fluids, lined sumps for the collection of hydraulic fluids, recovery and treatment of contaminated soils and the safe storage of dried waste mud by burying it in a purpose-built containment area must be implemented. Waste disposal on site must be avoided wherever possible, by segregating, trucking out and recycling waste off-site. Spills kits, to remediate and clean up hazardous leaks and spills, must be kept on site at all times. Spillages of potentially contaminating liquids and solids must be cleaned up immediately. 	Operation	<ul style="list-style-type: none"> N/A
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Loss of floral habitat and diversity	<ul style="list-style-type: none"> Planning Phase: <ul style="list-style-type: none"> Minimise the loss of indigenous vegetation through adequate planning by considering the sensitivity map of the Terrestrial Biodiversity Study. All prospecting equipment must be in a good working order, so as to prevent potential spills and leaks. An alien and invasive Plant Management Plan must be compiled for implementation. The following must be taken into consideration in the compilation of the Plan: <ul style="list-style-type: none"> Removal of alien and invasive species must be undertaken during the operation phase and continue through the rehabilitation phase. No alien and invasive plant propagules must be allowed to spread. The Plan must be implemented by a qualified professional. Chemical control of alien and invasive plants must not occur without the input of a certified professional and/or within the Freshwater Habitat. A Rehabilitation Plan must be compiled for implementation. The following must be taken into consideration in the compilation of the Rehabilitation Plan: <ul style="list-style-type: none"> The Rehabilitation Plan must consider all phases of prospecting activities indicating rehabilitation actions to be undertaken during prospecting activities and once prospecting has been completed. Any natural areas disturbed beyond the project footprint must be rehabilitated using indigenous species. Rehabilitation must be implemented concurrently where possible, and disturbed areas must be rehabilitated as soon as these areas become available. Rehabilitation must be done in such a way so as to ensure that the habitat that was present prior to project activities is recreated. Rehabilitation must be implemented to a point where natural processes will allow the ecological functioning and biodiversity of the area to be re-instated. A Dust Management Plan must be designed and compiled for implementation. Operation Phase: <ul style="list-style-type: none"> The prospecting footprint must be kept as small as possible to minimise the impact on the surrounding environment. The prospecting footprint must be demarcated so as to ensure that prospecting activities are restricted to those areas. Shade cloth/barrier mesh fencing is considered preferable as this will provide for visual obstruction for faunal species. Appropriate sanitary facilities must be provided for staff and waste must be removed to an appropriate waste disposal site. Removal of vegetation must be restricted to what is absolutely necessary and should remain within the approved project footprint. 	Operation	<ul style="list-style-type: none"> Implementation of an alien invasive species management or control plan is in accordance with the NEM: BA Alien and Invasive Species List (2020) that require the control of alien invasive species. Obtaining permits to remove protected flora and faunal species is in accordance with NEM: BA and NFA.

Activity (refer to Table 3-4)	Potential Impact	Management Action	Timeframe for Implementation	Compliance with Standards
		<ul style="list-style-type: none"> ○ Existing access roads must be used as far as possible. Any additional road construction must be limited to what is absolutely necessary. ○ Collection of indigenous floral species must not be allowed. ○ All compacted soils must be ripped, profiled and re-seeded as soon as possible. ○ The spread of alien and invasive species must be managed. Any removed alien species must not be allowed to lay on unprotected ground as seeds may disperse upon it. All cleared material must be disposed of at a licenced waste facility that complies with legal standards. ○ Any spills/leaks from plant and equipment must be cleaned up immediately and disposed of at a licensed facility. ○ Upon completion of prospecting activities, no bare areas must remain. Indigenous species must be used to revegetate the disturbed area. ○ No fires must be made on site during operations. ○ No dumping of litter must be allowed on site. 		
<ul style="list-style-type: none"> ● Site preparation ● Soil sampling and analysis ● Transport systems ● General site maintenance 	Loss of floral SCC	<ul style="list-style-type: none"> ● Planning Phase: <ul style="list-style-type: none"> ○ Prior to the commencement of any prospecting activities, a summer season walkthrough of the site must be undertaken by a suitably qualified professional to identify and mark all floral SCC within the project footprint. ○ If floral SCC are encountered within the project footprint, these species must, where possible, be relocated to suitable habitat surrounding the project footprint. ○ Appropriate permits must be obtained prior to the relocation of any floral SCC. ● Operation Phase: <ul style="list-style-type: none"> ○ No collection of floral SCC must be allowed. 	Operation	
<ul style="list-style-type: none"> ● Site preparation ● Soil sampling and analysis ● Transport systems ● General site maintenance 	Loss of faunal habitat and diversity	<ul style="list-style-type: none"> ● No hunting/trapping/collection of faunal species must be allowed. ● Barrier fencing must be erected around sections that will be excavated in order to prevent faunal species from accessing the prospecting site. <ul style="list-style-type: none"> ○ Smaller species of invertebrates and reptiles are likely to be less mobile during colder periods. Should any be observed in the footprint areas during clearing and operational activities, they are to be carefully and safely moved to an area of similar habitat outside of the disturbance footprint. Operational personnel are to be educated about these species and the need for their conservation. Harmless reptiles should be carefully relocated by a suitably nominated person or nominated mine official. For larger venomous snakes, a suitably trained mine official should be contacted to affect the relocation of the species, should it not move off on its own. 	Operation	
<ul style="list-style-type: none"> ● Site preparation ● Soil sampling and analysis ● Transport systems ● General site maintenance 	Loss of faunal SCC	<ul style="list-style-type: none"> ● Planning Phase: <ul style="list-style-type: none"> ○ Prior to the commencement of any prospecting activities, a walkthrough of the site must be undertaken to identify all faunal SCC within the project footprint. ○ If faunal SCC are encountered within the project footprint, these species must, where possible, be relocated to suitable habitat surrounding the project footprint. ○ Appropriate permits must be obtained prior to the relocation of any faunal SCC. ● Operation Phase: <ul style="list-style-type: none"> ○ No collection of faunal SCC must be allowed. ○ In the event of the encounter of faunal SCC, an appropriate relocation plan, guided by relevant specialists and provincial authorities, must be compiled and implemented. 	Operation	
<ul style="list-style-type: none"> ● Site preparation ● Soil sampling and analysis ● Transport systems ● General site maintenance 	Sedimentation of surface water resources	<ul style="list-style-type: none"> ● Sheet runoff from compacted areas should be slowed down by the strategic placement of berms. ● It is considered ideal that activities occur within the dry season (low rainfall) to minimise impacts of sedimentation. ● As much vegetation growth as possible (of indigenous floral species) must be encouraged to protect soils. ● Temporary stockpiling of excavated material from trenches must be retained alongside trenches, as required for backfilling. Any soil to be stockpiled for longer than a month must be moved to a designated stockpile area which should be located outside the 32 m zone of regulation, as approved by the EO. ● All soils compacted during the repair and maintenance phase must be ripped and profiled. 	Operation	<ul style="list-style-type: none"> ● N/A
<ul style="list-style-type: none"> ● Site preparation ● Soil sampling and analysis ● Transport systems ● General site maintenance 	Contamination of surface water resources	<ul style="list-style-type: none"> ● The development footprint must remain as small as possible and should only encroach into the freshwater ecosystem if considered absolutely essential. ● The boundaries of the prospecting area, including contractor laydown areas, must be clearly defined and it must be ensured that all activities remain within defined footprint areas. Edge effects must be carefully controlled. ● Planning of temporary roads and access routes must avoid freshwater ecosystem areas and be restricted to existing roads which traverses the freshwater ecosystem. ● Appropriate sanitary facilities must be provided for all phases of the project. 	Operation	<ul style="list-style-type: none"> ● N/A

Activity (refer to Table 3-4)	Potential Impact	Management Action	Timeframe for Implementation	Compliance with Standards
		<ul style="list-style-type: none"> All waste must be removed to an appropriate licensed waste facility. All hazardous chemicals, as well as stockpiles, must be stored in sealed containers (where possible) and on bunded surfaces and have facilities constructed to control runoff from these areas. All hazardous storage containers and storage areas must comply with the relevant SABS standards to prevent leakage. No fires should be permitted in or near the project area. An adequate number of waste bins and spill kits must be provided. 		
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Reduced air pollution	<ul style="list-style-type: none"> Dust suppression measures (wet and dry) must be implemented to minimise the dust generated from vegetation clearing, topsoil stockpiling and material handling activities. Vehicle exhaust emissions must be reduced through the use of better-quality diesel. Inspection and maintenance programmes for all plant and equipment must be implemented. 	Operation	<ul style="list-style-type: none"> N/A
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis Transport systems General site maintenance 	Increase in disturbing noise levels	<ul style="list-style-type: none"> Prospecting activities must be limited to the daytime. A grievance mechanism/procedure must be implemented in the event of a noise-related complaint. 	Operation	<ul style="list-style-type: none"> N/A
<ul style="list-style-type: none"> Site preparation Civil works Earthworks 	Loss of cultural/heritage resources	<ul style="list-style-type: none"> The stone walled sites must be avoided by all developmental activities. An archaeological walk-over of the northern most parts of the project area and all borehole and trenches must be undertaken prior to construction and a report submitted to SAHRA for commenting. SAHRA reserves the right to object to the development pending the results of the walk-down. In the event of the uncovering of a heritage resource, implement the following chance find procedure: <ul style="list-style-type: none"> The person or group (identifier) who identified or exposed the heritage resource or graves must cease all activity in the immediate vicinity of the site. The identifier must immediately inform the senior on-site manager of the discovery. The senior on-site manager must make an initial assessment of the extent of the find and confirm that further work has stopped and ensure that the site is secured, and that controlled access is implemented. The senior on-site manager will inform the EO and H&S officers of the chance-find and its immediate impact on the project. The EO will then contact the project archaeologist. If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Elijah Katsetse/Phillip Hine 021 462 4502) must be alerted as per section 35(3) of the NHRA. Based on the comments received from the authorities the project archaeologist will provide the mine with a Terms of References Report and associated costs if mitigation measures must be implemented. In the event of the uncovering of grave, implement the following chance find procedure: <ul style="list-style-type: none"> The project archaeologist must confirm the presence of graveyards and graves and follow the following procedures. Inform the local South African Police Service (SAPS) and traditional authority. The project archaeologist in conjunction with the SAPS and traditional authority will inspect the possible graves and make an informed decision whether the remains are of forensic, recent, cultural-historical or of archaeological significance. The project archaeologist will notify the SAHRA BGG Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490). The project archaeologist will provide advice with mitigation measures for the graveyards and graves. In the event of a chance-find, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. 	Operation	<ul style="list-style-type: none"> In the event of chance finds, compliance will be in accordance with the NHRA.
<ul style="list-style-type: none"> Site preparation Soil sampling and analysis 	Loss of paleontological resources	<ul style="list-style-type: none"> In the event of the uncovering of a paleontological resource on the surface or during prospecting activities, implement the following chance find procedure: <ul style="list-style-type: none"> When excavations begin, the rocks must be given a cursory inspection by the EO or designated person. Any fossiliferous material (plants, insects, bone, coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted. Photographs of similar fossil plants must be provided to the Contractor to assist in recognizing the fossil plants in the shales and mudstones. This information must be built into the EMP training and awareness plan and procedures. 	Operation	

Activity (refer to Table 3-4)	Potential Impact	Management Action	Timeframe for Implementation	Compliance with Standards
		<ul style="list-style-type: none"> ○ Photographs of the putative fossils must be sent to a palaeontologist for a preliminary assessment. ○ If there is any possible fossil material found by the Contractor/EO/miner workers, then a palaeontologist must visit the site to inspect the selected material and check the dumps, where feasible. ○ Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site, a permit from SAHRA must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits. ○ If no good fossil material is recovered, then no site inspections by a palaeontologist will be necessary. A final report by a palaeontologist must be sent to SAHRA once the project has been completed and only if fossils were found. ○ If no fossils are found and the excavations have completed, then no further monitoring is required. 		

27. FINANCIAL PROVISION

The aim of this chapter is to outline the closure objectives, the rehabilitation plan and the financial liability determined for the proposed project.

27.1 DETERMINATION OF THE AMOUNT OF FINANCIAL PROVISION

27.1.1 Closure Objectives Description and the Alignment with the Baseline Environment

The closure objectives for the proposed project are aligned with the overall closure objectives of the Pilanesberg Platinum Mine. The closure objectives include establishing the pre-mining potential of the land – wilderness/ecotourism and grazing land. This is being further refined through on-going closure planning where the final end land use would likely be a wilderness area which would be incorporated into the North West HPC.

27.1.2 Confirmation that Closure Objectives Have Been Consulted with I&APs

The closure objectives are outlined in this report and will be made available to I&APs for review and comment. To date, no comments regarding the closure objectives have been received from I&APs (refer to section 7.2 and 27.1.1). These sections will be updated as the BA process progresses.

27.1.3 Rehabilitation Plan

The proposed project does not require the development of an annual rehabilitation plan as outlined in the Financial Provisioning Regulations, 2015 (GNR 1147 of 20 November 2015) that focusses on rehabilitation for the forthcoming 12 months. The short term and long-term rehabilitation objectives applicable to the proposed project are outlined in the following sections.

27.1.3.1 Short Term Objectives

- Demolish and remove all infrastructure that will not be handed over to the surrounding communities, as per the closure plan.

27.1.3.2 Long Term Objectives:

- Stable landforms that blend into the surrounding environment.
- Return of native flora and fauna.
- Landforms that allow for the desired land uses.
- Ensure no negative residual impacts are present.

27.1.4 Compatibility of the Rehabilitation Plan with the Closure Objectives

It is confirmed that PPM's rehabilitation plan is compatible with the closure objectives given that the closure objectives were taken into account during the determination of the financial provision. The rehabilitation plan is in line with the minimum requirement of the EMPr.

27.1.5 Calculate and State the Quantum of the Financial Provision

The financial provision represents a ten-year forecast of the proposed project. The financial provision takes into consideration that the proposed prospecting activities will commence in Y2022, whereby rehabilitation will commence immediately and also be completed in Y2022. It further takes into consideration that post-closure care and maintenance will continue for a five-year period post-rehabilitation. PPM is to financially provide for the highest liability figure out of the ten-year closure forecast, which has been calculated at

R 390 543.00 (Rounded Closure Forecast (Y2022)). This figure includes P&Gs (25%), Contingencies (10%) and VAT (15%) (see Appendix E).

27.1.6 Confirmation that the Financial Provision will be Provided

The financial provision is provided in the form of an insurance guarantee.

28. MECHANISMS FOR MONITORING COMPLIANCE AND PERFORMANCE AGAINST THE EMPR

The aim of this section is to outline the monitoring programme that will need to be implemented during the proposed project.

PPM currently has monitoring programmes in place for its existing mining operations. It is recommended that the implementation of those monitoring programmes be continued.

As a general approach, PPM will ensure that existing monitoring programmes comprise the following:

- Adherence to a formal monitoring procedure.
- Use of appropriately calibrated equipment by personnel trained to use the equipment.
- The preservation of samples according to laboratory specifications, where samples require analysis.
- The use of an accredited, independent and commercial laboratory to undertake sample analysis.
- The identification of monitoring parameters in consultation with a specialist in the relevant field and/or the relevant authority.
- The amendment or removal of monitoring parameters, where necessary, following the initial monitoring results and in consultation with a specialist and/or the relevant authority.
- The interpretation of data and reporting of trends to be undertaken by an appropriately qualified person.
- The record-keeping of data and reports for life of mine.

Impacts that require specific monitoring programmes include monitoring for soil erosion, alien and invasive species; floral and faunal vegetation, floral and faunal SCC; and sedimentation and pollution of surface water resources. Monitoring for these parameters must be undertaken in line with any existing monitoring plans implemented at the Pilanesberg Platinum Mine and in accordance with any new plans required specifically for the proposed project (see Appendix D).

28.1 FREQUENCY OF PERFORMANCE ASSESSMENT REPORT

PPM will, for the period during which the EA and the EMPr is valid, submit environmental audit reports to the DMRE. These audits will focus on the mine's compliance with the conditions of the EA and the commitments in the EMPr. These audits will be undertaken by a qualified independent person and will comply with the relevant EIA Regulations, 2014 (as amended).

The Environmental Manager will conduct internal management audits against the commitments in the EMPR in accordance with an annual audit plan. These audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

28.2 CLOSURE COST REPORTING

The financial provision for the mine will be updated on an annual basis and be submitted to the DMRE for the duration of the operation in accordance with the relevant legislation.

29. ENVIRONMENTAL AWARENESS PLAN

This chapter outlines the environmental awareness plan that has been developed for the proposed project.

29.1 MANNER IN WHICH THE APPLICANT INTENDS TO INFORM EMPLOYEES OF THE ENVIRONMENTAL RISKS

This section includes an environmental awareness plan for the proposed project. The plan describes how employees will be informed of environmental risks which may result from their work, the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment and the training required for general environmental awareness and the dealing of emergency situations and remediation measures for such emergencies. All contractors that conduct work on behalf of PPM are bound by the content of the EMPr and a contractual condition to this effect will be included in all such contracts entered into by PPM. If contractors are used, the responsibility for ensuring compliance with the EMPr will remain with PPM.

The purpose of the environmental awareness plan is to ensure that all personnel and management understand the general environmental requirements of the site. In addition, greater environmental awareness must be communicated to personnel involved in specific activities which can have a significant impact on the environment and ensure that they are competent to carry out their tasks on the basis of appropriate education, training and/or experience. The environmental awareness plan should enable PPM to achieve the objectives of the environmental policy.

29.2 ENVIRONMENTAL POLICY

The Pilanesberg Platinum Mine's environmental policy is displayed prominently at the mine entrance and key notice boards at the mine's business units. The Pilanesberg Platinum Mine environmental policy is described below:

- To minimise the impact of the Pilanesberg Platinum Mine's mining operations on the environment wherever possible.
- To comply with all applicable environmental legislation and the commitments contained in PPM's EMPr.
- To ensure that all mine employees, contractors and sub-contractors:
 - Are aware of the impact of their activities on the environment.
 - Are informed about the measures required to prevent, mitigate and manage environmental impacts.
 - Apply these principles whilst carrying out their work.
- To establish and maintain a good relationship with surrounding communities, industries and other I&APs with regard to the mine's activities.
- To develop a localised environmental strategy with the local authority and nearby industries, particularly with regard to the proposed North West HPC.
- To provide relevant and constructive consultation/public participation on the management of the potential environmental impacts posed by the mine in the future.

29.3 STEPS TO ACHIEVE THE ENVIRONMENTAL POLICY OBJECTIVES

The Pilanesberg Platinum Mine environmental policy will be realised by setting specific and measurable objectives. It is proposed that new objectives are set throughout the life of mine, but initial objectives are as follows:

- Management of environmental responsibilities:
 - PPM will establish and appoint Managers at senior mine management level at each site, who will be provided with all necessary resources to carry out the management of all environmental aspects of the site irrespective of other responsibilities, for example:
 - Compliance with environmental legislation and EMPr commitments.
 - Implementing and maintaining an environmental management system with the assistance of the appointed Environmental Management System Area Coordinator and the Area Waste Coordinator.
 - Developing environmental emergency response procedures and coordinating personnel during incidents.
 - Manage routine environmental monitoring and data interpretation.
 - Environmental trouble shooting and implementation of remediation strategies.
 - Closure planning.
- Communication of environmental issues and information:
 - Meetings, consultations and progress reviews will be carried out, and specifically PPM will:
 - Set the discussion of environmental issues and feedback on environmental projects as an agenda item at all company board meetings.
 - Provide progress reports on the achievement of policy objectives and level of compliance with the approved EMPr to the DMRE.
 - Ensure environmental issues are raised at monthly mine management executive committee meetings and all relevant mine wide meetings at all levels.
 - Ensure environmental issues are discussed at all general liaison meetings with local communities and other interested and affected parties.
- Environmental awareness training:
 - PPM will provide environmental awareness training to individuals at a level of detail specific to the requirements of their job, but will generally comprise:
 - Basic awareness training for all prior to granting access to site (e.g., short video presentation requiring registration once completed). Employees and contractors who have not attended the training will not be allowed on site.
 - General environmental awareness training will be given to all employees and contractors as part of the Safety, Health and Environment induction programme. All non- PPM personnel who will be on site for more than three days must undergo the SHE induction training.
 - Specific environmental awareness training will be provided to personnel whose work activities can have a significant impact on the environment (e.g., workshops, waste handling and disposal, sanitation, etc.).
- Review and update the environmental topics already identified in the EMPr.
- All mine projects will be designed to minimise impact on the environment and to accomplish closure/rehabilitation objectives.
- PPM will maintain records of all environmental training, monitoring, incidents, corrective actions and reports.

- Contractors and employees will be contractually bound to participate in the achievement of environmental policy objectives, outcomes and compliance with the BAR and EMPr.

29.4 TRAINING OBJECTIVES OF THE ENVIRONMENTAL AWARENESS PLAN

The environmental awareness plan ensures that training needs are identified, and that appropriate training is provided. The environmental awareness plan should communicate:

- The importance of conformance with the environmental policy, procedures and other requirements of good environmental management.
- The significant environmental impacts and risks of individuals work activities and explain the environmental benefits of improved performance.
- Individuals' roles and responsibilities in achieving the aims and objectives of the environmental policy.
- The potential consequences of not complying with environmental procedures.

29.4.1 General Contents of the Environmental Awareness Plan

To achieve the objectives of the environmental awareness, the general contents of the training plans are as follows:

- Module 1 – Basic training plan applicable to all personnel entering the site:
 - Short (15 min) presentation to indicate the site layout and activities at specific business units together with their environmental aspects and potential impacts.
 - Individuals to sign off with site security on completion in order to gain access to the site.
- Module 2 – General training plan applicable to all personnel at the site for longer than 3 days:
 - General understanding of the environmental setting of PPM (e.g., local communities and industries and proximity to natural resources such as rivers).
 - Understanding the environmental impact of individual activities on site (e.g., excessive production of waste, poor housekeeping, energy consumption, water use, noise, etc.).
 - Indicate potential site-specific environmental aspects and their impacts.
 - PPM's environmental management strategy.
 - Identifying poor environmental management and stopping work which presents significant risks.
 - Reporting incidents.
 - Examples of poor environmental management and environmental incidents.
 - Procedures for emergency response and cleaning up minor leaks and spills.
- Module 3 – Specific training plan:
 - Environmental setting of the workplace (e.g., proximity of watercourses, vulnerability of groundwater, proximity of local communities and industries, etc.).
 - Specific environmental aspects such as:
 - Spillage of hydrocarbons .
 - Poor waste management such as mixing hazardous and general wastes, inappropriate storage and stockpiling large amounts of waste.
 - Poor housekeeping practices.
 - Poor working practices (e.g., not carrying out oil changes in designated bunded areas).
 - Excessive noise generation and unnecessary use of hooters.
 - Protection of heritage resources (including palaeontological resources).

- Impact of environmental aspects, for example:
 - Hydrocarbon contamination resulting in loss of resource (soil, water) to downstream users.
 - Groundwater contamination also resulting in loss of resource due to potential adverse aesthetic, taste and health effects.
 - Dust impacts on local communities (nuisance and health implications).
- PPM's duty of care (specifically with respect to waste management).
- Purpose and function of PPM's environmental management system.

Individuals required to complete Module 3 (Specific training module) will need to complete Modules 1 and 2 first. On completion of the Module 3, individuals will be subject to a short test (written or verbal) to ensure the level of competence has been achieved. Individuals who fail the test will be allowed to re-sit the test after further training by the training department.

The actual contents of the training modules will be developed based on a training needs analysis. Key personnel will be required to undergo formal, external environmental management training (e.g., how to operate the environmental management system, waste management and legal compliance). In addition to the above PPM will:

- Conduct refresher training/presentations on environmental issues for mine employees (permanent and contractors) at regular intervals.

29.5 MANNER IN WHICH RISKS WILL BE DEALT WITH TO AVOID POLLUTION OR DEGRADATION

29.5.1 Ongoing Monitoring and Management Actions

Implementation of the Pilanesberg Platinum Mine's existing monitoring programmes, as mentioned in chapter 28, will be continued to provide early warning systems necessary to avoid environmental emergencies associated with the proposed project.

29.5.2 Procedures in Case of Environmental Emergencies

Emergency procedures apply to incidents that are unexpected and may be sudden, and which may lead to serious danger to employees/contractors, the public and/or potentially serious pollution of, or detriment to the environment (immediate and delayed). Procedures to be followed in case of environmental emergencies are described in the following sections.

29.5.2.1 General Emergency Procedure

The general procedure that should be followed in the event of all emergency situations is as follows. The contents of the procedure have been taken from the Pilanesberg Platinum Mine's approved EMPr and aligned with the NEMA requirements.

- During operation, the Operation Manager and EO must be notified of an incident upon discovery.
- During operation, the incident must be reported immediately to Environmental Department for emergencies involving environmental impacts or to the Safety Department in the case of injury.
- Area to be cordoned off to prevent unauthorised access and tampering of evidence.
- Take photographs and samples as necessary to assist in investigation.
- The Environmental Department must comply with Section 30 of NEMA such that:
 - The Environmental Department must immediately notify the Director-General (DMRE, DWS, and Inspectorate of Mines as appropriate), SAPS and relevant fire prevention service,

the provincial head of DEDECT or municipality, the head of the regional DWS office and any persons whose health may be affected, of:

- The nature of the incident.
 - Any risks posed to public health, safety and property.
 - The toxicity of the substances or by-products released by the incident.
 - Any steps taken to avoid or minimise the effects of the incident on public health and the environment.
- The Environmental Department must as soon as is practical after the incident:
 - Take all reasonable measures to contain and minimise the effects of the incident including its effects on the environment and any risks posed by the incident to the health, safety and property of persons.
 - Undertake clean up procedures.
 - Remedy the effects of the incident.
 - Assess the immediate and long-term effects of the incident (environment and public health).
 - Within 14 days the Environmental Department must report to the Director-General (DMRE, DWS, as appropriate), the provincial head of DEDECT and the local municipality, the head of the regional DWS office such information as is available to enable an initial evaluation of the incident, including:
 - The nature of the incident.
 - The substances involved and an estimation of the quantity released.
 - The possible acute effects of the substances on the persons and the environment (including the data needed to assess these effects).
 - Initial measures taken to minimise the impacts.
 - Causes of the incident, whether direct or indirect, including equipment, technology, system or management failure.
 - Measures taken to avoid a recurrence of the incident.

Identification of Emergency Situations

The project-specific emergency situations that have been identified together with specific emergency response procedures are outlined in Table 29-1.

Table 29-1: Emergency Response Procedures

Item	Emergency situation	Response in addition to general procedures
1	Spillage of chemicals, engineering substances and waste	<ul style="list-style-type: none"> Where there is a risk that contamination will contaminate the land (leading to a loss of resource), surface water and/or groundwater, PPM will: <ul style="list-style-type: none"> Notify residents/users downstream of the pollution incident. Identify and provide alternative resources should contamination impact adversely on the existing environment. Cut off the source if the spill is originating from a pump, pipeline or valve (e.g., refuelling bays) and the infrastructure 'made safe'. Contain the spill (e.g., construct temporary earth bund around source such as road tanker). Pump excess hazardous liquids on the surface to temporary containers (e.g., 210 litre drums, mobile tanker, etc.) for appropriate disposal. Remove hazardous substances from damaged infrastructure to an appropriate storage area before it is removed/repared.
2	Pollution of surface water (where relevant)	<ul style="list-style-type: none"> Apply the principals listed for Item 1 above. Absorbent booms will be used to absorb surface plumes of hydrocarbon contaminants. Contamination entering the surface water drainage system will be redirected into the dirty water system. The Environmental Department will collect in-stream water samples downstream of the incident to assess the immediate risk posed by contamination.
3	Groundwater contamination	<ul style="list-style-type: none"> Apply the principals listed for Item 1 above. Investigate the source of contamination and implement control/management actions.
4	Flooding from failure of surface water control infrastructure	<ul style="list-style-type: none"> Evacuate the area downstream of the failure. Using the emergency response team, rescue/recover and medically treat any injured personnel. Temporarily reinstate/repair storm water diversions during the storm event (e.g. emergency supply of sandbags). Close the roads affected by localised flooding or where a storm water surge has destroyed crossings/bridges.
5	Veld fire	<ul style="list-style-type: none"> Evacuate employees from areas at risk. Notify downwind residents and industries of the danger. Assist those in imminent danger/less able individuals to evacuate until danger has passed. Provide emergency firefighting assistance with available trained mine personnel and equipment.
6	Escape of dangerous wild animals from proposed North West HPC	<ul style="list-style-type: none"> Notify the park manager of the siting of dangerous wild animals. Ensure personnel get to safety (i.e. with buildings or vehicles).
7	Development of informal settlements	<ul style="list-style-type: none"> Project personnel must local authorities (municipality and police) that people are illegally occupying the land and ensure that action is taken within 24 hours.

Item	Emergency situation	Response in addition to general procedures
8	Road traffic accidents (on site)	<ul style="list-style-type: none"> • The individual discovering the accident (be it bystander or able casualty) must raise the alarm giving the location of the incident. Able personnel at the scene should shut down vehicles where it is safe to do so. • Access to the area should be restricted and access roads cleared for the emergency response team. • Vehicles must be made safe first by trained professionals (e.g. crushed or overturned vehicles). • Casualties will be moved to safety by trained professionals and provided with medical assistance. • Medical centres in the vicinity with appropriate medical capabilities will be notified if multiple seriously injured casualties are expected. • A nearby vet should be consulted in the case of animal injury.
9	Falling into hazardous excavations	<ul style="list-style-type: none"> • Personnel discovering the fallen individual or animal must mobilise the emergency response team to the location of the incident and provide a general appraisal of the situation (e.g., human or animal, conscious or unconscious, etc.). • The injured party should be recovered by trained professionals such as the PPM emergency response team. • A doctor (or appropriate medical practitioner)/ambulance should be present at the scene to provide first aid and transport individual to hospital.
10	Uncovering of graves, sites and fossils	<ul style="list-style-type: none"> • Refer to the Chance Find Procedure provided in Table 10-1.

29.6 TECHNICAL, MANAGEMENT AND FINANCIAL OPTIONS

Technical, management and financial options that will be put into place to deal with the remediation of impacts in cases of environmental emergencies are described below:

- PPM will appoint a competent management team with the appropriate skills to develop and manage the proposed project.
- To prevent the occurrence of emergency situations, PPM will implement, as a minimum, the mine plan and mitigation measures as included in this BAR and EMPr.
- PPM has an environmental management system in place where to identify, report, investigate, address and close out environmental incidents.
- As part of its annual budget, PPM will allow a contingency for handling of any risks identified and/or emergency situations.
- Where required, PPM will seek input from appropriately qualified people.

30. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

As mentioned in chapter 28, PPM will, for the period during which the EA and the EMPr is valid, submit environmental audit reports to the DMRE. These audits will focus on the mine's compliance with the conditions of the EA and the commitments in the EMPr. These audits will be undertaken by a qualified independent person and will comply with the relevant EIA Regulations, 2014 (as amended).

The Environmental Manager will conduct internal management audits against the commitments in the EMPr in accordance with an annual audit plan. These audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

Furthermore, the financial provision for the mine will be updated on an annual basis and be submitted to the DMRE for the duration of the prospecting in accordance with the relevant legislation.

31. UNDERTAKING

We, Kate Hamilton and Rizqah Baker, undertake that:

- The information provided herein is correct.
- Comments and inputs from I&APs have been included and correctly recorded in this report.
- Inputs and recommendations from the specialist reports have been included, where relevant. and
- Any information provided to I&APs and any responses to comments or inputs made is correct or was correct at that time.



Signature of Assistant Project Manager and Report Author

29 June 2022

Date



Signature of Project Director, Project Manager and EAP

29 June 2022

Date



Signature of Commissioner of Oaths

29 June 2022

Date

COMMISSIONER OF OATHS
Oren Jan Van Vrede
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32. REFERENCES

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