



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: NEWRAY (SOUTH AFRICA) RESOURCES (PTY) LTD

REFERENCE NUMBER: NW 30/5/1/1/2/11621 PR

ENVIRONMENTAL MANAGEMENT PLAN

SUBMITTED

**IN TERMS OF SECTION 39 AND OF REGULATION 52 OF THE MINERAL AND
PETROLEUM RESOURCES DEVELOPMENT ACT, 2002,
(ACT NO. 28 OF 2002) (THE ACT)**

STANDARD DIRECTIVE

Applicants for prospecting rights or mining permits, are herewith, in terms of the provisions of Section 29 (a) and in terms of section 39 (5) of the Mineral and Petroleum Resources Development Act, directed to submit an Environmental Management Plan strictly in accordance with the subject headings herein, and to compile the content according to all the sub items to the said subject headings referred to in the guideline published on the Departments website, within 60 days of notification by the Regional Manager of the acceptance of such application. This document comprises the standard format provided by the Department in terms of Regulation 52 (2), and the standard environmental management plan which was in use prior to the year 2011, will no longer be accepted.

IDENTIFICATION OF THE APPLICATION IN RESPECT OF WHICH THE ENVIRONMENTAL MANAGEMENT PLAN IS SUBMITTED.

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1 REGULATION 52 (2): DESCRIPTION OF THE ENVIRONMENT LIKELY TO BE AFFECTED BY THE PROPOSED PROSPECTING OR MINING OPERATION.

1.1 The environment on site relative to the environment in the surrounding area.

Atmosphere/air quality

Presently, the air quality is good due to the generally deserted nature of the area and thus lack of pollutants. Air pollution occurs in the form of carbon monoxide from vehicles which passes through the area using the R510 road and other secondary roads and tracks (Figure 1). The dry and arid nature of the area, which experiences high wind resulting in intermittent dust storms, especially in the summer months, has the main impact on the air quality of the area.

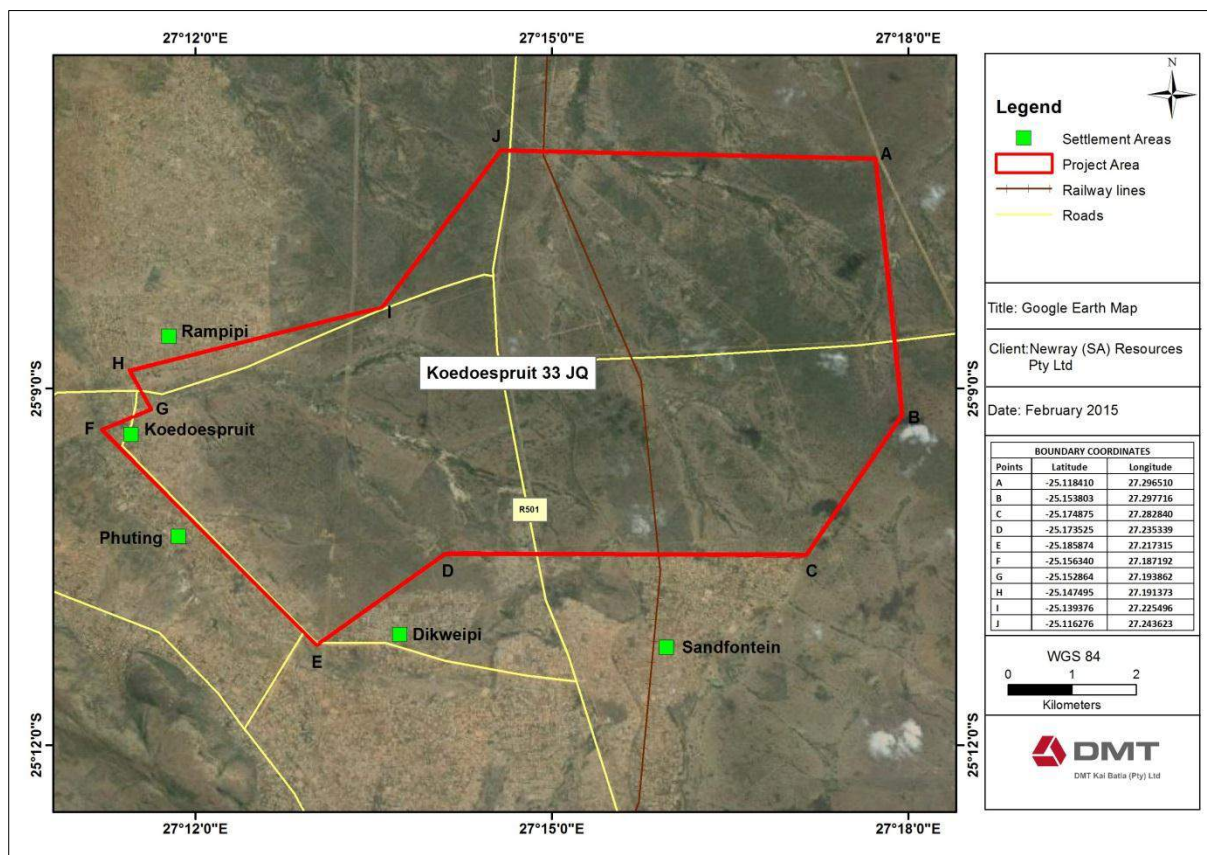


Figure 1: Locality map.

Noise

The only current sources of noise are from traffic on the farm roads transecting the property.

Infrastructure

- Railway line.
- Power lines and substation is located east of the area.
- The R510 arterial road, and secondary roads.
- Reservoir and fountain on the eastern portion of the area
- Wind pumps to the southwest and east of the area.

Terrain

The topography of the project area is characterised by plains with open low hills or ridges. See Figure 2 for a map showing the topography.

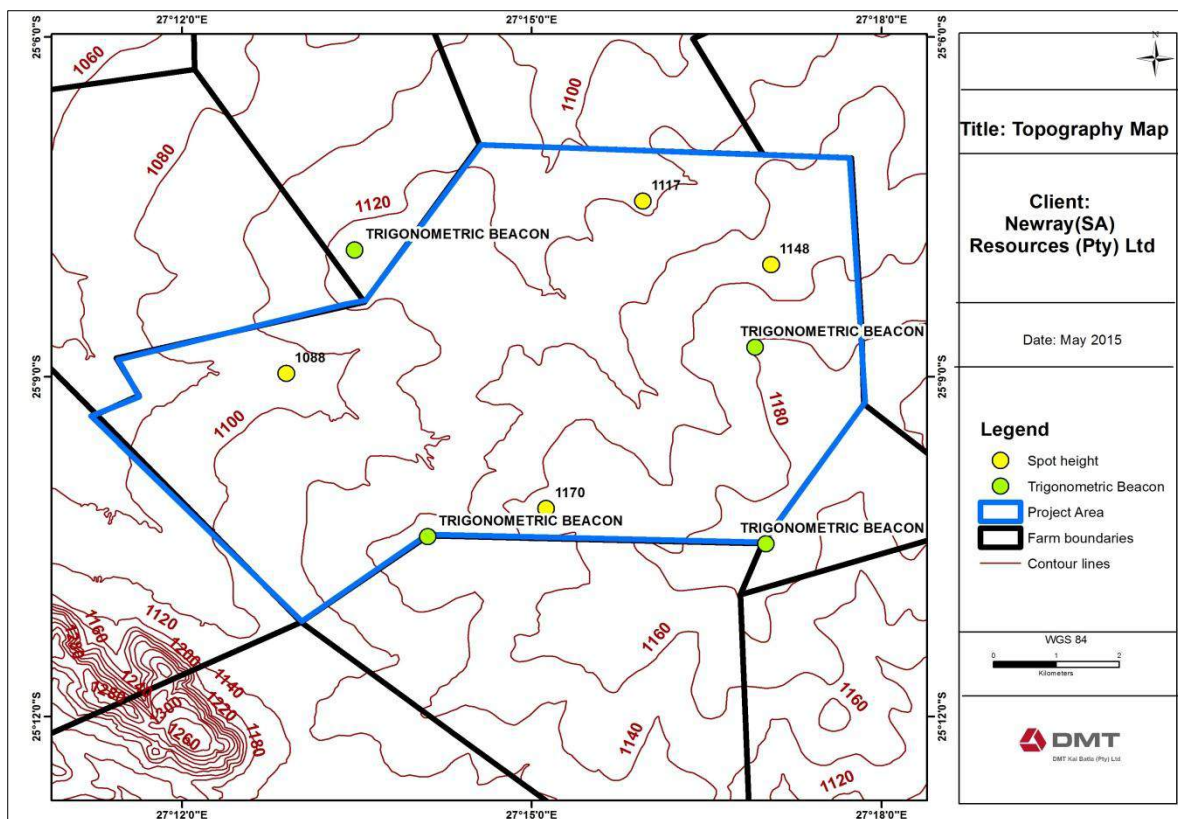


Figure 2: Map showing the topography of farm Koedoespruit 33 JQ.

Climate

According to www.climate-data.org, Köppen and Geiger classifies the Sandfontein area as Csa (Hot-summer Mediterranean climate). The climate is classified as warm and temperate. The temperature averages 19.2 °C. The temperatures are highest on average in January, at around 24.2 °C. June has the lowest average temperature of the year (11.8 °C) (Figure 3).

The annual precipitation is 646 mm and the least amount of rainfall occurs in August (average is 4 mm). With an average of 126 mm, the most precipitation falls in December. There is more rainfall in the winter than in the summer (Figure 4).

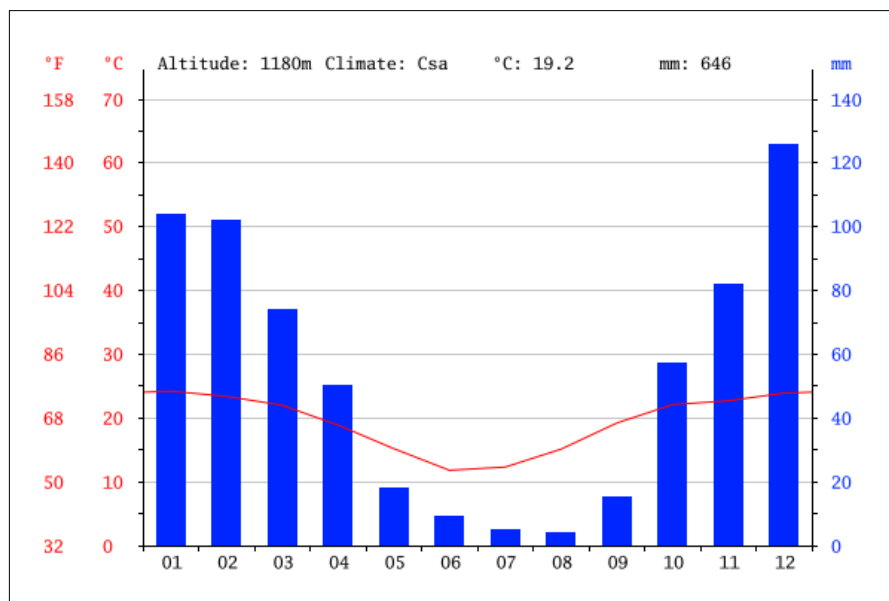


Figure 3: Precipitation graph (climate-data.org).

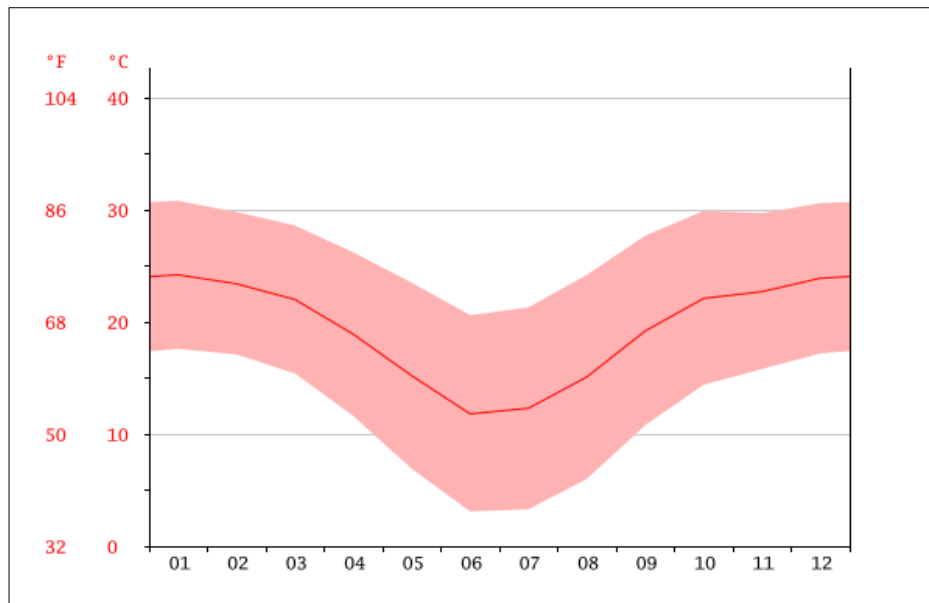


Figure 4: Temperature graph (climate-data.org).

Fauna

The North West Province has some of the largest traders of wildlife in the world. The 14 national parks, 10 registered conservancies and several game farms or ranches attest to this. Of the total area of about 160 000 Hectare of land committed to game farming, about 6% can be classified as true game farms. The remainder comprises game camps (fenced off portions of farms) that vary in size. The species being conserved on these farms are predominantly antelope such as kudu, duiker and steenbok. Other animals such as sable, Cape buffalo, gemsbok, eland, red hartebeest, blue wildebeest and even black rhinoceros also occur in the Province. In the Moses Kotane Local Municipality, uncontrolled hunting by villagers is a serious problem in the rural areas.

Flora

The project area is located in the Savanna Biome, Central Bushveld Bioregion and falls within the Central Sandy Bushveld Vegetation type. This type of vegetation typically occurs in low undulating areas, sometimes between mountains and sandy plains and catena supporting tall, deciduous woodlands *Terminalia sercia* and *Bureka Africana* woodland on deep sandy soils, low broad leaf *Combretum* woodland on shallow rocky or gravelly soils.

Species of *Acaia*, *Ziziphus* and *Euclea* are found on the flats and lower slopes on eutrophic sands and some less sandy soils. *A. Tortillis* may dominate some areas on the valley. Grass-dominted herbaceous layer with relatively low basal cover on dystrophic sands.

Several alien plants are widely scattered but often at low densities; these include *Cereus jamacaru*, *Eucalyptus* species, *Lantana camara*, *Melia azedarach*, *Opuntia ficus-indica* and *Sesbania punicea*.

Important taxa includes tall and small trees, tall and low shrubs and herbs.

- Tall trees: *Acacia Burkei* (d), *A. Robusta*, *Sclerocarya birreas subsp. Caffra*
- Small trees: *Burkea Africana* (d) *Combretum apiculatum* (d), *C zeyher*, *Terminalia serica* (d), *Ochna pulchra*, *Peltophorum africanum*, *Rhus leptodictya*
- Tall shrubs: *Combretum hereoense*, *Grewia bicolor*, *G. Monticola*, *Strychnos pungens*
- Low shrubs: *Agathisanthemum Bojeri* (d), *Indigofera filipes* (d), *E. Rigidior* (d), *Hyperthelia dissolute* (d), *Panicum maximum* (d), *Perotis patens* (d), *Anthephora pubescens*, *Aristida acabrivals subsp. abrivavis*, *Brachiaria sarta*, *Elionurus muticus*, *Eragrostis nindensis*, *Loudetia simplex*, *Schmidtia papophoroides*, *Themeda triandra*, *Trachypogon spicatus*

- Herbs: *Dicerocaryum seneioides* (d), *Baleria macrostegia*, *Blephars integrifolia*, *Crabbea angustifolia*, *Evolvulus alsinoides*, *Geigeria burkei*, *Hermannia lancifolia*, *Indigofera daleoides*,
- *Justicia anagaloides*, *Kyphocarpa angustifolia*, *Lophiocarpus tenuissimus*, *Waltheria indica*, *Xerophyta humilis*
- Geophytic herb: *Hypoxis hemerocallidea*
- Succulent herb: *Aloe greatheadii* var. *davyana*

Biogeographically Important Taxa (Central Bushveld endemics)

- Graminiod: *Mosdenia leptostachys*
- Herb: *Oxygonum dregeanum* subsp. *canescens* var. *dissectum*

Soil

More than a third of the country's soils are shallow with minimal development. Soil characteristics in South Africa are described using 20 characteristics classes (Table 1).

In the North West Province, the predominant soil types are red-yellow apedal soils (Low clay) particularly in the western parts of the Province, followed by plinthic catena (ideal crop production soils) and glenrosa and mispah (predominantly shallow and rocky) forms.

According to the Agricultural Geo-Referenced Information System (AGIS), the project area is indicated to have LP1 soil. LP1 soils have a limited pedological development, are usually shallow on hard or weathering rock, with or without intermittent diverse soils. Lime is rare or absent in the landscape. To the west, northwest and southwest of the project area occurs CM (Red-yellow drained soils generally lacking a strong texture contrast) soils. To the southwest of the site also occurs a rocky area (Pilanesburg Mountain) with limited soil (Figure 5).

Soil in some parts of the project area is degraded possibly due to water and wind erosion.

Table 1: Soil characteristics on South Africa.

| Red-yellow well drained soils generally lacking a strong texture contrast | |
|--|---|
| Ferralsols (FR) | Red and yellow soils with a humic horizon |
| Acrisols (AC) | Red and yellow, massive or weakly structured soils with low to medium base status |
| Cambisols (CM) | Red, massive or weakly structured soils with high base status |
| Soils with a plinthic catena | |
| Plinthosols1 (PT1) | Red, yellow and greyish soils with low to medium base status |
| Plinthosols2 (PT2) | Red, yellow and greyish soils with high base status |
| Soils with a strong texture contrast | |
| Luvisols1 (LV1) | Soils with a marked clay accumulation, strongly structured and a reddish colour |
| Luvisols2 (LV2) | Soils with a marked clay accumulation, strongly structured and a non-reddish colour In addition one or more of vertic, melanic and plinthic soils may be present |
| Well-structured soils generally with a high clay content | |
| Vertisols (VR) | Dark coloured, strongly structured soils dominated by cracking and swelling clays (vertic soils). In addition, one or more of melanic and red structured soils may be present |
| Phaezems/Kastanozems (PH/KS) | Soils with dark coloured, well-structured topsoil with high base status (melanic soils) In addition, one or more of vertic and red structured soils may be present |
| Nitisols (NT) | Deep, well drained, dark reddish soils having a pronounced shiny, strong blocky |

| | |
|---|---|
| | structure (nutty), usually fine (red structured soils). In addition, one or more of vertic and melanic soils may be present |
| Soils with limited pedological development | |
| Leptosols1 (LP1) | Soils with minimal development, usually shallow on hard or weathering rock, with or without intermittent diverse soils. Lime rare or absent in the landscape |
| Leptosols2 (LP2) | Soils with minimal development, usually shallow on hard or weathering rock, with or without intermittent diverse soils. Lime generally present in part or most of the landscape |
| Fluvisols (FL) | Soils with negligible to weak profile development, usually occurring on deep deposits |
| Sandy soils | |
| Arenosols1 (AR1) | Red, excessively drained sandy soils with high base status - dunes are present |
| Arenosols2 (AR2) | Red and yellow, sandy well drained soils with high base status |
| Arenosols3 (AR3) | Greyish, sandy excessively drained soils |
| Strongly saline soils | |
| Solonchaks (SC) | Strongly saline soils generally occurring in deep deposits on flat lands |
| Podzolic soils | |
| Podzols (PZ) | Soils with a sandy texture, leached and with sub-surface accumulation of organic matter and aluminium with or without iron oxides, either deep or on hard or weathering rock |
| Rocky areas | |
| Regosols (R) | Rock with limited soils |

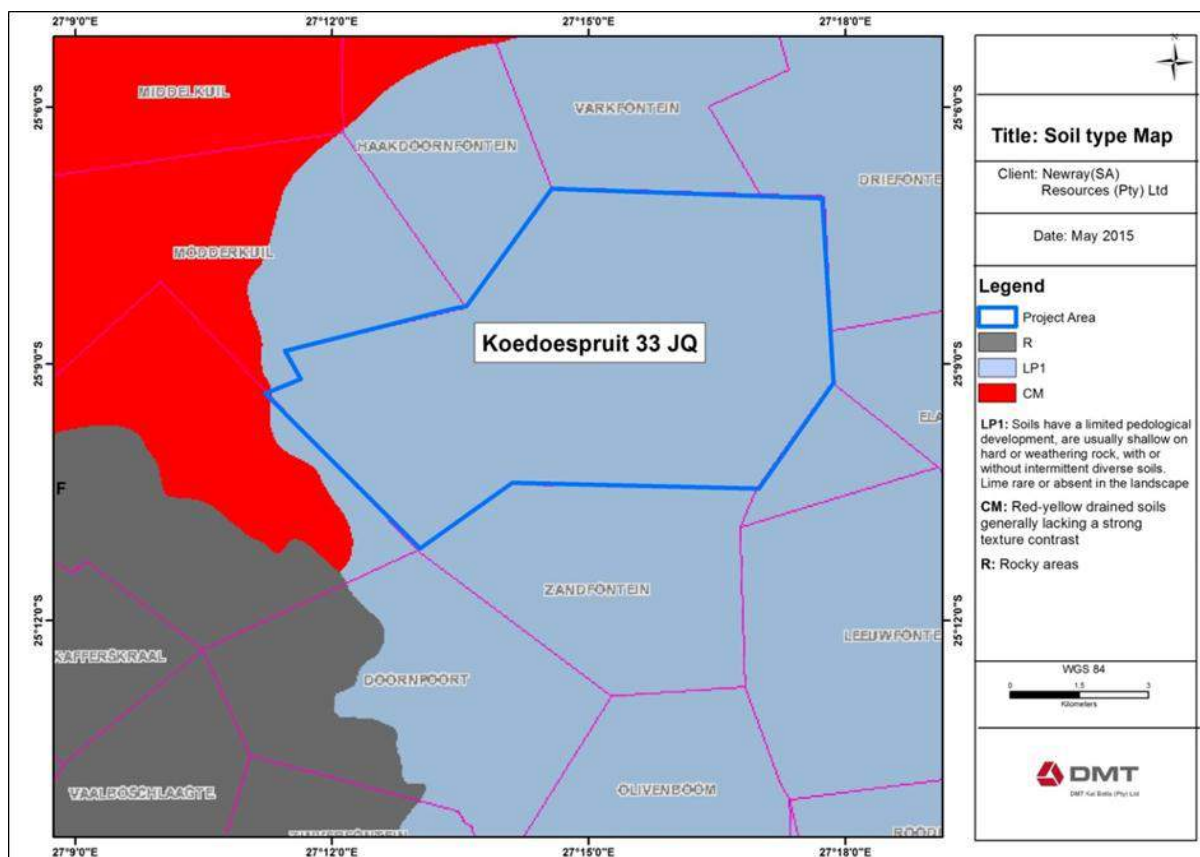


Figure 5: Soil type map.

Land use

The north-western and south-western portions of the project area comprises some built-up areas including Rampipi, Koedoespruit, Phuting, Sandfontein and Dikweipi villages (Figure 7, Figure 8 and Figure 9). A significant portion of the western side comprises degraded vegetation and patches of dongas (a steep-sided gully created by soil erosion). These dongas are also present in the eastern side of the project area (Figure 9).

Vegetation degradation is usually regarded as a reduction in the available biomass, and decline in the vegetative ground cover, because of deforestation and overgrazing. Such degradation is a major contributory factor to soil degradation particularly with regard to soil erosion and loss of soil organic matter.

Land use features found within the project area include:

- **Roads:** The project area comprises one arterial, two secondary roads and tracks/hiking trails. The R510 (arterial road) connecting Rustenburg and Northam cuts across (north-south) the project area and runs almost parallel to the railway line. A secondary road runs in the north-western part (from Moruleng connecting to the R510) of the project area and another in the eastern part (from Mmorogong connecting to the R510). A track/hiking trail runs parallel to the railway line, starting from the centre towards the northern part of the project area. Several other track/hiking trails are located in the western part of the project area connecting the Rampipi, Koedoespruit, Phuting, Sandfontein and Dikweipi villages.
- **Railway:** A railway line cuts across (north-south) the project area and runs almost parallel to the R510 arterial road.
- **Power lines :** Power lines run north-south in the western and eastern parts of the project area. Another runs from west to east.
- **Reservoir:** A reservoir is located in the northern portion of the project area, next to the Moruleng secondary road.
- **Water Point :** A water point likely to be man-made is located in the eastern part of the project area.
- **Wind pump:** Three wind pumps are found within the project area. One about 500 m north-east of Phuting village, one about 2.5 km north of Sandfontein and the other about 2 km north-west of Sandfontein.

See Figure 7, Figure 8 and Figure 9 for locations of all land use features.

Land Capability

The project area land is classified as moderate potential arable-land according to AGIS. The characteristics of this type of land include:

- A severe permanent limitation that restricts the choice of alternative uses and the intensity of crop production is of moderate potential.
- The land is suitable for cropping, pasture, afforestation and other less intensive uses.
- When used for cultivated crops, the conservation practices are usually more difficult to apply and maintain.

Geology and Minerals

Regional Geology

The Bushveld Igneous Complex (65 000 km²) is of Palaeoproterozoic age, and is located in the central northeast portion of the Kaapvaal Craton within southern Africa. The Bushveld Complex is comprised of four limbs, namely, the Northern, Eastern, Southern, and Western limbs. The project area is located on the Western limb, which extend from Warmbaths to Zeerust. Four groups of rocks make up the Bushveld Complex, and include the Rashedoep Granophyre Suite, Rustenburg Layered Suite, Lebowa Granite Suite and various satellite intrusions. The Prospecting Right is underlain by lithologies of the Lebowa Granite Suite, Bushveld Igneous Complex (see Figure 6).

Local Geology and Mineralization

The Bushveld Complex is host to 80% of the world's Platinum Group Metals (PGM) reserves, 70% of its chromium reserves, as well as 30% of its titanium reserves. There may even be potential for additional resources of iron ore, titanium, tin, fluorspar, uranium, and Rare Earth Elements.

Granites of the Bushveld Complex are enriched in tin mineralization in more highly fractionated parts of the suite, such as that of the Northern limb, which is approximately 180 km northeast of the project area. The project area is dominantly comprised of rocks from the Lebowa Granite Suite, of the Western limb of the Bushveld Complex. This location does not show a potentially mineralized upper contact zone of granite, unlike the Northern and Eastern limb, as well as northern parts of the Western limb. However, approximately 50 km northeast of the project area, a potentially mineralized upper contact zone of granite has recorded tin mineralization. The Lebowa Granite Suite is subdivided into three major types of granites, namely, the Nebo, Bobbejaankop, and Lease Granites. Tin mineralization within the Bushveld Complex is restricted to the Lease and Bobbejaankop Granites, where it occurs in pipe-like bodies, sub-horizontal lenticular bodies and as sub-horizontal disseminated low grade bodies within both granites.

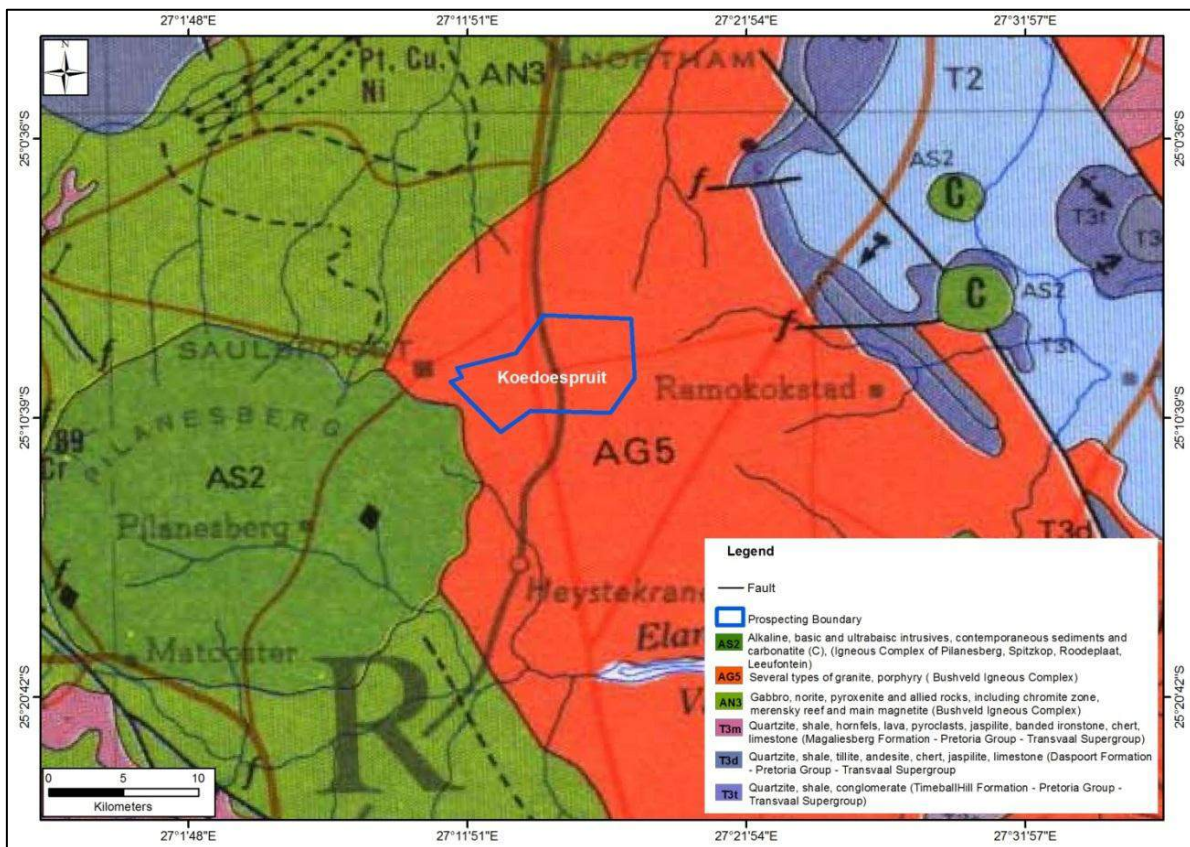


Figure 6: Geology of the project area.

Water Resources

The project area falls within the Limpopo River Catchment and comprises a non-perennial river (Makgabo) which branches out throughout the project area (**Error! Reference source not found.**). This river is also has a connection to numerous wetlands.

- Non-Perennial rivers

Non-perennial rivers are those rivers, which do not have a constant flow throughout the year. It mainly consists of those rivers which flow only during the rainy season. These are usually found in areas with arid climates where evaporation tends to be greater than precipitation. Usually, the stream flow declines on their course and they dry on occasions.

- Wetlands

A wetland is an area of marsh, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed ten metres. The types of wetlands found within the project area are presented in Table 2.

Table 2: Description of wetland types found on the project area.

| Wetland landscape setting | Description |
|---|---|
| <p>Bench</p> <ul style="list-style-type: none"> • An area of mostly level or nearly level high ground (relative to the broad surroundings), including <i>Hilltops/crests</i>: Areas at the top of a mountain or hill flanked by down-slopes in all directions <i>Saddles</i>: Relatively high-lying areas flanked by down-slopes on two sides in one direction and up-slopes on two sides in an approximately perpendicular direction and shelves/terraces/ledges (relatively high-lying, localised flat areas along a slope, representing a break in slope with an up-slope on one side and a down-slope on the other side in the same direction). • Benches are considered to be those high-lying areas with a gradient of less than 0.001 (or 1:1000). | <p>Flat</p> <ul style="list-style-type: none"> • A near-level wetland area (i.e. with little or no relief) with little or no gradient, situated on a plain or a bench in terms of landscape setting. • The primary source of water is precipitation, with the exception of flats along the coast (usually in a plain setting) where the water table (i.e. groundwater) may rise to the surface or near to the surface in areas of little or no relief because of the location near to the base level of the land surface represented by the presence of the ocean. • Water exits a flat through evaporation and infiltration. |
| <p>Slope</p> <ul style="list-style-type: none"> • An inclined stretch of ground that is not part of a valley floor, which is typically located on the side of a mountain, hill or valley (includes scarp slopes, mid-slopes and foot-slopes). • Slopes are considered to be those areas where the gradient is steeper than that associated with the Lowland or Upland Floodplain Zones (i.e. gradient ≥ 0.001 or 1:1000). | <p>Hillslope seep</p> <ul style="list-style-type: none"> • A wetland area located on (gently to steeply) sloping land, which is dominated by the colluvial (i.e. gravity-driven), unidirectional movement of material down-slope. • Water inputs are primarily from groundwater or precipitation that that enters the wetland from an up-slope direction in the form of subsurface flow. • Water movement through the wetland is mainly in the form of interflow, with diffuse overland flow ('sheetwash') often being significant during and after rainfall events. • Water leaves a 'hillslope seep with channelled outflow' mostly by means of concentrated surface flow, whereas water leaves a 'hillslope seep without channelled outflow' by means of a combination of diffuse surface flow, interflow, evaporation and infiltration. |

1.2 The specific environmental features on the site applied for which may require protection, remediation, management or avoidance.

Watercourses

A number of watercourses have been identified to occur within the boundaries of the project area. This includes Makgabo river (non-perennial) and associated wetlands, therefore, these watercourses may be regarded as sensitive ecological environments due to the expected unique characteristics thereof when compared to the general characteristics of the remainder of the project area. These watercourses will be protected and avoided by not conducting any prospecting activities within 100 m from rivers and within 500 m from wetlands.

Fauna

Fauna will be disturbed by the prospecting activities hence will require remediation and management. Should it be established during commencement of prospecting activities that any type of fauna will be affected, such will be protected based on the severity of the potential threat.

Flora

Flora will be disturbed by the prospecting activities hence will require remediation and management. All the disturbed areas will be rehabilitated to match their original state as closely as possible by re-vegetation.

Soil

Soil will be disturbed by the prospecting activities hence will require remediation and management. All the disturbed areas will be rehabilitated to match their original state as closely as possible by covering all exposed areas with appropriate vegetation.

Topography

The topography might be disturbed by the prospecting activities (trenching and pitting) hence will require remediation and management. All the disturbed areas will be rehabilitated to their original state possible by properly backfilling all diggings.

1.3 Map showing the spatial locality of all environmental, cultural/heritage and current land use features identified on site.

- Environmental features

See Figure 7.

See Section 1.1 for full descriptions of environmental features identified on site.

- Land use features

See Figure 7, Figure 8 and Figure 9.

See Section 1.1 for full descriptions of current land use features identified on site.

- Cultural/heritage features

No cultural/heritage features are known at this stage. The project has been registered with SAHRA to determine if there are any sites of archaeological or heritage significance. The local community will also be engaged in identification of such resources before prospecting activities commence.

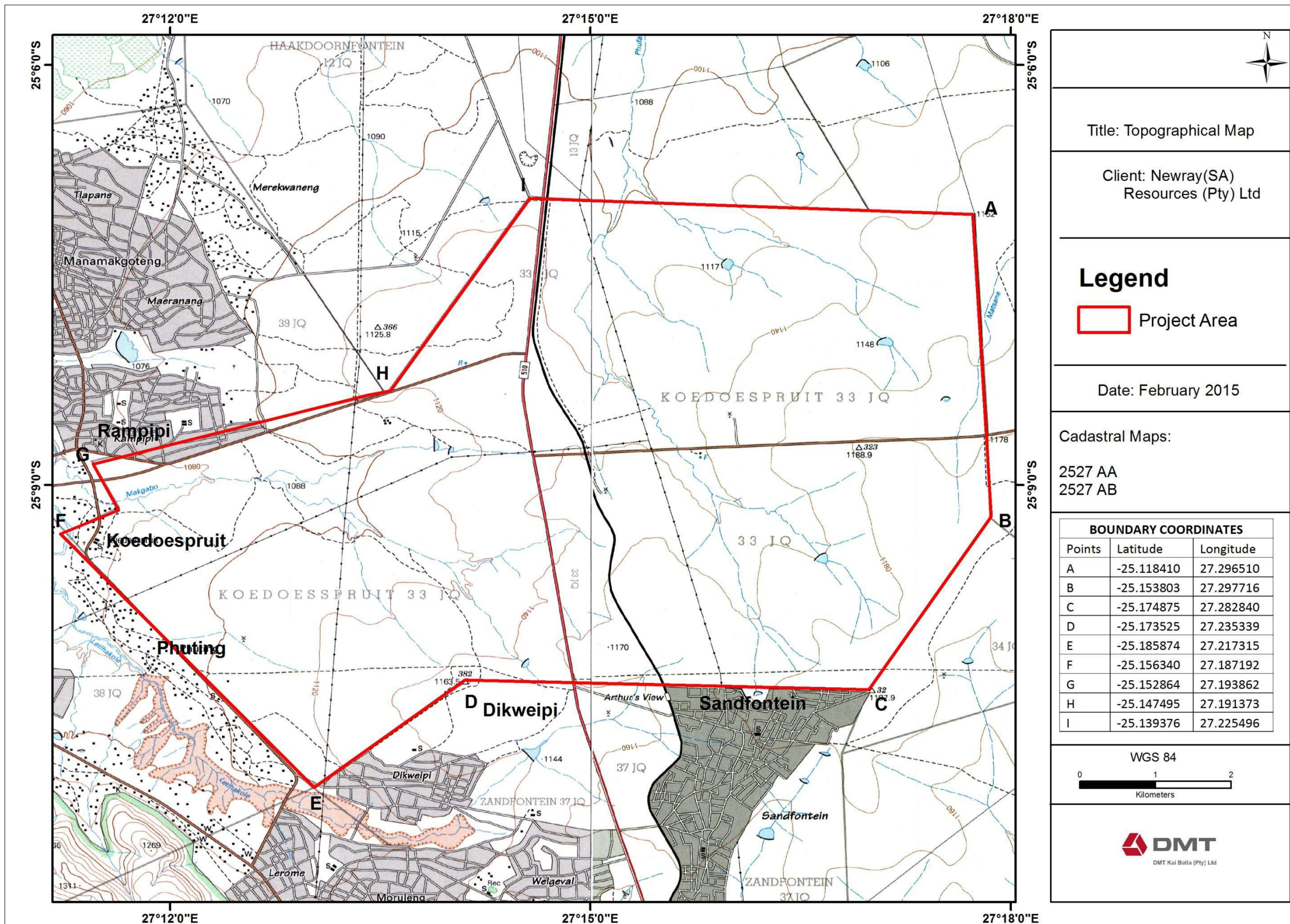


Figure 7: Location of environmental and land use features.

Map Reference

| | |
|---|--|
| National Freeway; National Route..... | |
| Arterial Route | |
| Main Road | |
| Secondary Road; Bench Mark..... | |
| Other Road; Bridge | |
| Track and Hiking Trail..... | |
| Railway; Station or Siding..... | |
| Other Railway; Tunnel..... | |
| Embankment; Cutting..... | |
| Power Line..... | |
| Built-up Area (High, Low Density)..... | |
| Buildings; Ruin..... | |
| Post Office; Police Station; Store..... | |
| Place of Worship; School; Hotel | |
| Fence; Wall | |
| Windpump; Monument..... | |
| Communication Tower..... | |
| Mine Dump; Excavation | |
| Trigonometrical Station; Marine Beacon..... | |
| Lighthouse and Marine Light..... | |
| Cemetery; Grave | |
| International Boundary and Beacon..... | |
| Provincial Boundary..... | |
| Protected Area..... | |
| Perennial River | |
| Perennial Water..... | |
| Non-perennial River..... | |
| Non-Perennial Water..... | |
| Dry Water Course | |
| Dry Pan | |
| Marsh and Vlei | |
| Pipeline (above ground)..... | |
| Water Tower; Reservoir; Water Point..... | |
| Coastal Rocks | |
| Prominent Rock Outcrop..... | |
| Erosion; Sand | |
| Woodland | |
| Cultivated Land | |
| Orchard or Vineyard | |
| Recreation Ground..... | |
| Row of Trees..... | |

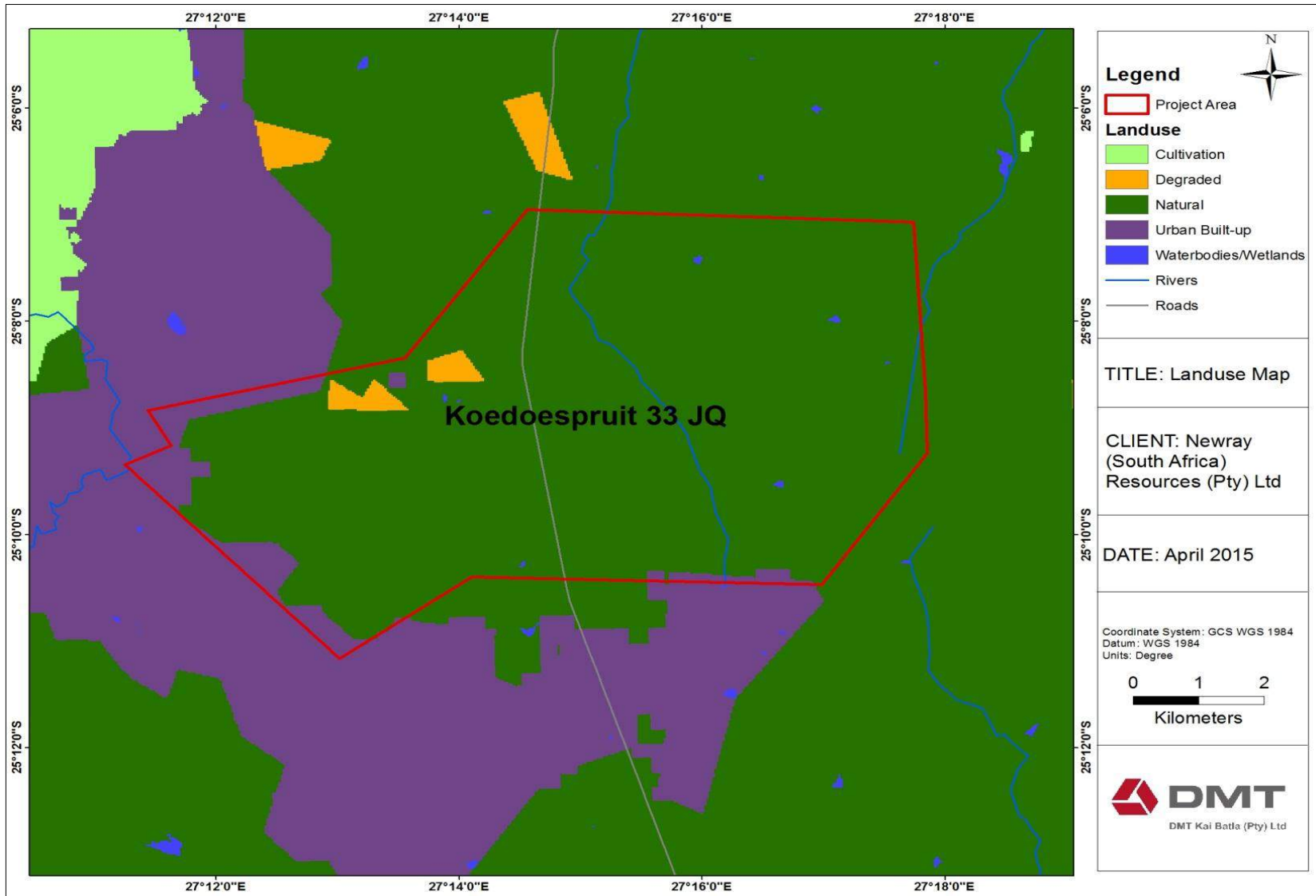


Figure 8: Map showing land use of the project area.

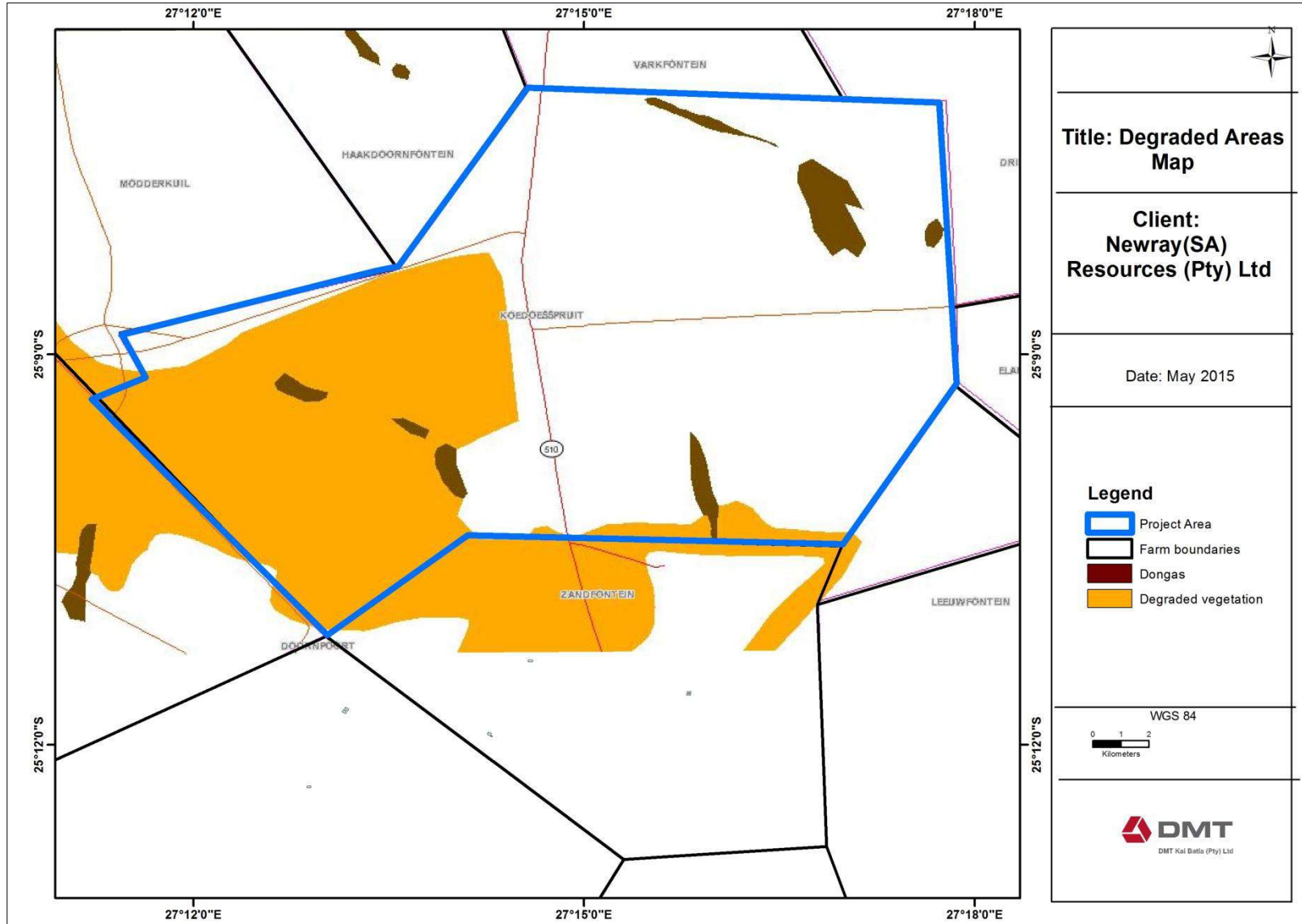


Figure 9: Map showing degraded parts of the project area.

1.4 Confirmation that the description of the environment has been compiled with the participation of the community, the landowner and interested and affected parties.

The landowners and identified interested and affected parties were notified of the proposed project, and were offered an opportunity to forward/ raise their comments regarding the project.

The following is a description of the public consultation process undertaken:

- Interested and Affected Parties (I&APs) were identified and an I&AP register was generated. The identified I&APs included:
 - Communities in the vicinity of the project area : Rampipi, Koedoespruit, Phuthing, Dikweipi and Sandfontein.
 - Traditional Authority: Bakgatla-Ba-Kgafela Traditional Administration (BBKTA)
 - Government Departments, organs of state, agencies and institutions:
 - SANRAL SOC Ltd
 - Transnet Freight Rail
 - Eskom
 - Department of Mineral Resources-North West
 - Department of Rural Development and Land Reform
 - Department of Water and Sanitation
 - Department of Agriculture
 - South African Heritage Resources Agency (SAHRA)
 - South Africa National Parks
 - Bakgatla-Ba-Kgafela Traditional Administration (BBKTA)
 - Moses Kotane Local Municipality
 - Bojanala Platinum District Municipality
- A Background Information Letter (BID) was compiled containing information on the proposed project. The BID was circulated to all identified I&APs along with a returnable comments register (This was conducted through registered mail and email).
- Notices were placed in places easily accessible by the public. The notices provided the project background, public meeting date and further requested the public to register as I&APs.
- A newspaper advert detailing the proposed project was published on the 26th February 2015 in the Rustenburg Herald Newspaper. The public was requested the public to register as I&APs and forward comments.
- Notices was placed in places easily accessible by the public. The notices provided the project background, public meeting date and further requested the public to register as I&APs and forward comments.
- A public meeting was held on 26th March 2015.
- A meeting with BBKTA was held on 14 April 2015.

2. REGULATION 52 (2) (B): ASSESSMENT OF THE POTENTIAL IMPACTS OF THE PROPOSED PROSPECTING OR MINING OPERATION ON THE ENVIRONMENT, SOCIO- ECONOMIC CONDITIONS AND CULTURAL HERITAGE.

2.1 Description of the proposed prospecting or mining operation.

2.1.1 List of all the main prospecting activities (e.g. access roads, topsoil storage sites and any other basic prospecting design features).

See Table 3 for all prospecting activities to be undertaken.

- **Planning and Construction Phase**

- Access roads
- Site camp

- **Operational Phase**

- Drilling pads
- Sumps
- Trenches
- Pits
- Topsoil storage site

- **Decommissioning Phase**

- Rehabilitation

2.1.1 Plan of the main activities with dimensions.

- The drill holes depths will vary between 50 metres and 250 metres although 150 metres per hole is planned on average.
- The layout of the proposed boreholes will depend on the results obtained from desktop studies, research and field mapping.
- The typical layout of a drilling site is presented as Figure 10.
- Initially about 5 percussion boreholes are planned to be drilled. This will be followed by diamond cored holes on 2 km grid, then on a 1 km grid, and finally to a 250-500 m grid.
- Length of the trenches could vary between 10 – 100 m.
- Pits, if required, will have a much smaller footprint (approximately 2 m x 2 m) and will likely be dug manually or with an excavator.

Table 3: Prospecting phases.

| Phase | Activity (what are the activities that are planned to achieve optimal prospecting) | Skill(s) required (refers to the competent personnel that will be employed to achieve the required results) | Timeframe (in months) for the activity) | Outcome (What is the expected deliverable, E.g. Geological report, analytical results, feasibility study, etc.) | What technical expert Will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc.) |
|--|--|---|---|--|--|
| Phase 1: Project Examination | Desktop studies <ul style="list-style-type: none"> • Site preparation. • Preliminary field mapping | Geologist | 1-6 Months | Identification of target areas. Readiness for prospecting | Geologist |
| Phase 2: Reconnaissance Exploration | Detailed field mapping <ul style="list-style-type: none"> • Geophysical (e.g. Magnetics) Survey • 5 NQ boreholes average depth of 150m, to test for the mineralization occurrence. • Logging and sampling of the boreholes • Consolidation of results and report writing • Assessment and target selection for the next phase | Geologist Drilling Contractor | 7-12 Months | Identification of target areas Detailed geological report on the sidewall profiles, volumes, average grades and the locality. Analytical Results | Geologist |
| Phase 3: Outline Drilling | Wide-spaced drilling and sampling to determine the distribution and lateral extent of mineralization established in the previous drilling phase (15 NQ holes averaging 150m at > 1 km spacing) <ul style="list-style-type: none"> • Detailed geological logging and sampling of the drill cores. • Analyses of the core samples | Geologist Mineral economist Environmentalist | 13-24 Months | Borehole core Delineate ore body Geological report Analytical results | Geologist |

| Phase | Activity (what are the activities that are planned to achieve optimal prospecting) | Skill(s) required (refers to the competent personnel that will be employed to achieve the required results) | Timeframe (in months) for the activity) | Outcome (What is the expected deliverable, E.g. Geological report, analytical results, feasibility study, etc.) | What technical expert Will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc.) |
|--|--|---|---|---|--|
| | <ul style="list-style-type: none"> • Construction of preliminary geological and resource model. • Consolidation of exploration results and report writing | | | | |
| Phase 4: Infill Drilling | <ul style="list-style-type: none"> • Closer spaced drilling and sampling to increase the resource status in a selected portion(s) of the area (10 NQ holes averaging 150m at ~500m spacing) • Analyses of the drill core samples • Metallurgical & Geotechnical test work • Update preliminary geological model. | Geologist Drilling contractor Metallurgical engineer Geotechnical engineer | 25-36 Months | Refine limits and structure of ore body Geological report Analytical results | Geologist |
| Phase 5: Resource Drilling | Detailed drilling and target infill drilling to confirm mineable resource | Geologist Drilling contractor | 37-48 Months | Reserve area delineation Build mining model Competent person's report | Geologist |
| Phase 6: Pre-Feasibility and Feasibility Studies | Reserve drilling <ul style="list-style-type: none"> • Bulk sampling • Trial mining • Pilot plant test | Geologist Metallurgist | 48-60 Months | Mining feasibility report Final geological modelling report | Geologist |

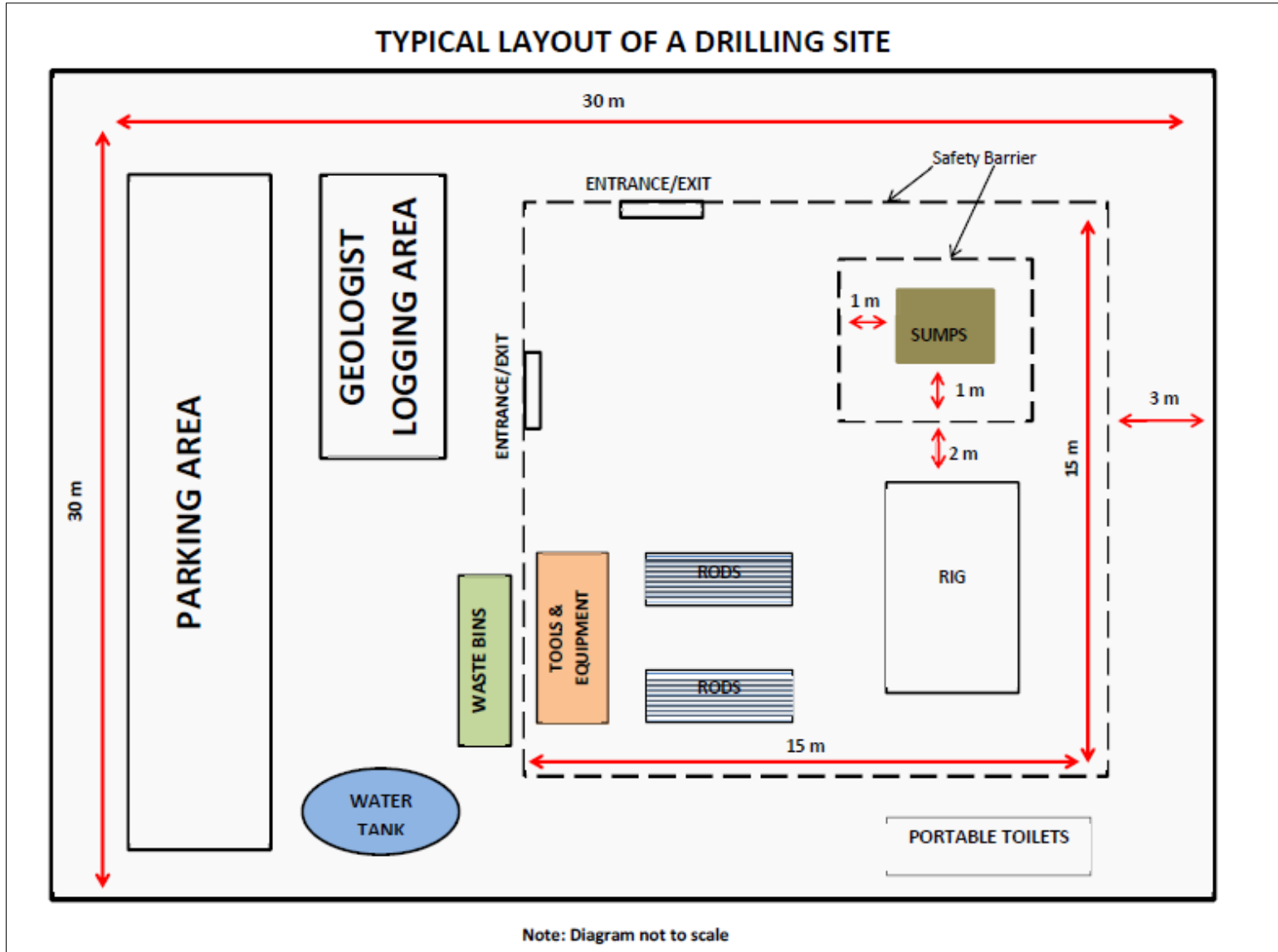


Figure 10: Typical layout of a drilling site.

2.1.2 Description of construction, operational, and decommissioning phases.

- **Construction Phase**

The construction phase will involve the establishment of drilling sites. This will comprise of moving of the drilling equipment to site, creating sumps, clearing of the drilling pads and clearing of access roads if necessary. It is envisaged that clearing of site for access will include removal of large rocks and the disturbance of obstructing vegetation. Such access roads may also require 'light' grading to allow the movement of surface mobile vehicles. The existing tracks on site will be used wherever possible to minimize clearing of the vegetation cover.

- **Operational Phase**

The operational phase will be conducted in six phases.

Phase 1: Project Examination

The aim of this phase will be to identify target areas and determine the readiness for prospecting. The phase will be conducted in the following manner:

Desktop study: Desktop study will be conducted through comprehensive review of published and unpublished work from various data sources.

Preliminary field mapping: Mapping will be conducted such that accurate and meaningful geological data may be derived from it and to communicate information gathered from the desktop study with mapping results

Site preparation: The site will be prepared for drilling activities.

The deliverable of this stage will be a report, making recommendations regarding further investigations of the mineralized areas.

Phase 2: Reconnaissance Exploration

Detailed field mapping, geophysical survey and drilling of 5 NQ, boreholes with an average depth of 150 m will be conducted to test for the mineralization occurrence. The drill core will be logged and sampled. This phase will result in the identification of target areas, detailed geological report on the sidewall profiles, volumes, average grades and the locality of the mineralization.

Phase 3: Outline drilling

15 NQ widespread core boreholes averaging 150 m at >1 km spacing will be drilled to determine the distribution and lateral extent of mineralization established in Phase 2. The drill core will be logged and sampled; and the samples will be analysed in the laboratory. Subsequent to sample analysis, a preliminary resource model will be compiled and report produced.

Phase 4: Infill drilling

10 NQ closer spaced core boreholes averaging 150 m at approximately 500 m spacing will be drilled and sampled to refine limits and structure of ore body and to increase the resource status in a selected portion(s) of the project area. Metallurgical and geotechnical test work will be conducted on the sampled core. The geological model will then be updated and a geological report will be compiled.

Phase 5: Resource drilling

Detailed drilling and target infill drilling will be conducted to confirm mineable resource. The number of boreholes to be drilled will depend of the results of the previous stages. This phase will result in reserve area delineation, build of mining model and Competent Person's report.

Phase 6: Pre-feasibility and feasibility studies

Reserve drilling, bulk sampling, trial mining and pilot plant test will be conducted to determine the feasibility of the prospecting project. The number of boreholes to be drilled will depend of the

results of the previous stages. This phase will result in compilation of a mining feasibility report and final geological modelling report.

Note: It is envisaged that trenching, pitting and bulk sampling might be conducted depending on indications from mapping and/or early stage drilling results.

Trenches: If required, will be dug with an excavator up to 3 metres below ground level to intersect the rock outcrop. The length of the trenches could vary between 10 to 100 m.

Pits: If required, will have a much smaller footprint (approximately 2 m x 2 m) and will likely be dug manually or with an excavator.

Bulk Sampling: This is envisaged to occur during the advanced stages of prospecting. The type and size of for example, box-cut will largely depend on the results of the prospecting activities.

- **Decommissioning Phase**

The decommissioning phase will only commence once all invasive prospecting activities have been completed and the site is rehabilitated. All drilling equipment including drill bits, fuel tanks, water tanks; waste bins; portable toilets; drill core will be removed from site. All boreholes will be capped and marked, all trenches and pits dug will be backfilling and profiling rehabilitation of the disturbed areas will take place.

Newray (South Africa) Resources (Pty) Ltd will apply for a Mining Right should the findings of the prospecting activities prove feasible. However, should the outcome of the prospecting activities not prove feasible Newray (South Africa) Resources (Pty) Ltd will apply for a closure certificate.

2.1.3 Listed activities (in terms of the NEMA EIA regulations).

It should be noted that the detailed prospecting works programme as it relates to the location and extent of bulk sampling and drilling can only be determined after the preceding phases of the prospecting works programme has been completed.

According to Listing Notice 1: List of activities and competent authorities identified in terms of Sections 24(2) and 24 D of the National Environmental Management Act, 1998 (Act no. 107 of 1998) of Government Gazette no 38282, No. R. 98 the following activities presented in Table 4 are applicable according to NEMA EIA regulations.

Table 4: Listed activities in terms of NEMA EIA regulations.

| | |
|--------------------|---|
| Activity 20 | Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002). |
| Activity 22 | The decommissioning of any activity requiring (i) a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002); or (ii) a prospecting right, mining right, mining permit, production right or exploration right, where the throughput of the activity has reduced by 90% or more over a period of 5 years excluding where the competent authority has in writing agreed that such reduction in throughput does not constitute closure. |

2.2 Identification of potential impacts.

(Refer to the guideline)

2.2.1 Potential impacts per activity and listed activities.

Table 5: Potential impacts per activity and listed activities.

| Impacted Environment | Impact | Status of impact |
|--|--|------------------|
| PLANNING AND CONSTRUCTION PHASE | | |
| Activity: Site visits and moving of equipment to site | | |
| Sub activity: Moving vehicles | | |
| Fauna | Loss of food, nest sites and refugia | Negative |
| | Potential damage to or destruction of sensitive faunal habitats | Negative |
| Flora | Loss of biodiversity | Negative |
| Noise | Increased noise levels | Negative |
| Air quality | Dust generation | Negative |
| | Emissions from vehicles | Negative |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative |
| | Potential disruption to grave sites | Negative |
| Soil | Potential compaction of soil | Negative |
| | Potential hydrocarbon contamination | Negative |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative |
| Traffic & safety | Road degradation | Negative |
| | Increased potential for road incidences | Negative |
| Activity: Construction of access roads and site camp | | |
| Sub activity: Truck and heavy machinery operations | | |
| Air quality | Dust generation | Negative |
| | Emissions | Negative |
| Groundwater | Potential hydrocarbon contamination from leaks or spills leeching into the water table | Negative |
| Noise | Increased noise levels | Negative |
| Soils | Potential compaction of soils in neighbouring areas | Negative |
| | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative |
| Traffic & safety | Increased potential for road incidences | Negative |
| | Road degradation | Negative |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative |
| | Potential disruption to grave sites | Negative |
| Activity: Clearing of drilling pads and creation of sumps | | |
| Sub activity: Removal of vegetation | | |
| Air quality | Dust generation | Negative |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative |
| | Potential disruption to grave sites | Negative |
| Fauna | Loss of habitat, refuge and food for animals | Negative |
| Flora | Loss of biodiversity | Negative |
| Noise | Increased noise levels | Negative |
| Soils | Potential for erosion, loss of soil characteristics, compaction of soil & soil degradation through stockpiling | Negative |
| Surface water | Potential silt-loading of drainage lines and downstream water bodies | Negative |
| Activity: Erection of portable toilets | | |
| Sub activity: Erection of toilets | | |
| Noise | Increased noise levels | Negative |
| Visual aspect | Deterioration in visual aesthetics of the area | Negative |
| Fauna | Loss of habitat, refuge and food for animals | Negative |
| Flora | Loss of biodiversity | Negative |
| Soil | Potential for erosion, loss of soil characteristics, compaction of soil & soil degradation | Negative |

| Impacted Environment | Impact | Status of impact |
|---|---|------------------|
| Activity: Installation of mobile lightening | | |
| Sub activity: Erection of mobile lighting | | |
| Visual aspect | Deterioration in visual aesthetics of the area | Negative |
| OPERATIONAL PHASE | | |
| Activity: Drilling | | |
| Sub activity : Drilling | | |
| Air quality | Dust generation | Negative |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative |
| | Potential disruption to grave sites | Negative |
| Groundwater | Potential hydrocarbon contamination leeching into the water table through the borehole. | Negative |
| Fauna | Loss of food, nest sites and refugia | Negative |
| | Potential damage to or destruction of sensitive faunal habitats: Pans & watering points | Negative |
| Flora | Loss of biodiversity | Negative |
| Noise | Increased noise levels | Negative |
| Soils | Potential compaction of soils in neighbouring areas | Negative |
| | Potential hydrocarbon contamination to soils | Negative |
| Surface water | Potential hydrocarbon contamination which may reach downstream surface water bodies | Negative |
| Traffic & safety | Road degradation | Negative |
| Traffic & safety | Increased potential for road incidences | Negative |
| Sub activity: Lighting | | |
| Fauna | Impact to nocturnal insects and their predators and other nocturnal animals. | Negative |
| Visual aspect | Deterioration in visual aesthetics of the area | Negative |
| Activity: Trenching and sampling | | |
| Air quality | Dust generation | Negative |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative |
| | Potential disruption to grave sites | Negative |
| Fauna | Loss of food, nest sites and refugia | Negative |
| | Potential damage to or destruction of sensitive faunal habitats: Pans & watering points | Negative |
| Flora | Loss of biodiversity | Negative |
| Noise | Increased noise levels | Negative |
| Soils | Potential compaction of soils in neighbouring areas | Negative |
| | Potential hydrocarbon contamination to soils | Negative |
| Surface water | Potential hydrocarbon contamination which may reach downstream surface water bodies | Negative |
| Activity: Waste generation | | |
| Sub activity: Domestic and industrial waste generation | | |
| Fauna | Potential harm through littering | Negative |
| Groundwater | Potential contamination through littering | Negative |
| Soils | Potential contamination through littering | Negative |
| Surface water | Potential contamination through littering | Negative |
| Visual aspect | Loss of and disturbance to surface archaeological sites | Negative |
| Activity: General | | |
| Sub activity: Creation of jobs | | |
| Social | Potential for more employment | Positive |
| | Multiplier effect - improved livelihoods | Positive |
| DECOMMISSIONING PHASE | | |
| Activity: Rehabilitation of access roads and drilling site | | |
| Sub activity: Truck and heavy machinery operations | | |
| Air quality | Dust generation | Negative |
| | Emissions | Negative |
| Groundwater | Potential hydrocarbon contamination from leaks or spills leeching into the water table | Negative |
| Noise | Increased noise levels | Negative |
| Soils | Potential compaction of soils in neighbouring areas | Negative |
| | Potential hydrocarbon contamination from leaks or spills to soils | Negative |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may | Negative |

| Impacted Environment | Impact | Status of impact |
|--|--|------------------|
| | reach downstream surface water bodies | |
| Traffic & safety | Increased potential for road incidences | Negative |
| | Road degradation | Negative |
| Sub activity: Ripping of access roads | | |
| Noise | Increased noise levels | Negative |
| Visual Aspect | Altered aesthetics | Positive |
| Sub activity: Re-vegetation | | |
| Flora | Reintroduction of vegetation in rehabilitation | Positive |
| Fauna | Reintroduction of fauna attracted to flora to the area | Positive |
| Soils | Soils replaced and ameliorated | Positive |
| Surface water | Re-vegetation of disturbed areas reduces risk of silt loading on downstream water bodies | Positive |
| Topography | Re-contouring of area for free surface water drainage | Positive |
| Visual Aspect | Improved aesthetics through rehabilitation | Positive |
| Sub activity: Contouring for correct elevation and topography | | |
| Air quality | Dust generation | Negative |
| | Emissions | Negative |
| Soils | Potential soil compaction | Negative |
| Topography | Re-contouring of area for free surface water drainage | Positive |
| Sub activity: Profiling of all area | | |
| Topography | Re-contouring of area for free surface water drainage | Positive |
| Surface water | Free drainage resorted to area | Positive |
| | Large area of surface water runoff return to catchment | Positive |
| Sub activity: Seeding with local indigenous species | | |
| Fauna | New habitat available to fauna in the area and reduced activity should result in influx of animals to the area | Negative |
| Flora | Area re-vegetated with indigenous plants | Positive |
| | Alien invasive encroachment | Negative |

2.2.2 Potential cumulative impacts.

Table 6: Potential cumulative impacts.

| Aspect | Impacts | Detailed Description |
|--------------------------------|---|--|
| Atmosphere | Release of greenhouse gas emissions | The release of greenhouse gasses and other contaminants to the atmosphere is expected as a result of land based vehicle activity. The clearing of vegetation negatively affects carbon sequestration efficiency and increase emissions resulting from decomposition. These impacts are regarded as insignificant in terms of contribution. The risks are recognised as a cumulative impact. |
| Soil | Loss of natural resource (topsoil) | The loss of topsoil as a natural resource due to contamination and erosion will negatively affect land capability. |
| Surface water | Surface water pollution | Surface water quality impacts will extend beyond the boundary of the site if not managed appropriately. The Harts River drains the majority of the property and this river is already regarded to have poor water quality which in turn affects the agricultural sector highly dependent on this surface water resource. |
| Groundwater | Groundwater pollution | Groundwater contamination is regarded as a cumulative impact. Regionally there is a high dependency on groundwater resources and all activities which may impact on ground water resources are regarded as significant. |
| Biodiversity (Flora and fauna) | Loss of biodiversity and disruption of existing ecosystem functioning | The cumulative impacts relate to land transformation resulting in the loss of habitat. |
| Visual | Visual disturbance and change of landscape character. | The cumulative impacts relate to visual disturbance is regarded to impact the regional "sense of place". |
| Traffic and safety | Increased traffic | The increase in traffic flow may have an impact on local, regional and national roads in the area. |

2.2.3 Potential impact on heritage resources.

No heritage resources are known at this stage. The project has been registered with SAHRA to determine if there are any sites of archaeological or heritage significance. The local community will also be engaged in identification of such resources before prospecting activities commence.

Should heritage resources be located on site, prospecting activities will be conducted such that these resources are not negatively impacted. The general potential impacts on heritage resources are listed in Table 7.

Table 7: Potential impact on heritage resources.

| Impacted Environment | Impact | Status of impact |
|--|---|------------------|
| PLANNING AND CONSTRUCTION PHASE | | |
| Activity: Site visits and moving of equipment to site | | |
| Sub activity: Moving vehicles | | |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative |
| | Potential disruption to grave sites | Negative |
| Activity: Construction of access roads and site camp | | |
| Sub activity: Truck and heavy machinery operations | | |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative |
| | Potential disruption to grave sites | Negative |
| Activity: Clearing of drilling pads and creation of sumps | | |
| Sub activity: Removal of vegetation | | |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative |
| | Potential disruption to grave sites | Negative |

2.2.4 Potential impacts on communities, individuals or competing land uses in close proximity. (If no such impacts are identified this must be specifically stated together with a clear explanation why this is not the case.)

The only competing land use in close proximity of the project area is for residential purposes. The only potential impact to these areas is the temporary limited dust and noise created during prospecting.

The communities that reside within some parts and in close proximity of the project area include Rampipi, Koedoespruit, Phuthing, Dikweipi and Sandfontein. These communities could be impacted both negatively and positively in that employment opportunities will arise from the proposed prospecting operation, there will be an influx of jobseekers and social integration will occur.

Employment creation: Jobs will be created during prospecting. This impact will typically be limited to the unskilled portion of the communities. This impact is anticipated to be *high and positive*.

Influx of job seekers: As prospecting activities require a skilled work force. The workmanship required may not necessarily be available from the local communities and as a result, skills would be sourced elsewhere. This could have an impact on the social structures present in the local communities for the duration of the prospecting activities. This impact can be positive in the light that it allows the injection of additional income in the area.

Social integration: Like any other development, this project would require employees during the prospecting phase. Due to their unique situation, workers engage in behaviours that makes them vulnerable, such as risky sexual behaviour (e.g. unprotected sex) and destructive behaviour (e.g. alcohol abuse, damaging the environment), which could be explained by their migratory status. When separated from their homes, they are also distanced from traditional norms, prevailing cultural traditions and support systems that normally regulate behaviour within a stable community. Research also seems to indicate that workers might be more at risk of contracting HIV from members of local communities, as opposed to transmitting the infection to community members. All the development proposals are anticipated to have a similar significance with respect to this impact.

2.2.5 Confirmation that the list of potential impacts has been compiled with the participation of the landowner and interested and affected parties.

The landowners and identified interested and affected parties were notified by means of registered letters, emails, newspaper notice, background information documents, site notices, presentations and meetings. The environmental objectives relating to closure were communicated to the community during the meeting.

2.2.6 Confirmation of specialist report appended.

(Refer to guideline)

No specialist studies were conducted as this is a Prospecting Right Application.

3 REGULATION 52 (2) (C): SUMMARY OF THE ASSESSMENT OF THE SIGNIFICANCE OF THE POTENTIAL IMPACTS AND THE PROPOSED MITIGATION MEASURES TO MINIMISE ADVERSE IMPACTS.

3.1 Assessment of the significance of the potential impacts.

3.1.1 Criteria of assigning significance to potential impacts.

Environmental Impact Assessment (EIA) Criteria

Methodology for Assessing the Impacts

The Environmental impact assessment addresses the actions of the development of the proposed activity during the construction, the operational and the decommissioning phase and assesses the significance of the impact on the environment. The impact will then be described under the headings presented in Table 8:

Table 8: Criteria of assigning significance to potential impacts.

| The status of the impact | |
|--------------------------|---------------------------------------|
| Positive | A benefit to the holistic environment |
| Negative | A cost to the holistic environment |
| Neutral | No cost or benefit |

| The effect (severe or beneficial) of the impact | | |
|---|--------------------------|--|
| Score | Severe/beneficial effect | Description |
| 1 | Slight | Little effect - negligible disturbance/benefit |
| 2 | Slight to moderate | Effects observable- environmental impacts reversible with time |
| 3 | Moderate | Effects observable- impacts reversible with rehabilitation |
| 4 | Moderate to high | Extensive effects- irreversible alteration to the environment |
| 5 | High | Extensive permanent effects with irreversible alteration |

| The extent of the impact | | |
|--------------------------|---------------|--|
| Score | Extent | Description |
| 1 | Site specific | Within the site boundary |
| 2 | Local | Affects immediate surrounding areas |
| 3 | Regional | Extends substantially beyond the site boundary |
| 4 | Provincial | Extends to almost entire province or larger region |
| 5 | National | Affects country or possibly world |

| The duration of the impact | | |
|----------------------------|----------------------|-------------------|
| Score | Duration | Description |
| 1 | Short term | Less than 2 years |
| 2 | Short to medium term | 2 – 5 years |
| 3 | Medium term | 6 – 25 years |
| 4 | Long term | 26 – 45 years |
| 5 | Permanent | 46 years or more |

| The reversibility of the impact | | |
|---------------------------------|-----------------------|--|
| Score | Reversibility | Description |
| 1,2 | Completely reversible | Will reverse with minimal rehabilitation & negligible residual affects |
| 3,4 | Reversible | Requires mitigation and rehabilitation to ensure reversibility |
| 5 | Irreversible | Cannot be rehabilitated completely/rehabilitation not viable |

| The probability of the impact | | |
|-------------------------------|-----------------|---|
| Score | Rating | Description |
| 1 | Unlikely | Less than 15% sure of an impact occurring |
| 2 | Possible | Between 15% and 40% sure of an impact occurring |
| 3 | Probable | Between 40% and 60% sure that the impact will occur |
| 4 | Highly Probable | Between 60% and 85% sure that the impact will occur |
| 5 | Definite | Over 85% sure that the impact will occur |

| The consequence of the impact |
|---|
| Consequence = Severity + Spatial Scale + Duration + Reversibility |

| The significance of the impact | | |
|--|------------------|-------------|
| Significance = Consequence x Probability | | |
| Significance | Score out of 100 | Colour code |
| Low | 1 to 20 | |
| Moderate to Low | 21 to 40 | |
| Moderate | 41 to 60 | |
| Moderate to high | 61 to 80 | |
| High | 81 to 100 | |

| Is Mitigation possible? |
|---|
| Will there be any mitigation possible? Yes or No |

3.1.2 Potential impact of each main activity in each phase, and corresponding significance assessment.

Table 9: Significance assessment of potential impacts.

| Impacted Environment | Impact | Status of impact | Effect of impact | Extent of impact | Duration of impact | Reversibility | Consequence | Probability | Significance before mitigation | Mitigation required? | Degree of loss of resource |
|--|--|------------------|------------------|------------------|--------------------|---------------|-------------|-------------|--------------------------------|----------------------|----------------------------|
| PLANNING AND CONSTRUCTION PHASE | | | | | | | | | | | |
| Activity: Site visits and moving of equipment to site | | | | | | | | | | | |
| Sub activity: Moving vehicles | | | | | | | | | | | |
| Fauna | Loss of food, nest sites and refugia | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| | Potential damage to or destruction of sensitive faunal habitats | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Flora | Loss of biodiversity | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Noise | Increased noise levels | Negative | 2 | 2 | 1 | 1 | 6 | 5 | 30 | Yes | Mod |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| | Emissions form vehicles | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| | Potential disruption to grave sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| Soil | Potential compaction of soil | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 | Yes | Low |
| | Potential hydrocarbon contamination | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative | 3 | 3 | 1 | 1 | 8 | 3 | 24 | Yes | Low |
| Traffic & safety | Road degradation | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| | Increased potential for road incidences | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Activity: Construction of access roads and site camp | | | | | | | | | | | |
| Sub activity: Truck and heavy machinery operations | | | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| | Emissions | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Groundwater | Potential hydrocarbon contamination from leaks or spills leeching into the water table | Negative | 3 | 3 | 2 | 3 | 11 | 2 | 22 | Yes | Low |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Soils | Potential compaction of soils in neighbouring areas | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 | Yes | Low |
| | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative | 3 | 3 | 2 | 3 | 11 | 3 | 33 | Yes | Mod |

| Impacted Environment | Impact | Status of impact | Effect of impact | Extent of impact | Duration of impact | Reversibility | Consequence | Probability | Significance before mitigation | Mitigation required? | Degree of loss of resource |
|--|--|------------------|------------------|------------------|--------------------|---------------|-------------|-------------|--------------------------------|----------------------|----------------------------|
| Traffic & safety | Increased potential for road incidences | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | - |
| | Road degradation | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | - |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| | Potential disruption to grave sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| Activity: Clearing of drilling pads and creation of sumps | | | | | | | | | | | |
| Sub activity: Removal of vegetation | | | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| | Potential disruption to grave sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| Fauna | Loss of habitat, refuge and food for animals | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Flora | Loss of biodiversity | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Soils | Potential for erosion, loss of soil characteristics, compaction of soil & soil degradation through stockpiling | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Surface water | Potential silt-loading of drainage lines and downstream water bodies | Negative | 3 | 3 | 2 | 3 | 11 | 3 | 33 | Yes | Mod |
| Activity: Erection and use of portable toilets | | | | | | | | | | | |
| Sub activity: Erection of toilets | | | | | | | | | | | |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Visual aspect | Deterioration in visual aesthetics of the area | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Activity: Installation of mobile lighting | | | | | | | | | | | |
| Sub activity: Erection of mobile lighting | | | | | | | | | | | |
| Visual aspect | Deterioration in visual aesthetics of the area | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| OPERATIONAL PHASE | | | | | | | | | | | |
| Activity: Drilling | | | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| | Potential disruption to grave sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| Groundwater | Potential hydrocarbon contamination leeching into the water table through the borehole. | Negative | 3 | 3 | 1 | 1 | 8 | 2 | 16 | Yes | Low |
| Fauna | Loss of food, nest sites and refugia | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| | Potential damage to or destruction of sensitive faunal habitats: Pans & watering points | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Flora | Loss of biodiversity | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |

| Impacted Environment | Impact | Status of impact | Effect of impact | Extent of impact | Duration of impact | Reversibility | Consequence | Probability | Significance before mitigation | Mitigation required? | Degree of loss of resource |
|---|---|------------------|------------------|------------------|--------------------|---------------|-------------|-------------|--------------------------------|----------------------|----------------------------|
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Soils | Potential compaction of soils in neighbouring areas | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 | Yes | Low |
| | Potential hydrocarbon contamination to soils | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Surface water | Potential hydrocarbon contamination which may reach downstream surface water bodies | Negative | 3 | 3 | 1 | 1 | 8 | 3 | 24 | Yes | Low |
| Traffic & safety | Road degradation | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Traffic & safety | Increased potential for road incidences | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Sub activity: Lighting | | | | | | | | | | | |
| Fauna | Impact to nocturnal insects and their predators and other nocturnal animals. | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Visual aspect | Deterioration in visual aesthetics of the area | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Activity: Trenching and sampling | | | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| | Potential disruption to grave sites | Negative | 5 | 1 | 1 | 1 | 8 | 5 | 40 | Yes | Mod |
| Fauna | Loss of food, nest sites and refugia | Negative | 3 | 3 | 1 | 1 | 8 | 2 | 16 | Yes | Low |
| | Potential damage to or destruction of sensitive faunal habitats: Pans & watering points | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Flora | Loss of biodiversity | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Soils | Potential compaction of soils in neighbouring areas | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| | Potential hydrocarbon contamination to soils | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 | Yes | Low |
| Surface water | Potential hydrocarbon contamination which may reach downstream surface water bodies | Negative | 3 | 3 | 1 | 1 | 8 | 3 | 24 | Yes | Low |
| Activity: Waste generation | | | | | | | | | | | |
| Sub activity: Domestic and industrial waste generation | | | | | | | | | | | |
| Fauna | Potential harm through littering | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Groundwater | Potential contamination through littering | Negative | 3 | 3 | 1 | 1 | 8 | 2 | 16 | Yes | Low |
| Soils | Potential contamination through littering | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Surface water | Potential contamination through littering | Negative | 3 | 3 | 1 | 1 | 8 | 3 | 24 | Yes | Low |
| Visual aspect | Loss of and disturbance to surface archaeological sites | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Activity: General | | | | | | | | | | | |
| Sub activity: Creation of jobs | | | | | | | | | | | |
| Social | Potential for more employment | Positive | 2 | 2 | 1 | 1 | 6 | 4 | 24 | Yes | Low |

| Impacted Environment | Impact | Status of impact | Effect of impact | Extent of impact | Duration of impact | Reversibility | Consequence | Probability | Significance before mitigation | Mitigation required? | Degree of loss of resource |
|--|--|------------------|------------------|------------------|--------------------|---------------|-------------|-------------|--------------------------------|----------------------|----------------------------|
| | Multiplier effect - improved livelihoods | Positive | 2 | 2 | 1 | 1 | 6 | 5 | 30 | No | Mod |
| DECOMMISSIONING PHASE | | | | | | | | | | | |
| Activity: Rehabilitation of access roads and drilling site | | | | | | | | | | | |
| Sub activity: Truck and heavy machinery operations | | | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| | Emissions | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Groundwater | Potential hydrocarbon contamination from leaks or spills leeching into the water table | Negative | 3 | 3 | 2 | 3 | 11 | 2 | 22 | Yes | Low |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Soils | Potential compaction of soils in neighbouring areas | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 | Yes | Low |
| | Potential hydrocarbon contamination from leaks or spills to soils | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative | 3 | 3 | 2 | 3 | 11 | 3 | 33 | Yes | Mod |
| Traffic & safety | Increased potential for road incidences | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| | Road degradation | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Sub activity: Ripping of access roads | | | | | | | | | | | |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Visual Aspect | Altered aesthetics | Positive | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Sub activity: Re-vegetation | | | | | | | | | | | |
| Flora | Reintroduction of vegetation in rehabilitation | Positive | 3 | 1 | 1 | 1 | 6 | 5 | 30 | Yes | Mod |
| Fauna | Reintroduction of fauna attracted to flora to the area | Positive | 3 | 2 | 1 | 1 | 7 | 5 | 35 | Yes | Mod |
| Soils | Soils replaced and ameliorated | Positive | 3 | 1 | 1 | 1 | 6 | 5 | 30 | Yes | Mod |
| Surface water | Re-vegetation of disturbed areas reduces risk of silt loading on downstream water bodies | Positive | 3 | 3 | 2 | 1 | 9 | 5 | 45 | Yes | Mod |
| Topography | Re-contouring of area for free surface water drainage | Positive | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Sub activity: Contouring for correct elevation and topography | | | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| | Emissions | Negative | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| Soils | Potential soil compaction | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Topography | Re-contouring of area for free surface water drainage | Positive | 2 | 1 | 1 | 1 | 5 | 2 | 10 | Yes | Low |
| Sub activity: Profiling of all area | | | | | | | | | | | |
| Topography | Re-contouring of area for free surface water drainage | Positive | 2 | 1 | 1 | 1 | 5 | 2 | 10 | No | Low |
| Surface water | Free drainage resorted to area | Positive | 3 | 3 | 2 | 1 | 9 | 5 | 45 | Yes | Mod |

| Impacted Environment | Impact | Status of impact | Effect of impact | Extent of impact | Duration of impact | Reversibility | Consequence | Probability | Significance before mitigation | Mitigation required? | Degree of loss of resource |
|--|--|------------------|------------------|------------------|--------------------|---------------|-------------|-------------|--------------------------------|----------------------|----------------------------|
| | Large area of surface water runoff return to catchment | Positive | 3 | 3 | 2 | 1 | 9 | 5 | 45 | Yes | Mod |
| Sub activity: Seeding with local indigenous species | | | | | | | | | | | |
| Fauna | New habitat available to fauna in the area and reduced activity should result in influx of animals to the area | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |
| Flora | Area re-vegetated with indigenous plants | Positive | 2 | 1 | 1 | 1 | 5 | 5 | 25 | Yes | Low |
| | Alien invasive encroachment | Negative | 2 | 1 | 1 | 1 | 5 | 3 | 15 | Yes | Low |

3.1.3 Assessment of potential cumulative impacts.

Table 10: Assessment of potential cumulative impacts.

| Impacted Environment | Impact | Status of impact | Effect of impact | Extent of impact | Duration of impact | Reversibility | Consequence | Probability | Significance |
|---------------------------------------|---|------------------|------------------|------------------|--------------------|---------------|-------------|-------------|--------------|
| Atmosphere | Release of greenhouse gas emissions | Negative | 1 | 3 | 1 | 3 | 8 | 5 | 40 |
| Soil | Loss of natural resource (topsoil) | Negative | 3 | 1 | 1 | 1 | 6 | 5 | 30 |
| Surface water | Surface water pollution | Negative | 3 | 3 | 1 | 1 | 8 | 3 | 24 |
| Groundwater | Groundwater pollution | Negative | 5 | 3 | 1 | 5 | 14 | 1 | 14 |
| Biodiversity (Flora and fauna) | Loss of biodiversity and disruption of existing ecosystem functioning | Negative | 3 | 1 | 3 | 1 | 8 | 5 | 40 |
| Visual | Visual disturbance and change of landscape character. | Negative | 1 | 1 | 2 | 1 | 5 | 5 | 25 |
| Traffic and safety | Increased traffic | Negative | 1 | 3 | 2 | 1 | 7 | 5 | 35 |

3.2 Proposed mitigation measures to minimise adverse impacts.

Table 11: Proposed mitigation measures to minimise adverse impacts.

| Impacted Environment | Impact | Proposed mitigation measures |
|--|--|---|
| Fauna | Loss of food, nest sites and refugia | Relocate larger animals with the aid of specialists. Ensure relevant permits are in place. |
| | Potential damage to or destruction of sensitive faunal habitats | Pans and artificial watering points must be cordoned off with at least 100 m horizontal distance buffer zones and no activity is to take place within these areas. |
| Flora | Loss of biodiversity | Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas. |
| Noise | Increased noise levels | Vehicles will be regularly serviced to ensure acceptable noise levels are not exceed. |
| Air quality | Dust generation | Roads will be sprayed with water regularly ,especially during times of high dust generation. Speed limits will be established on the road to minimise dust generation. All contractors will enforce speed limits. |
| | Emissions form vehicles | All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity. |
| | Potential disruption to grave sites | Should graves be observed on site during activity progress then all activity should ceased and the area demarcated as a no-go zone. A specialist will need to be consulted . |
| Soil | Potential compaction of soil | Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants. |
| | Potential hydrocarbon contamination | All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material. |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material. |
| Traffic & safety | Road degradation | All intersections with main tarred roads will be clearly signposted. drivers will be enforced to keep to set speed limits. Trucks will be road-worthy condition with reflective strips. |
| | Increased potential for road incidences | A fund will be set aside to maintain the serviceability of the road verge where the trucks approach or depart from the main road. |

| Impacted Environment | Impact | Proposed mitigation measures |
|----------------------|--|--|
| Groundwater | Potential hydrocarbon contamination from leaks or spills leeching into the water table | <p>The drill rig will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material</p> <p>All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material.</p> |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | All vehicles will be regularly serviced to ensure they are in proper working conditions and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material. |
| Visual aspect | Deterioration in visual aesthetics of the area | <p>Directional lighting and soft lighting will be utilised to ensure that only areas required to be lit are lit.</p> <p>Waste generated on site should be recycled as far as possible. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality.</p> |

3.2.1 List of actions, activities, or processes that have sufficiently significant impacts to require mitigation.

- Fauna
- Flora
- Noise
- Air quality
- Soil
- Surface water
- Groundwater

3.2.2 Concomitant list of appropriate technical or management options.

(Chosen to modify, remedy, control or stop any action, activity, or process which will cause significant impacts on the environment, socio-economic conditions and historical and cultural aspects as identified. Attach detail of each technical or management option as appendices)

- **Flora:** No trees or shrubs will be cut or damaged. Management will be responsibility to protect all declared exotic species. The following control methods will be used:
 - The plants will be treated with herbicide
- **Fauna:** To ensure a minimum of impact on fauna, the following management guidelines will be followed:
 - Backfilling of open excavations will be conducted
 - Operations will accommodate escape route for animals
 - No hunting will be allowed through prospecting
- **Air quality:** To limit the creation of nuisance dust, the following management guidelines will be followed:
 - Unnecessary removal of vegetation will be avoided
 - Routine spraying with water of unpaved site areas and roads will be conducted
 - Speed limits for vehicles will be set to avoid excessive dust creation and excessive deterioration of the roads
 - All cleared, disturbed or exposed areas will be re-vegetated to prevent the creation of additional dust
- **Soil:** The topsoil will be removed and stockpiled on a dedicated area. If any soil is contaminated during the life of the prospecting period, it will either be treated on site or be removed together with the contaminant and placed in acceptable containers to be removed with the industrial waste to a recognized facility or company.
- **Noise:** Working hours will be kept between sunrise and sunset as far as possible. Newray will comply with the measures for good practice with regard to management of noise related impacts during prospecting.
- **Surface water:** The disposal of oil, grease and related industrial waste will be transported to the stores area where it will be stored in steel containers. All oil and grease will be removed on a regular basis from the operation by a registered approved contractor
- **Groundwater:** Drip pans will be placed at all points where diesel, oil or hydraulic fluid may drip.

Appendix A is a detailed Site Environmental Management Programme Newray will implement.

3.2.3 Review the significance of the identified impacts.

(After bringing the proposed mitigation measures into consideration).

Table 12: Significance of the identified impacts. after bringing the proposed mitigation measures into consideration.

| Impacted Environment | Impact | Status of impact | Effect of impact | Extent of impact | Duration of impact | Reversibility | Consequence | Probability | Significance |
|--|--|------------------|------------------|------------------|--------------------|---------------|-------------|-------------|--------------|
| PLANNING AND CONSTRUCTION PHASE | | | | | | | | | |
| Activity: Site visits and moving of equipment to site | | | | | | | | | |
| Sub activity: Moving vehicles | | | | | | | | | |
| Fauna | Loss of food, nest sites and refugia | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| | Potential damage to or destruction of sensitive faunal habitats | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Flora | Loss of biodiversity | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| Noise | Increased noise levels | Negative | 2 | 2 | 1 | 1 | 6 | 4 | 24 |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| | Emissions form vehicles | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 3 | 1 | 5 | 5 | 14 | 2 | 28 |
| | Potential disruption to grave sites | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Soil | Potential compaction of soil | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| | Potential hydrocarbon contamination | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative | 2 | 2 | 1 | 1 | 6 | 2 | 12 |
| Traffic & safety | Road degradation | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| | Increased potential for road incidences | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| Activity: Construction of access roads and site camp | | | | | | | | | |
| Sub activity: Truck and heavy machinery operations | | | | | | | | | |
| Air quality | Dust generation | Negative | 3 | 1 | 1 | 1 | 6 | 3 | 18 |
| | Emissions | Negative | 1 | 1 | 1 | 1 | 4 | 4 | 16 |
| Groundwater | Potential hydrocarbon contamination from leaks or spills leeching into the water table | Negative | 2 | 1 | 3 | 3 | 9 | 1 | 9 |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| Soils | Potential compaction of soils in neighbouring areas | Negative | 1 | 1 | 1 | 1 | 4 | 1 | 4 |
| | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative | 2 | 1 | 1 | 3 | 7 | 2 | 14 |

| | | | | | | | | | |
|--|--|----------|---|---|---|---|----|---|----|
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative | 3 | 2 | 3 | 1 | 9 | 1 | 9 |
| Traffic & safety | Increased potential for road incidences | Negative | 3 | 1 | 1 | 5 | 10 | 1 | 10 |
| | Road degradation | Negative | 3 | 2 | 1 | 3 | 9 | 1 | 9 |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 3 | 1 | 5 | 5 | 14 | 2 | 28 |
| | Potential disruption to grave sites | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Activity: Clearing of drilling pads and creation of sumps | | | | | | | | | |
| Sub activity: Removal of vegetation | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 3 | 1 | 5 | 5 | 14 | 2 | 28 |
| | Potential disruption to grave sites | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Fauna | Loss of habitat, refuge and food for animals | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Flora | Loss of biodiversity | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| Soils | Potential for erosion, loss of soil characteristics, compaction of soil & soil degradation through stockpiling | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Surface water | Potential silt-loading of drainage lines and downstream water bodies | Negative | 3 | 2 | 3 | 1 | 9 | 1 | 9 |
| Activity: Erection and use of portable toilets | | | | | | | | | |
| Sub activity: Erection of toilets | | | | | | | | | |
| Noise | Increased noise levels | Negative | 1 | 2 | 1 | 1 | 5 | 2 | 10 |
| Visual aspect | Deterioration in visual aesthetics of the area | Negative | 1 | 1 | 1 | 3 | 6 | 2 | 12 |
| Activity: Installation of mobile lightening | | | | | | | | | |
| Sub activity: Erection of mobile lighting | | | | | | | | | |
| Visual aspect | Deterioration in visual aesthetics of the area | Negative | 2 | 2 | 1 | 1 | 6 | 2 | 12 |
| OPERATIONAL PHASE | | | | | | | | | |
| Activity: Drilling | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 3 | 1 | 5 | 5 | 14 | 2 | 28 |
| | Potential disruption to grave sites | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Groundwater | Potential hydrocarbon contamination leeching into the water table through the borehole. | Negative | 2 | 2 | 1 | 1 | 6 | 1 | 6 |
| Fauna | Loss of food, nest sites and refugia | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| | Potential damage to or destruction of sensitive faunal habitats: Pans & watering points | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Flora | Loss of biodiversity | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| Soils | Potential compaction of soils in neighbouring areas | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| | Potential hydrocarbon contamination to soils | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Surface water | Potential hydrocarbon contamination which may reach downstream surface water bodies | Negative | 2 | 2 | 1 | 1 | 6 | 2 | 12 |
| Traffic & safety | Road degradation | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |

| | | | | | | | | | |
|---|--|----------|---|---|---|---|----|---|----|
| Traffic & safety | Increased potential for road incidences | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| Sub activity: Lighting | | | | | | | | | |
| Fauna | Impact to nocturnal insects and their predators and other nocturnal animals. | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Visual aspect | Deterioration in visual aesthetics of the area | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Activity: Trenching and sampling | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| Archaeological & cultural sites | Loss of and disturbance to surface archaeological sites | Negative | 3 | 1 | 5 | 5 | 14 | 2 | 28 |
| | Potential disruption to grave sites | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Fauna | Loss of food, nest sites and refugia | Negative | 2 | 2 | 1 | 1 | 6 | 1 | 6 |
| | Potential damage to or destruction of sensitive faunal habitats: Pans & watering points | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Flora | Loss of biodiversity | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| Noise | Increased noise levels | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| Soils | Potential compaction of soils in neighbouring areas | Negative | 2 | 1 | 1 | 1 | 5 | 1 | 5 |
| | Potential hydrocarbon contamination to soils | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Surface water | Potential hydrocarbon contamination which may reach downstream surface water bodies | Negative | 2 | 2 | 1 | 1 | 6 | 2 | 12 |
| Activity: Waste generation | | | | | | | | | |
| Sub activity: Domestic and industrial waste generation | | | | | | | | | |
| Fauna | Potential harm through littering | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Groundwater | Potential contamination through littering | Negative | 2 | 2 | 1 | 1 | 6 | 1 | 6 |
| Soils | Potential contamination through littering | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 |
| Surface water | Potential contamination through littering | Negative | 2 | 2 | 1 | 1 | 6 | 2 | 12 |
| Visual aspect | Loss of and disturbance to surface archaeological sites | Negative | 2 | 2 | 1 | 3 | 8 | 2 | 16 |
| Activity: General | | | | | | | | | |
| Sub activity: Creation of jobs | | | | | | | | | |
| Social | Potential for more employment | Positive | 2 | 2 | 1 | 1 | 6 | 4 | 24 |
| | Multiplier effect - improved livelihoods | Positive | 2 | 2 | 1 | 1 | 6 | 5 | 30 |
| DECOMMISSIONING PHASE | | | | | | | | | |
| Activity: Rehabilitation of access roads and drilling site | | | | | | | | | |
| Sub activity: Truck and heavy machinery operations | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 4 | 20 |
| | Emissions | Negative | 1 | 1 | 1 | 1 | 4 | 4 | 16 |
| Groundwater | Potential hydrocarbon contamination from leaks or spills leeching into the water table | Negative | 2 | 1 | 3 | 3 | 9 | 1 | 9 |
| Noise | Increased noise levels | Negative | 1 | 1 | 1 | 1 | 4 | 4 | 16 |
| Soils | Potential compaction of soils in neighbouring areas | Negative | 1 | 1 | 1 | 1 | 4 | 1 | 4 |
| | Potential hydrocarbon contamination from leaks or spills to soils | Negative | 2 | 1 | 1 | 3 | 7 | 2 | 14 |
| Surface water | Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies | Negative | 3 | 2 | 3 | 1 | 9 | 1 | 9 |
| Traffic & safety | Increased potential for road incidences | Negative | 3 | 1 | 1 | 5 | 10 | 1 | 10 |
| | Road degradation | Negative | 1 | 1 | 1 | 1 | 4 | 2 | 8 |

| Sub activity: Ripping of access roads | | | | | | | | | | |
|--|--|----------|---|---|---|---|----|---|----|--|
| Noise | Increased noise levels | Negative | 2 | 2 | 1 | 1 | 6 | 3 | 18 | |
| Visual Aspect | Altered aesthetics | Positive | 4 | 1 | 3 | 3 | 11 | 2 | 22 | |
| Sub activity: Re-vegetation | | | | | | | | | | |
| Flora | Reintroduction of vegetation in rehabilitation | Positive | 4 | 2 | 4 | 1 | 11 | 2 | 22 | |
| Fauna | Reintroduction of fauna attracted to flora to the area | Positive | 1 | 2 | 4 | 3 | 10 | 2 | 20 | |
| Soils | Soils replaced and ameliorated | Positive | 4 | 1 | 3 | 3 | 11 | 2 | 22 | |
| Surface water | Re-vegetation of disturbed areas reduces risk of silt loading on downstream water bodies | Positive | 3 | 2 | 3 | 3 | 11 | 2 | 22 | |
| Topography | Re-contouring of area for free surface water drainage | Positive | 2 | 1 | 1 | 1 | 5 | 5 | 25 | |
| Sub activity: Contouring for correct elevation and topography | | | | | | | | | | |
| Air quality | Dust generation | Negative | 2 | 1 | 1 | 1 | 5 | 2 | 10 | |
| | Emissions | Negative | 1 | 1 | 1 | 1 | 4 | 1 | 4 | |
| Soils | Potential soil compaction | Negative | 3 | 1 | 1 | 3 | 8 | 1 | 8 | |
| Topography | Re-contouring of area for free surface water drainage | Positive | 2 | 1 | 1 | 1 | 5 | 2 | 10 | |
| Sub activity: Profiling of all area | | | | | | | | | | |
| Topography | Re-contouring of area for free surface water drainage | Positive | 2 | 1 | 1 | 1 | 5 | 2 | 10 | |
| Surface water | Free drainage resorted to area | Positive | 2 | 2 | 3 | 3 | 10 | 2 | 20 | |
| | Large area of surface water runoff return to catchment | Positive | 2 | 2 | 3 | 3 | 10 | 2 | 20 | |
| Sub activity: Seeding with local indigenous species | | | | | | | | | | |
| Fauna | New habitat available to fauna in the area and reduced activity should result in influx of animals to the area | Negative | 1 | 1 | 1 | 1 | 4 | 2 | 8 | |
| Flora | Area re-vegetated with indigenous plants | Positive | 3 | 2 | 4 | 3 | 12 | 2 | 24 | |
| | Alien invasive encroachment | Negative | 1 | 1 | 1 | 1 | 4 | 1 | 4 | |

4 REGULATION 52 (2) (D): FINANCIAL PROVISION.THE APPLICANT IS REQUIRED TO-

4.1 Plans for quantum calculation purposes.

(Show the location and aerial extent of the aforesaid main mining actions, activities, or processes, for each of the construction operational and closure phases of the operation).

As previously mentioned, each phase of the prospecting activities is dependent on the success of the previous. Depending on the outcome of the Phase 1 desktop studies and Phase 2 mapping, the number of boreholes to be drilled will be determined and at this stage, it will be determined whether trenching and pitting is required. Depending on Phase 3 drilling, it will also be determined whether further drilling for Phase 4 and Phase 5 is required and if so, how many boreholes would be required. The digging , extent and location of trenches and pits will also be determined as the project progress, should need arise.

For the purposes of this report, a typical layout of a drill site (refer Figure 10) has been included to provide an understanding of the potential scale and significance of these activities.

4.2 Alignment of rehabilitation with the closure objectives.

(Describe and ensure that the rehabilitation plan is compatible with the closure objectives determined in accordance with the baseline study as prescribed).

The closure objectives of the prospecting activities will include:

- Remove all surface infrastructure
- Clear boulders from site
- Remove all waste from site
- Ensure rehabilitated areas are at appropriate elevations and have appropriate contours
- Ensure adequate topsoil placement on rehabilitated areas
- Ensure the rehabilitated areas are free draining
- Re-vegetate all rehabilitated areas as soon as possible, with area specific vegetation
- Wetland areas are not compromised or destructed
- Future public health and safety are not compromised
- The site is reversed to almost its original state
- Environmental features are not subject to physical and chemical deterioration
- The after-use of the site is beneficial and sustainable in the long term
- Any adverse socio-economic impacts are minimized
- All socio-economic benefits are maximized

Rehabilitation Plan

The rehabilitation plan shall coincide with the objectives and commitments as stipulated above. The aim of rehabilitation is to return the land disturbed by the prospecting activities to its original state, and to ensure that residual impacts after the completion of prospecting are minimal.

The rehabilitation plan shall entail removal of all generated waste, infrastructures and materials, re-vegetation of disturbed and cleared areas, rehabilitation of access roads, ensuring the growth of the existing flora and fauna and cleaning of hydrocarbon spillages.

Access roads, drilling sites, site camps, sampling sites

After prospecting operations are completed all access roads, site camp, storage areas and the drilling sites will be rehabilitated as follows:

- All material removed from the earth will be used to backfill open excavations
- Compacted areas will then be ripped and where possible, the topsoil will be returned and landscaped
- The site will be seeded, should the need arise, with a vegetation seed mix which reflects the local indigenous flora
- All infrastructure and equipment used during prospecting will be removed from site
- Upon completion of operations, all buildings, structures or objects on site will be dealt with in accordance with Regulation 44 of the Minerals and Petroleum Resources Development Act, 2002
- Long-term stability and safety: It will be the objective of management to ensure the long term stability of all rehabilitated areas. This will be conducted by monitoring of all areas until formal closure is conducted

Waste Disposal

- All waste material will be removed from site and disposed of appropriately
- No waste will be buried or burned on site
- No on-going monitoring of ground or surface water will take place, unless required by the Department of Water Affairs.

Backfilling of sumps and sample pit

- Sumps must be backfilled after the fluid has evaporated/infiltrated. Sumps should be rehabilitated by replacing the material (which was originally excavated) in the reverse (i.e. topsoil should be re-spread last).
- The sample pit will be backfilled with suitable material sources off site. Borrow pits to source such material will not be established on-site. The area is to be lined with subsoils, followed with the laying down of topsoil.
- The areas are to be re-vegetated with the appropriate seed mix.
- The areas are to be inspected on a monthly basis for a period of 6 months for the following:
 - Remove any unwanted plants and weeds.
 - Inspect for and repair soil / wind erosion features. Should engineering intervention be required to limit areas of consistent erosion (wind / water), these should be implemented timeously.
 - Confirm re-vegetation target of 45%. If the target is not achieved re-seeding will be undertaken.
 - Inspect for subsidence, and if required undertake additional backfilling, re-vegetate and monitor.

Drill Holes

- Drill hole capping will be undertaken.
- Drill hole subsidence will be monitored for a period of 6 month after permanent capping has been completed.

4.3 Quantum calculations.

(Provide a calculation of the quantum of the financial provision required to manage and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulation 54 (1) in respect of each of the phases referred to).

Table 13: Quantum calculations for the proposed project area.

| NEWRAY (SA) RESOURCES (PTY)LTD | | Physical Address: Block 2, 29 IMPALA ROAD, SANDTON | | | | | | |
|--|--|---|----------------------|----------|--|-----------------------|--------------------|-----------------|
| Prospecting Right: 30/5/1/1/2/11621PR | | email address: caroline@intresources.com | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| #NAME? | | | A | B | C | D | E = A*B*C*D | |
| Rate Component | Description | Unit | Published Rates 2014 | Quantity | MASTER RATE 6.20% (Published April 2014) | MULTIPLICATION FACTOR | Weighting Factor 1 | Amount (in ZAR) |
| S1.2 | Annual Adjustment for Average CPI Figures | CPI % | 0.062 | Step 4.5 | | Step 4.3 | Step 4.4 | 0 |
| 1 | Dismantling of processing plant and related structures (Including overland conveyors and powerlines) | M3 | | 0 | R 6.82 | | | 0 |
| 2A | Demolition of steel buildings and structure | M2 | | 0 | R 95.00 | | | 0 |
| 2B | Demolition of reinforced concrete buildings and structure | M2 | | 0 | R 140.00 | | | 0 |
| 3 | Rehabilitation of access road | M | | 1000 | R 17.00 | 1 | 1.05 | R 17 850.00 |
| 4A | Demolition and rehabilitation of electrified railway lines | M | | 0 | R 165.00 | | | 0 |
| 4B | Demolition and rehabilitation of nonelectrified railway lines | M | | 0 | R 90.00 | | | 0 |
| 5 | Demolition of housing and/or administration facilities | M2 | | | R 190.00 | | | 0 |
| 6 | Opencast rehabilitation including final voids and ramps | Ha | | 0 | R 96 700.00 | | | 0 |
| 7 | Sealing of shafts, edits and inclines | M3 | | 0 | R 51.00 | | | 0 |
| 8A | Rehabilitation of overburden and spoils | Ha | | 0 | R 66 400.00 | | | 0 |
| 8B | Rehabilitation of processing waste deposits and evaporation ponds (basic, salt producing waste) | Ha | | 0 | R 82 700.00 | | | 0 |
| 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste) | Ha | | 0 | R 240 200.00 | | | 0 |
| 9 | Rehabilitation of subsided areas | Ha | | 0 | R 55 600.00 | | | 0 |
| 10 | General surface rehabilitation | Ha | | 3.9 | R 52 600.00 | | | 0 |
| 11 | River diversions | Ha | | 0 | R 52 600.00 | 1 | 1.05 | 0 |
| 12 | Fencing | Ha | | 0 | R 6 000.00 | | | 0 |
| 13 | Water Management | Ha | | 0 | R 20 000.00 | | | 0 |
| 14 | 2 to 3 years of maintenance and aftercare | Ha | | 3.9 | R 700.00 | 1 | 1.05 | R 2 866.50 |
| 15(A) | Specialist study | Sum | | 0 | | | | 0 |
| 15(B) | Specialist study | Sum | | 0 | | | | 0 |
| Subtotal 1 (Sum of items 1 to 15) | | | | | | | | 20716.5 |
| Multiply sum of 1 - 15 by weighting factor 2 (Step 4.4) | | WF2 | | | R | | | |
| 1 Preliminary and General | | Add 6% of subtotal if R100, 000, 000.00 | | | | | | 1242.99 |
| | | Add 12% of subtotal if R100, 000, 000.00 | | | | | | |
| 2 Contingencies | | Subtotal 2 (Add 10% of subtotal 1) | | | | | | 2071.65 |
| | | subtotal 1 plus sum of management and contingency subtotal 2 | | | | | | |
| | | Subtotal 3 | | | | | | 24031.14 |
| | | VAT @ 14% of Subtotal 3 | | | | | | 3364.3596 |
| | | Grand Total (subtotal 3 plus VAT) | | | | | | 27395.4996 |

4.4 Undertaking to provide financial provision.

(Indicate that the required amount will be provided should the right be granted).

The financial provision for rehabilitation will be provided by means of bank guarantees from a reputable financial institution.

5 REGULATION 52 (2) (E): PLANNED MONITORING AND PERFORMANCE ASSESSMENT OF THE ENVIRONMENTAL MANAGEMENT PLAN.

5.1 List of identified impacts requiring monitoring programmes.

- Air quality
- Noise
- Visual aspect

5.2 Functional Requirements for Monitoring Programmes

The operations manager will conduct internal EMP compliance audit on a weekly basis. None compliance will be reported in the form of EMP checklist to the Environmental Assessment Practitioner (EAP). It is recommended that an EAP be appointed to conduct the site monitoring during the site establishment/ clearance for site camp to assess the environmental performance against the approved EMP. An Environmental Assessment Practitioner will conduct external EMP compliance audit every six months. Performance assessment report in terms of Regulation 55 of the MPRDA Regulations will be compiled.

5.3 Roles and responsibilities for the execution of monitoring programmes

The Operations Manager will be responsible for the proper execution of the monitoring programmes. The manager will ensure that the appointed EAP delivers as per the monitoring programmes requirements. The manager will also insure that all incidences are documented and rectified.

5.4 Committed Time Frames for Monitoring and Reporting

Time-frames detail the implementation schedule of management actions. The successful implementation and commencement within the timeframes is to be monitored as part of the performance assessment programme.

Monitoring time frames

- Noise monitoring – Quarterly monitoring
- Air quality monitoring - Quarterly monitoring
- Visual aspect monitoring- Daily monitoring

Reporting time frames

The results of these monitoring programmes will be compiled into annual reports submitted to the Department of Mineral Resources.

6 REGULATION 52 (2) (F): CLOSURE AND ENVIRONMENTAL OBJECTIVES.

6.1 Rehabilitation plan.

(Show the areas and aerial extent of the main prospecting activities, including the anticipated prospected area at the time of closure).

As previously mentioned, each phase of the prospecting activities is dependent on the success of the previous. Depending on the outcome of the Phase 1 desktop studies and Phase 2 mapping, the

number of boreholes to be drilled will be determined and at this stage, it will be determined whether trenching and pitting is required. Depending on Phase 3 drilling, it will also be determined whether further drilling for Phase 4 and Phase 5 is required and if so, how many boreholes would be required. The digging, extent and location of trenches and pits will also be determined as the project progresses, should need arise.

For the purposes of this report, a typical layout of a drill site (refer Figure 10) has been included to provide an understanding of the potential scale and significance of these activities.

6.2 Closure objectives and their extent of alignment to the pre-mining environment.

Prospecting activities are to be undertaken in a manner which facilitates site rehabilitation and the restoration of existing land capabilities. The primary objectives for rehabilitation include:

- The facilitation of the re-establishment of the land use and capability to as close as reasonably to the original conditions
- Removal of all infrastructure and material introduced to site
- Removal of all wastes and their and their related disposal
- Promotion of the rapid re-establishment of natural vegetation and the restoration of site ecology.

The closure objectives of the prospecting activities will include:

- Remove all surface infrastructure
- Clear boulders from site
- Remove all waste from site
- Ensure rehabilitated areas are at appropriate elevations and have appropriate contours
- Ensure adequate topsoil placement on rehabilitated areas
- Ensure the rehabilitated areas are free draining
- Re-vegetate all rehabilitated areas as soon as possible, with area specific vegetation
- Wetland areas are not compromised or destructed
- Future public health and safety are not compromised
- The site is reversed to almost its original state
- Environmental features are not subject to physical and chemical deterioration
- The after-use of the site is beneficial and sustainable in the long term
- Any adverse socio-economic impacts are minimized
- All socio-economic benefits are maximized

The rehabilitation plan shall entail removal of all generated waste, infrastructures and materials, re-vegetation of disturbed and cleared areas, rehabilitation of access roads, ensuring the growth of the existing grasses and plants species and cleaning of spillages etc. Additional measures that will need to be put in place to allow for the successful implementation of the action plan are listed on relevant sections.

The various actions that need to be implemented, to ensure that the environmental objectives are met, are detailed in the EMP. The actions are aimed at mitigating environmental impacts and implementing rehabilitation plan.

Emergency procedures indicate the actions to be taken in the case of an environmental emergency. These refer to an event that could result in a pollution incidents or damage to biophysical or social environment. Fire fighting equipment including fire extinguishers and fire beaters are to be kept on site (at the camp site and drilling areas). The fire management plan or procedure will be drawn and erected at the site camp and drilling machine. Any plan that will be drawn and implemented on site is the spillage of fuel, oil, lubricant or any chemical substances. Spill kits are to be purchased and be kept on site in close proximity to fuel/lubricant storage areas.

6.3 Confirmation of consultation.

(Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties).

The landowners and identified interested and affected parties were notified by means of registered letters, emails, newspaper notice, background information documents, site notices, presentations and meetings. The environmental objectives relating to closure were communicated to the community during the meeting.

7 REGULATION 52 (2) (G): RECORD OF THE PUBLIC PARTICIPATION AND THE RESULTS THEREOF.

7.1 Identification of interested and affected parties.

(Provide the information referred to in the guideline)

7.1.1 Name the community or communities identified, or explain why no such community was identified.

Rampipi, Koedoespruit, Phuthing, Dikweipi and Sandfontein.

7.1.2 Specifically state whether or not the Community is also the landowner.

The community is not the land owner.

7.1.3 State whether or not the Department of Land Affairs been identified as an interested and affected party.

The Department of Land Affairs (now Department of Rural Development and Land Reform) was identified as an interested and affected party.

7.1.4 State specifically whether or not a land claim is involved.

No land claim is involved.

7.1.5 Name the Traditional Authority identified

Bakgatla-Ba-Kgafela Traditional Administration (BBKTA)

7.1.6 List the landowners identified by the applicant. (Traditional and Title Deed owners)

Title Deed landowner: State

Traditional landowner: Bakgatla-Ba-Kgafela Traditional Administration (BBKTA)

7.1.7 List the lawful occupiers of the land concerned.

Tribal community

7.1.8 Explain whether or not other persons' (including on adjacent and non-adjacent properties) socio-economic conditions will be directly affected by the proposed prospecting or mining operation and if not, explain why not.

It is not anticipated that the proposed development will have an impact on the socio-economic conditions as the project is only a prospecting activity

7.1.9 Name the Local Municipality.

Moses Kotane Local Municipality

7.1.10 Name the relevant Government Departments, agencies and institutions responsible for the various aspects of the environment and for infrastructure which may be affected by the proposed project.

- SANRAL SOC Ltd
- Transnet Freight Rail
- Eskom
- Department of Mineral Resources-North West
- Department of Rural Development and Land Reform
- Department of Water and Sanitation
- Department of Agriculture
- South African Heritage Resources Agency (SAHRA)
- South Africa National Parks
- Bakgatla-Ba-Kgafela Traditional Administration (BBKTA)
- Moses Kotane Local Municipality
- Bojanala Platinum District Municipality

7.1.11 Submit evidence that the landowner or lawful occupier of the land in question, and any other interested and affected parties including all those listed above, were notified.

Evidence of notification is appended (**Appendix B**).

- Newspaper advertisement
- Background Information Document
- Site Notices
- Minutes to meetings
- Letters
- Emails

7.2 The details of the engagement process.

7.2.1 Description of the information provided to the community, landowners, and interested and affected parties.

The information provided included:

Identification of applicant: Newray (SA) Resources

Reason for the notice: Prospecting Right Application lodged with the Department of Mineral Resources, North West Province for phosphates ore, iron ore, titanium ore, magnetite ore and vanadium ore within the Magisterial District of Mankwe

Description of proposed area: The property description for the project area was provided as Portions 1, 2, 3, 4, 5 and the remaining extent of Farm Koedoesspruit 33 JQ

Introduction of the environmental consultants: It was mentioned that DMT-Kai Batla (Pty) Ltd was appointed to undertake the environmental study and undertake the Public consultation process and prepare the Environmental Management Plan and for the prospecting right application.

General information regarding legislation governing the Prospecting Right Application

Potential impacts of prospecting

Further studies that could potentially be undertaken

Contact details for enquiries: I&APs were invited to register and send their responses, concerns and issues regarding the proposed project by fax, telephone or e-mails.

7.2.2 List of which parties identified in 7.1 above that were in fact consulted, and which were not consulted.

Table 14: List of Interested and Affected Parties consulted.

| Interested and Affected Parties | Consulted |
|--|------------------|
| SANRAL SOC Ltd | X |
| Transnet Freight Rail | X |
| Eskom | X |
| Department of Mineral Resources-North West | X |
| Department of Rural Development and Land Reform | X |
| Department of Water and Sanitation | X |
| Department of Agriculture | X |
| South African Heritage Resources Agency (SAHRA) | X |
| South Africa National Parks | X |
| Bakgatla-Ba-Kgafela Traditional Administration (BBKTA) | X |
| Moses Kotane Local Municipality | X |
| Bojanala Platinum District Municipality | X |
| Rampipi Community | X |
| Koedoespruit Community | X |
| Phuthing Community | X |
| Dikweipi Community | X |
| Sandfontein Community | X |

7.2.3 List of views raised by consulted parties regarding the existing cultural, socio-economic or biophysical environment.

- Community Member-Ms Rebecca Magalie: enquired "what happens to me if I live on this farm?".
- Community Member-Mr Tebogo Legong enquired "what happens should my property get damaged by blasting?".
- Community Member-Mr Daniel Gouwe "What happens as villages are expanding? What happens after a few months when the villages are bigger and there are more concerned people? How then do you deal with this then? He further enquired whether there is a rehabilitation plan scheduled.
- Community Member-Mr Mogwe noted that other communities should have also been identified and invited.

7.2.4 List of views raised by consulted parties on how their existing cultural, socio-economic or biophysical environment potentially will be impacted on by the proposed prospecting or mining operation.

- Community Member - Ms Rebecca Magalie: enquired "what happens to me if I live on this farm?"
- Community Member - Mr Tebogo Legong enquired "what happens should my property get damaged by blasting?"
- Community Member - Mr Daniel Gouwe "What happens as villages are expanding? What happens after a few months when the villages are bigger and there are more concerned people? How then do you deal with this then? He further enquired whether there is a rehabilitation plan scheduled.
- Community Member - Mr Mogwe noted that other communities should have also been identified and invited.

7.2.5 Other concerns raised by the aforesaid parties.

Eskom has raised concerns relating to power lines located within the project area. Eskom expressed that the power lines will be affected by prospecting activities. Eskom has terms and conditions Newray should consider before commencement of prospecting. See **Appendix C** for Eskom letter.

7.2.6 Confirmation that minutes and records of the consultations are appended.

Minutes of meetings and records of consultation are appended (**Appendix B**).

7.2.7 Information regarding objections received.

No objections were received.

7.3 The manner in which the issues raised were addressed.

Some concerns raised were addressed at the public meeting. Regarding Eskom comments, Newray has accepted all terms and conditions relating to protection of Eskom power lines (**Appendix D**).

8 SECTION 39 (3) (C) OF THE ACT: ENVIRONMENTAL AWARENESS PLAN.

8.1 Employee communication process

(Describe how the applicant intends to inform his or her employees of any environmental risk which may result from their work).

- Newray shall ensure that employees and contractors are adequately notified of the environmental risk, which may arise from the prospecting operations.
- Environmental awareness will be targeted at all full-time and part-time personnel on site.
- All personnel will be notified through induction programmes, whereby they will be trained and made aware of environmental obligations on the site they will work and the environmental risks associated with their work.
- Personnel will also be notified of the manner in which these risks must be dealt with to avoid pollution and minimize the degradation of the environment.
- Daily “toolbox talks” led by the operations manager will be held prior to commencing work, which will include discussions on health, safety and environmental matters.

8.2 Description of solutions to risks.

(Describe the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment).

The workforce on site will be trained on how to identify and mitigate risks on site. Potential risks and solutions are presented in Table 15. The most appropriate solutions to environmental risks will be determined in the following manner:

- Identify risk
- Analyse risk
 - Determine consequences
 - Determine likelihood
- Assess and prioritise risk
 - Determine priorities for treatment
- Treat risk
 - Eliminate
 - Reduce
 - Transfer
 - Manage
- Monitor and review

Table 15: Potential risks.

| Potential risks | Potential solutions |
|--|--|
| <p>Fauna: Loss of food, nest sites and refugia</p> <p>Fauna: Potential damage to or destruction of sensitive faunal habitats</p> | <p>Relocate larger animals with the aid of specialists. Ensure relevant permits are in place.</p> <p>Pans and artificial watering points must be cordoned off with at least 100 m horizontal distance buffer zones and no activity is to take place within these areas.</p> |
| <p>Flora: Loss of biodiversity</p> | <p>Ensure permits are obtained to remove protected species. Relocate all protected species with aid of specialists. Only remove species in areas designated for activity and do not disturb surrounding areas.</p> |
| <p>Noise: Increased noise levels</p> | <p>Vehicles will be regularly serviced to ensure acceptable noise levels are not exceed.</p> |
| <p>Air quality: Dust generation</p> <p>Air quality: Emissions form vehicles</p> | <p>Roads will be sprayed with water regularly ,especially during times of high dust generation. Speed limits will be established on the road to minimise dust generation. All contractors will enforce speed limits.</p> <p>All vehicles will be regularly services to ensure they are in proper working condition and to reduce risk of excessive emissions</p> |
| <p>Archaeological & cultural sites: Loss of and disturbance to surface archaeological sites</p> | <p>Should artefacts or archaeological items be observed, then all activity should cease immediately, the area marked off and a specialists consulted prior to any further activity.</p> <p>Should graves be observed on site during activity progress then all activity should ceased and the area demarcated as a no-go zone. A specialist will need to be consulted .</p> |
| <p>Soil: Potential compaction of soil</p> <p>Soil: Potential hydrocarbon contamination</p> | <p>Activity should be limited to area of disturbance. Where required the compacted soils should be disked to an adequate depth and re-vegetated with indigenous plants.</p> <p>All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material.</p> |
| <p>Surface water: Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies</p> | <p>All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material.</p> |
| <p>Traffic & safety: Road degradation</p> <p>Traffic & safety: Increased potential for road incidences</p> | <p>All intersections with main tarred roads will be clearly signposted. drivers will be enforced to keep to set speed limits. Trucks will be road-worthy condition with reflective strips.</p> <p>A fund will be set aside to maintain the serviceability of the road verge where the trucks approach or depart from the main road.</p> |
| <p>Groundwater: Potential hydrocarbon contamination from leaks or spills leeching into the water table</p> | <p>The drill rig will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material</p> <p>All vehicles will be regularly serviced to ensure they are in proper working condition and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material.</p> |
| <p>Surface water: Potential hydrocarbon contamination from leaks or spills which may reach downstream surface water bodies</p> | <p>All vehicles will be regularly serviced to ensure they are in proper working conditions and to reduce risk of leaks. All leaks will be cleaned up immediately using an absorbent material.</p> |
| <p>Visual aspect: Deterioration in visual aesthetics of the area</p> | <p>Directional lighting and soft lighting will be utilised to ensure that only areas required to be lit are lit.</p> <p>Waste generated on site should be recycled as far as possible. Recycled waste should not be stored on site for excessive periods to reduced risk of environmental contamination. Refuse bins will be placed around site to collect all non-recycle waste for disposal at the municipality.</p> |

8.3 Environmental awareness training.

(Describe the general environmental awareness training and training on dealing with emergency situations and remediation measures for such emergencies).

ENVIRONMENTAL AWARENESS TRAINING PROGRAMME

Environmental awareness training will be provided to all employees and contractors appointed to work on the project before any activity commences. Thereafter, refresher training will be conducted on an annual basis. Training will also be given to all employees and contractors working on site.

The objective of environmental awareness training will be to ensure that employees on site, including contractors, are competent to perform their duties, thereby eliminating negative impacts on their safety, health and the environment.

Training Needs Analysis

Before training commences, a training needs analysis will be conducted to ensure that appropriate training and training manuals are given everyone working onsite. After the training needs have been identified, it will be the responsibility of the operations manager to ensure that personnel receive the relevant identified training and associated manuals.

Training Materials

The Environmental topics to be covered during training will include the following:

- Natural resource management
- Hazardous substance use and storage
- Incident & emergency reporting
- Oil / diesel/ petrol spill clean up
- Conservation of water
- Conservation of vegetation
- Heritage resources management
- Waste management

Emergency Situations and Remediation

The workforce will be trained on how to deal with emergencies and remediation measures for such emergencies. The following aspects will be covered in the training.

- Methods of how to identify areas where accidents and emergency situations may occur and the potential impacts
- Emergency response procedures
- Appropriate equipment and resources for attending to emergencies
- Designation of responsibilities during emergency situations
- Communication/reporting lines during emergencies
- Training schedule to ensure effective response.

All training material for presentation to personnel and contractors will be reviewed annually to ensure consistency with organizational requirements and best practice guidelines. In addition to this, annual monitoring reports, audit results and all incident reports will be reviewed, any shortcomings and non-compliance will be highlighted and management measures incorporated or improved upon within the training material.

Newray management will assess the effectiveness of the environmental management training.

9 SECTION 39 (4) (A) (III) OF THE ACT: CAPACITY TO REHABILITATE AND MANAGE NEGATIVE IMPACTS ON THE ENVIRONMENT.

9.1 The annual amount required to manage and rehabilitate the environment.

(Provide a detailed explanation as to how the amount was derived)

A total estimated amount of R 42 000.00 has been calculated for the implementation of the Environmental Management Plan over the 5 year planned prospecting programme. Costs related to the appointment and / or training of an Environmental Management Officer, who will oversee the implementation of the Environmental Management Plan is not included in the costing.

9.2 Confirmation that the stated amount correctly reflected in the Prospecting Work Programme as required.

The rehabilitation cost was included in the costing schedule presented as Table 9.1 in the Prospecting Works Programme.

Table 16: Rehabilitation costs as presented in the prospecting works programme.

| Phase | Actions | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|---|---|--|--------|---|---|--|
| Phase 1: Project Examination | | Month 1- Month 6 | | | | |
| Phase 2: Reconnaissance Exploration | Rehabilitation of biodiversity, access roads, soil, boreholes, waste and spill management | Month 7- Month 12 R 5 000.00 | | | | |
| Phase 3: Outline Drilling | | | | Month 13- Month 24 R 10 000.00 | | |
| Phase 4: Infill Drilling | It is envisaged that rehabilitation costs will increase annually as drilling and possibly trenching and pitting occurs. | | | | Month 25- Month 36 R 12 000.00 | |
| Phase 5: Resource Drilling | | | | | | Month 37- Month 48 R 15 000.00 |
| Phase 6: Pre-Feasibility and Feasibility Studies | | | | | | |
| Total: R 42 000 | | | | | | |

10 REGULATION 52 (2) (H): UNDERTAKING TO EXECUTE THE ENVIRONMENTAL MANAGEMENT PLAN.

Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report comprises EIA and EMP compiled in accordance with the guideline on the Departments official website and the directive in terms of sections 29 and 39 (5) in that regard, and the applicant undertakes to execute the Environmental management plan as proposed.

| | |
|-------------------------------|------------------|
| Full Names and Surname | Caroline Munyai |
| Identity Number | 880503 0940 08 8 |

-END-