Mining activity	Impact on	Nature	Extent	Duration	Intensity	Probability	Significance
Electricity (Gensets)	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Site	Long term	Medium	Definite	Medium
	Flora	Negative	Site	Long term	Medium	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Local	Long term	High	Definite	Medium
	Soil	Negative	Local	Long term	Medium	Definite	Medium
	Surface Water	Negative	Local	Long term	Low	Probable	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Excavations	Air quality	Negative	Site	Long term	Medium	Definite	Medium
	Fauna	Negative	Local	Long term	High	Definite	Medium
	Flora	Negative	Local	Long term	High	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Site	Long term	Medium	Definite	Medium
	Soil	Negative	Local	Long term	Medium	Definite	Low
	Surface Water	Negative	Local	Long term	Medium	Probable	Low
	Topography	Negative	Site	Long term	High	Definite	High
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Haul roads	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	Medium	Definite	Medium
	Flora	Negative	Local	Long term	Medium	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Local	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Local	Long term	Low	Probable	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Laboratory	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	Medium	Definite	Medium
	Flora	Negative	Local	Long term	Medium	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Local	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Local	Long term	Low	Probable	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Offices	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	Medium	Definite	Medium
	Flora	Negative	Local	Long term	Medium	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Local	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Local	Long term	Low	Probable	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Processing and beneficiation (jigging) plant	Air quality	Negative	Local	Long term	Medium	Definite	Low
	Fauna	Negative	Local	Long term	Low	Definite	Medium
	Flora	Negative	Local	Long term	Low	Definite	Medium
	Groundwater	Negative	Local	Long term	Medium	Probable	Low
	Noise	Negative	Site	Long term	High	Definite	High
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Site	Long term	Low	Definite	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low

Mining activity	Impact on	Nature	Extent	Duration	Intensity	Probability	Significance
Recycling dam	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	High	Definite	Medium
	Flora	Negative	Local	Long term	High	Definite	Medium
	Groundwater	Positive	Local	Long term	Low	Definite	Low
	Noise	No impact	No impact	No impact	No impact	Definite	No impact
	Soil	Negative	Local	Long term	Medium	Definite	Medium
	Surface Water	No impact	No impact	No impact	No impact	Definite	No impact
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Salvage yard	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	Medium	Definite	Medium
	Flora	Negative	Local	Long term	Medium	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Local	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Local	Long term	Low	Probable	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Stockpile area	Air quality	Negative	Site	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	High	Definite	Medium
	Flora	Negative	Local	Long term	High	Definite	Medium
	Groundwater	Negative	Site	Long term	Low	Probable	Low
	Noise	Negative	Site	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Medium	Definite	Medium
	Surface Water	Negative	Site	Long term	Medium	Definite	Low
	Topography	Negative	Site	Long term	Medium	Definite	Medium
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Storage facilities	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	Medium	Definite	Medium
	Flora	Negative	Local	Long term	Medium	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Local	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Local	Long term	Low	Probable	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Topsoil storage sites	Air quality	Negative	Site	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	High	Definite	Medium
	Flora	Negative	Local	Long term	High	Definite	Medium
	Groundwater	Negative	Site	Long term	Low	Probable	Low
	Noise	Negative	Site	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Medium	Definite	Medium
	Surface Water	Negative	Site	Long term	Medium	Definite	Low
	Topography	Negative	Site	Long term	Medium	Definite	Medium
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Wash bay	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Site	Long term	Medium	Definite	Medium
	Flora	Negative	Site	Long term	Medium	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Definite	Low
	Noise	Negative	Local	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Local	Long term	Low	Definite	Low
	Topography	No impact	No impact	No impact	No impact	No impact	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low

Mining activity	Impact on	Nature	Extent	Duration	Intensity	Probability	Significance
Waste disposal sites	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	Medium	Definite	Medium
	Flora	Negative	Local	Long term	Medium	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Local	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Local	Long term	Low	Probable	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Waste rock dumps	Air quality	Negative	Site	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	High	Definite	Medium
	Flora	Negative	Local	Long term	High	Definite	Medium
	Groundwater	Negative	Site	Long term	Low	Probable	Low
	Noise	Negative	Site	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Medium	Definite	Medium
	Surface Water	Negative	Site	Long term	Medium	Definite	Low
	Topography	Negative	Site	Long term	High	Definite	High
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Water dams	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	No impact	No impact	No impact	No impact	No impact	No impact
	Flora	No impact	No impact	No impact	No impact	No impact	No impact
	Groundwater	Negative	Local	Long term	Low	Definite	Low
	Noise	No impact	No impact	No impact	No impact	No impact	No impact
	Soil	No impact	No impact	No impact	No impact	No impact	No impact
	Surface Water	No impact	No impact	No impact	No impact	No impact	No impact
	Topography	No impact	No impact	No impact	No impact	No impact	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Weighbridge & control rooms	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	No impact	No impact	No impact	No impact	No impact	No impact
	Flora	No impact	No impact	No impact	No impact	No impact	No impact
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Local	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Local	Long term	Low	Probable	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low
Mining activity	**Impact on**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Workshop	Air quality	Negative	Local	Long term	Low	Definite	Low
	Fauna	Negative	Local	Long term	Medium	Definite	Medium
	Flora	Negative	Local	Long term	Medium	Definite	Medium
	Groundwater	Negative	Local	Long term	Low	Probable	Low
	Noise	Negative	Local	Long term	Low	Definite	Low
	Soil	Negative	Local	Long term	Low	Definite	Low
	Surface Water	Negative	Local	Long term	Low	Probable	Low
	Topography	No impact	No impact	No impact	No impact	Definite	No impact
	Visual	Negative	Site	Long term	Low	Definite	Low

Socio-Economic:

Socio-economic activity	Nature	Extent	Duration	Intensity	Probability	Significance
Capital Expenditure	Positive	Regional	Long term	Medium	Definite	High
Payroll income	Positive	Regional	Long term	Medium	Definite	High
Operating expenditure and	Positive	Regional	Long term	Medium	Definite	High
Revenue	Positive	Regional	Long term	Medium	Definite	High
Employment	Positive	Regional	Long term	Medium	Definite	High
Employment of contractors	Positive	Regional	Long term	Medium	Definite	High
Provision of skills development	Positive	Regional	Long term	Medium	Definite	High
Opportunities for local SMME's	Positive	Site	Long term	Medium	Definite	Medium
Community involvement	Positive	Site	Long term	Medium	Definite	Medium
Poverty alleviation	Positive	Site	Long term	Medium	Definite	High
Community health	Positive	Site	Long term	Medium	Definite	Medium
Community proximity	Negative	Site	Long term	Medium	Definite	Medium
Social & Labour Plan	Positive	Regional	Long term	Medium	Definite	Medium
Security risk	Negative	Regional	Long term	Medium	Probable	Low

Cultural - Environmental impacts on air quality, fauna, flora, groundwater, noise, soil, surface water, topography & visual:

Cultural activity	Impact on	Nature	Extent	Duration	Intensity	Probability	Significance
Collecting of medicinal plants	Air quality	No impact	No impact	No impact	No impact	No impact	No impact
	Fauna	No impact	No impact	No impact	No impact	No impact	No impact
	Flora	Negative	Site	Long term	Low	Definite	Low
	Groundwater	No impact	No impact	No impact	No impact	No impact	No impact
	Noise	No impact	No impact	No impact	No impact	No impact	No impact
	Soil	No impact	No impact	No impact	No impact	No impact	No impact
	Surface Water	No impact	No impact	No impact	No impact	No impact	No impact
	Topography	No impact	No impact	No impact	No impact	No impact	No impact
	Visual	No impact	No impact	No impact	No impact	No impact	No impact
Collecting of firewood	Air quality	No impact	No impact	No impact	No impact	No impact	No impact
	Fauna	No impact	No impact	No impact	No impact	No impact	No impact
	Flora	Negative	Site	Long term	Low	Definite	Low
	Groundwater	No impact	No impact	No impact	No impact	No impact	No impact
	Noise	No impact	No impact	No impact	No impact	No impact	No impact
	Soil	No impact	No impact	No impact	No impact	No impact	No impact
	Surface Water	No impact	No impact	No impact	No impact	No impact	No impact
	Topography	No impact	No impact	No impact	No impact	No impact	No impact
	Visual	No impact	No impact	No impact	No impact	No impact	No impact
Hunting & Snaring	Air quality	No impact	No impact	No impact	No impact	No impact	No impact
	Fauna	No impact	No impact	No impact	No impact	No impact	No impact
	Flora	Negative	Site	Long term	Low	Definite	Low
	Groundwater	No impact	No impact	No impact	No impact	No impact	No impact
	Noise	No impact	No impact	No impact	No impact	No impact	No impact
	Soil	No impact	No impact	No impact	No impact	No impact	No impact
	Surface Water	No impact	No impact	No impact	No impact	No impact	No impact
	Topography	No impact	No impact	No impact	No impact	No impact	No impact
	Visual	No impact	No impact	No impact	No impact	No impact	No impact

Heritage:

Heritage activity	Nature	Extent	Duration	Intensity	Probability	Significance
Archaeological artefacts	No impact	No impact	No impact	No impact	No impact	No impact
Burial grounds and graves	No impact	No impact	No impact	No impact	No impact	No impact
Buildings and structures older than sixty years	No impact	No impact	No impact	No impact	No impact	No impact

Cumulative environmental impacts:

Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Air quality	• Nuisance dust on roads will be created by the mining equipment hauling material between the open excavation areas, the plant area, stockpile areas and waste dump areas on the mine site. • Nuisance dust will be created by the mining equipment during excavation activities. • Nuisance dust will be created by the drilling and blasting activities. • Vehicle and equipment emissions in workshop, stores and office areas. • Nuisance dust will be created at the modular processing plant. • Nuisance dust will be created in the residue deposition site, topsoil storage site, stockpile and waste dump areas when the material is dumped. • Nuisance dust will be created when new infrastructure is established. • Nuisance dust from the roads transecting the property and surrounding area. • Smoke from domestic open fires in the residing communities. • Dust created by surrounding prospecting and mining activities. • Fumes and noxious gases generated by blasting. • Emmissions from vehicles utilizing the road network in the area immediately surrounding the mine.	Negative	Regional	Long term	Medium	Definite	Low

Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Fauna	• Where new haulage roads will be created the natural habitat of the animals will be disturbed and/or destroyed. • Road kills. • Where the firebreak will be created the natural habitat of the animals will be disturbed and/or destroyed. • Where new excavations will be created the natural habitat of the animals will be disturbed and/or destroyed. • The natural habitat of the animals will be disturbed and/or destroyed where buildings and infrastructure will be built / established. • The natural habitat of the animals will be disturbed and/or destroyed where the modular processing plant will be established. • The natural habitat of the animals will be disturbed and/or destroyed where the residue deposition site, topsoil storage site, stockpile and waste dump areas will be established. • The natural habitat of the animals will be disturbed and/or destroyed where new infrastructure will be established. • Hunting & Snaring of animals • Hunting on surrounding farms • Disturbance and / or destruction of the natural habitat of the animals from surrounding prospecting / mining operations.	Negative	Site	Long term	High	Definite	Medium

Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Flora	• Where new haulage roads will be created the vegetation will be disturbed and/or destroyed. • Where the firebreak will be created the vegetation will be disturbed and/or destroyed. • Where new excavations will be created the vegetation will be disturbed • The vegetation cover will be disturbed and / or destroyed in the areas where the buildings and infrastructure will be built / established. • The vegetation cover will be disturbed and / or destroyed where the modular processing plant will be established. • The vegetation cover will be disturbed and / or destroyed where the residue deposition site, topsoil storage site, stockpile and waste dump areas will be established. • The vegetation cover will be disturbed and / or destroyed where new infrastructure will be established. • Grazing of livestock. • Runaway veld fires. • Disturbance and / or destruction of the natural vegetation cover from surrounding prospecting / mining operations.	Negative	Site	Long term	High	Definite	Medium

Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Groundwater	• Possible hydrocarbon spills from mine vehicles. • Abstraction of groundwater for the use in the processing and beneficiation (jigging) of ore. • The utilization of groundwater for the cleaning of vehicles and equipment. • Surrounding surface owners extracts groundwater for domestic and livestock farming uses. • Abstraction of groundwater by surrounding prospecting / mining operations.	Negative	Site	Long term	Low	Definate	Low

Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Noise	• Noise from the mining equipment on the haulage roads. • Noise from the mining equipment and vehicles during excavations activities. • Noise from drilling and blasting activities. • A high noise impact is expected inthe immediate vicinity of the processing plant. • Noise created by traffic on surrounding road network. • Noise created by surrounding agricultural equipment / activities. • Noise created by surrounding prospecting / mining activities.	Negative	Site	Long term	Medium	Definite	Medium

Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Soil	• Compaction of soil is expected on the roads that are used by the mining operation. • Possible hydrocarbon spills from mine vehicles. • Removal and disturbance of soil structure by excavation activities. • Disturbance of soil structure where buildings and infrastructure will be built / established. • Disturbance of soil structure where the residue deposition sites, topsoil storage sites, stockpile and waste dump sites will be created. • Disturbance of soil structure where new infrastructure will be established. • Disturbance of soil structure by surrounding prospecting / mining operations. • Potential hydrocarboun spills from vehicles and equipment of surrounding prospecting / mining operations.	Negative	Site	Long term	Medium	Definate	Medium

Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Surface water	• If roads are not properly maintained, water erosion after thunder storms can occur. • Possible contamination of surface water by hydrocarbon spills during a rain event. • Collection of water in open excavations during and after thunderstorms. • Water from the Vaal Gamagara Pipeline will potentially be used for the processing and beneficiation of ore. • Water from the Vaal Gamagara Pipeline will potentially be used for the cleaning of vehicles and equipment at the wash bay. • Using of water from the Vaal gamagara Pipeline for processing, beneficiation and domestic purposes by the surrounding prospecting / mining operations. • Potential hydrocarboun spills from vehicles and equipment of surrounding prospecting / mining operations.	Negative	Regional	Long term	Medium	Definite	Medium

Impact	Description	Nature	Extent	Duration	Intensity	Probability	Significance
Topography	• Changing of natural slopes will take place. The hill areas will be completely mined out, altering the topography permanently. • Temporary stockpiles, topsoil storage sites and waste rock dumps will be created, temprarily altering the topography. • A permanent waste rock dump will be created on site. • Changing of natural slopes by surrounding prospecting / mining operations.	Negative	Site	Long term	High	Definite	High
Impact	**Description**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Visual	• The haulage roads are visible to some extent from the immediate surroundings. • Changing of natural aesthetic view of environment could take place from mining activities and relating infrastructure. • Breaking of natural skyline. • Changing of natural aesthetic view of the environment could take place from surrounding prospecting and mining activities.	Negative	Site	Long term	Low	Definite	Low
Impact	**Description**	**Nature**	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**
Vibrations	• Ground vibrations due to blasting activities	Negative	Site	Long term	Low	Definite	Low

7.3. Indication of the phases (construction, operational, decommissioning) and estimated time frames in relation to the potential impacts rated.

Description	Construction	Time	Operational	Time	Decommissioning	Time
Ablution facilities	x	Year 1	x	LOM	x	Year 30
Access control (security)	x	Year 1	x	LOM	x	Year 30
Access road	x	Year 1	x	LOM	x	Year 30
Chemical toilets	x	Year 1	x	LOM	x	Year 30
Diesel tank	x	Year 1	x	LOM	x	Year 30
Electricity	x	Year 1	x	LOM	x	Year 30
Excavations	x	Year 1	x	LOM	x	Year 30
Haul roads	x	Year 1	x	LOM	x	Year 30
Laboratory	x	Year 1	x	LOM	x	Year 30
Offices	x	Year 1	x	LOM	x	Year 30
Processing plant	x	Year 1	x	LOM	x	Year 30
Recycling dam	x	Year 1	x	LOM	x	Year 30
Salvage yard	x	Year 1	x	LOM	x	Year 30
Stockpile area	x	Year 1	x	LOM	x	Year 30
Storage facilities	x	Year 1	x	LOM	x	Year 30
Topsoil storage sites	x	Year 1	x	LOM	x	Year 30
Wash bay	x	Year 1	x	LOM	x	Year 30
Waste disposal sites	x	Year 1	x	LOM	x	Year 30
Waste rock dumps	x	Year 1	x	LOM	x	Year 30
Water dam	x	Year 1	x	LOM	x	Year 30
Weighbridge & weighbridge control rooms	x	Year 1	x	LOM	x	Year 30
Workshop	x	Year 1	x	LOM	x	Year 30
Capital expenditure	x	Year 1	x	LOM	x	Year 30
Payroll income	x	Year 1	x	LOM	x	Year 30
Operating expenditure & maintenance	x	Year 1	x	LOM	x	Year 30
Revenue	x	Year 1	x	LOM	x	Year 30
Employment	x	Year 1	x	LOM	x	Year 30
Employment of contractors	x	Year 1	x	LOM	x	Year 30
Provision of skills development	N/A	N/A	x	LOM	x	Year 30
Opportunities for local SMME's	x	Year 1	x	LOM	x	Year 30
Community involvement	x	Year 1	x	LOM	x	Year 30
Poverty alleviation	x	Year 1	x	LOM	x	Year 30
Community health	x	Year 1	x	LOM	x	Year 30

Community proximity	x	Year 1	x	LOM	x	Year 30
Social & Labour Plan	x	Year 1	x	LOM	x	Year 30
Security Risk	x	Year 1	x	LOM	x	Year 30
Collecting of medicinal plants	x	Year 1	x	LOM	x	Year 30
Collecting of firewood	x	Year 1	x	LOM	x	Year 30
Hunting & Snaring	x	Year 1	x	LOM	x	Year 30
Archaeological artefacts	N/A	N/A	N/A	N/A	N/A	N/A
Burial grounds and graves	N/A	N/A	N/A	N/A	N/A	N/A
Buildings and structures older than 60 years	N/A	N/A	N/A	N/A	N/A	N/A

Footnote: LOM - Life-of-Mine

REGULATION 50(d)

8. Identification of the alternative land uses which will be impacted upon. (Include all the items to be included in the list referred to in the concomitant section of the guideline posted the official website of the Department.)

Feature	Type of Impact	Duration	Period
Livestock farming	Impede	Temporary	LOM

9. Listed results of a specialist comparative land use assessment. (Refer to the concomitant section of the guideline posted on the official website of the Department and attach the specialist study as an appendix.)

- **<u>Alternative land use:</u>**
  Livestock farming potential:
  The economic value of the alternative land use was calculated according to the tried and tested method of the Department of Agriculture's present recommended stocking rate of 12 hectares per large stock unit (LSU).

  Mining will disturb approximately 150 hectares per annum at full production, which disturbed areas will revert back to its current grazing capacity after 5 years. According to calculations a total area of approximately 750 hectares of grazing land will not be suitable for grazing at any one time (from years 5 - 30). 750 hectares (disturbed land) has the capacity of 62 head of cattle (LSU at 12 units per hectare). Breeding success of 80% calculates to 49 calves per annum. The monetary value of each calf is approximately R4 000 (weaned) (current market price) which calculates to R196 000-00.

  No impact to existing infrastructure on the property is foreseen, as no mining will be allowed within 100m from any structure.

  The buildings of the proposed mining operation will be left on the mine site after closure, for use by the surface owner, if so requested by the surface owner, and will have a positive economic impact on the property.

- **Mining:**

Autumn Skies will use the first six months after granting and execution of their Mining Right for the construction phase of their mining operation.

Autumn Skies plans to establish the following, amongst other, infrastructure on their mine site:

- **Modular crushing, screening & JIG plant (iron ore)**
- **Modular crushing & screening plant (manganese ore)**
- **Weighbridges (x 2)**
- **Gensets (2 x 640kVA)**
- **Diesel tank (3 x 23 000 litre)**
- **Water dam (2 x 2 500m^3)**
- **Washbay**
- **Buildings:**
  - **Offices**
  - **Workshop**
  - **Storage facilities**
  - **Laboratory**
  - **Ablution facilities**
  - **Security control point**
  - **Weighbridge control rooms**

Autumn Skies will mine the detrital ore immediately after granting and execution of the mining right and continue to do so until the detrital ore resource has been depleted. The detrital ore will be put through the processing plant once it has been established and first production is expected to be in month seven of the mining operation.

Mining of the high grade iron ore and manganese ore will commence in year 3 of the mining operation, the same year as Autumn Skies plans to reach full production of 30 000 tonnes iron ore per month and 10 000 manganese ore per month, until life-of-mine.

	Average of 10 Years
	R000'000
Industrial Output (Gross Sales) – Iron Ore & Manganese	**2,310**
Expenditure	
Mining	**943**
Technology	**308**
Technical Skills Cost	**137**
Regulatory Requirements	**109**
Environmental Cost	**16**
Social and Labour	**12**
Capital Cost	**212**
Transport	**360**
Total Jobs	57
Earnings per job for 10 year average	40,531,387

A summary of the economic impacts is found in the table below. As was already demonstrated in the table above, the plant's direct data consist of R2 310 million in sales or industrial output, R137 million in labour income and 57 jobs from year 1 onwards. This plant is expected to generate R23,7 million in total value added for year 1.

When the direct and the indirect workers convert their labour income into household spending, they will induce an additional R98,6 million in additional sales in the country.

Totals	Direct	Indirect	Induced	Total	Total Multiplier
	R	R	R	R	
Industrial Output	2,310,289,070	98,676,107	8,674,800	2,417,639,977	1.05
Value Added	23,718,003	10,910,282	4,743,601	39,371,885	1.66
Labour Income	8,674,800	3,469,920	1,561,464	13,706,184	1.58
Jobs	57	23	10	90	1.58

The last column in Table 2 contains the total multipliers for each category. A total multiplier is merely the ratio obtained by dividing the total value by the direct value. It tells how much the local economy reacts to a unit change in the direct value. The multiplier of 1.05 for industrial output says that for every R1 of direct industrial output, R0.05 in additional industrial output has been generated in the remaining (non-mining) economy. The multiplier of 1.66 for value added means that for every R1 of value added generated in the proposed mining operation R0.66 in value added is sustained in the rest of the local economy. The labour income multiplier is 1.58. That means that for every rand's worth of labour income paid in the proposed mining operation R0.58 in labour income is generated in the rest of the local economy. The jobs multiplier is 1.58 which mean that for every 1

person employed at the new proposed mining operation 0.58 new jobs will be created in the local economy.

REGULATION 50(e)

10. List of all the significant impacts as identified in the assessment conducted in terms of Regulation 50(c). (Include all the items to be included in the list referred to in the concomitant section of the guideline posted on the official website of the Department.)

The following is relevant towards the construction, operational & decommissioning phases:

Impact	Source		Action
Construction, Operational & Decommissioning phases			
Air quality	Ablution facilities	●	Speed limits
	Access control point	●	Sparying of surfaces with water
	Access road	●	Re-vegetation
	Chemical toilets	●	Monthly monitoring & reporting
	Diesel tank (re-fuelling point)	●	Backfilling and rehabilitation
	Electricity (gensets)	●	Controlled drilling & blasting operations
	Excavations		
	Haul roads		
	Laboratory		
	Offices		
	Processing plant		
	Recycling dam		
	Salvage yard		
	Stockpile area		
	Storage facilities		
	Topsoil storage sites		
	Wash bay		
	Waste disposal sites		
	Waste rock dumps		
	Water dams		
	Weighbridge		
	Weighbridge control rooms		
	Workshop		

Fauna	Ablution facilities	•	Speed limits
	Access control point	•	Continuous backfilling of open excavations (where possible)
	Access road	•	Continuous rehabilitation of disturbed areas
	Chemical toilets	•	Snares & traps removed and destroyed
	Diesel tank (re-fuelling point)	•	Low angle escape ramp in excavations
	Electricity (gensets)	•	Maintenance of firebreaks
	Excavations		
	Haul roads		
	Laboratory		
	Offices		
	Processing plant		
	Recycling dam		
	Salvage yard		
	Stockpile area		
	Storage facilities		
	Topsoil storage sites		
	Wash bay		
	Waste disposal sites		
	Waste rock dumps		
	Water dams		
	Weighbridge		
	Weighbridge control rooms		
	Workshop		

Flora	Ablution facilities	•	Backfilling of open excavations
	Access control point	•	Rehabilitation of disturbed areas
	Access road	•	Re-seeding where necessary
	Chemical toilets	•	Maintenance of firebreaks
	Diesel tank (re-fuelling point)	•	No trees will be felled for firewood
	Electricity (gensets)	•	Relevant permits will be obtained before removal of protected tree and/or plant species
	Excavations		
	Haul roads		
	Laboratory		
	Offices		
	Processing plant		
	Recycling dam		
	Salvage yard		
	Stockpile area		
	Storage facilities		
	Topsoil storage sites		
	Wash bay		
	Waste disposal sites		
	Waste rock dumps		
	Water dams		
	Weighbridge		
	Weighbridge control rooms		
	Workshop		

Groundwater	Ablution facilities	•	Immediate removal of any hydrocarbon spill
	Access control point	•	No possibility for acid mine drainage
	Access road	•	Maintenance & re-fuelling in dedicated areas
	Chemical toilets	•	Drip pans
	Diesel tank (re-fuelling point)	•	Storage of hydrocarbons in dedicated areas
	Electricity (gensets)	•	Monitoring of groundwater abstraction
	Excavations	•	Monitoring of groundwater quality
	Haul roads		
	Laboratory		
	Offices		
	Processing plant		
	Recycling dam		
	Salvage yard		
	Stockpile area		
	Storage facilities		
	Topsoil storage sites		
	Wash bay		
	Waste disposal sites		
	Waste rock dumps		
	Water dams		
	Weighbridge		
	Weighbridge control rooms		
	Workshop		

Noise	Ablution facilities	•	Hearing protection
	Access control point	•	Non-metallic washers to join infrastructure
	Access road	•	Working hours
	Chemical toilets	•	Controlled drilling & blasting operations
	Diesel tank (re-fuelling point)	•	Use of PU screen panels on screen plant.
	Electricity (gensets)	•	Use of good quality and good condition silencer in equipment and vehicles
	Excavations	•	Acoustic enclosure for generators.
	Haul roads		
	Laboratory		
	Offices		
	Processing plant		
	Recycling dam		
	Salvage yard		
	Stockpile area		
	Storage facilities		
	Topsoil storage sites		
	Wash bay		
	Waste disposal sites		
	Waste rock dumps		
	Water dams		
	Weighbridge		
	Weighbridge control rooms		
	Workshop		

Soil	Ablution facilities	•	Continuous rehabilitation of disturbed areas
	Access control point	•	Continuous rehabilitation of open excavation areas (where possible)
	Access road	•	Ripping of compacted areas
	Chemical toilets	•	Replacing layer of topsoil over backfilled areas
	Diesel tank (re-fuelling point)	•	Maintenance & re-fuelling in dedicated areas
	Electricity (gensets)	•	Drip pans
	Excavations	•	Storage of hydrocarbons in dedicated areas
	Haul roads		
	Laboratory		
	Offices		
	Processing plant		
	Recycling dam		
	Salvage yard		
	Stockpile area		
	Storage facilities		
	Topsoil storage sites		
	Wash bay		
	Waste disposal sites		
	Waste rock dumps		
	Water dams		
	Weighbridge		
	Weighbridge control rooms		
	Workshop		

Surface water	Ablution facilities	•	Storm water control
	Access control point	•	Immediate removal of any hydrocarbon spill
	Access road	•	Maintenance & re-fuelling in dedicated areas
	Chemical toilets	•	Drip pans
	Diesel tank (re-fuelling point)	•	Storage of hydrocarbons in dedicated areas
	Electricity (gensets)		
	Excavations		
	Haul roads		
	Laboratory		
	Offices		
	Processing plant		
	Recycling dam		
	Salvage yard		
	Stockpile area		
	Storage facilities		
	Topsoil storage sites		
	Wash bay		
	Waste disposal sites		
	Waste rock dumps		
	Water dams		
	Weighbridge		
	Weighbridge control rooms		
	Workshop		

Topography	Ablution facilities	•	Backfilling of open excavations with dumps (after resource has been mined out in a specific area)
	Access control point	•	Replacing layer of topsoil over backfilled areas
	Access road	•	Sloping of topsoil dumps, stockpiles and waste rock dump
	Chemical toilets		
	Diesel tank (re-fuelling point)		
	Electricity (gensets)		
	Excavations		
	Haul roads		
	Laboratory		
	Offices		
	Processing plant		
	Recycling dam		
	Salvage yard		
	Stockpile area		
	Storage facilities		
	Topsoil storage sites		
	Wash bay		
	Waste disposal sites		
	Waste rock dumps		
	Water dams		
	Weighbridge		
	Weighbridge control rooms		
	Workshop		

Visual	Ablution facilities	•	Backfilling of open excavations with dumps (after resource has been mined out in a specific area)
	Access control point	•	Replacing layer of topsoil over backfilled areas
	Access road	•	Sloping of topsoil dumps, stockpiles and waste rock dump
	Chemical toilets	•	Removal of all mine infrastructure upon mine closure
	Diesel tank (re-fuelling point)		
	Electricity (gensets)		
	Excavations		
	Haul roads		
	Laboratory		
	Offices		
	Processing plant		
	Recycling dam		
	Salvage yard		
	Stockpile area		
	Storage facilities		
	Topsoil storage sites		
	Wash bay		
	Waste disposal sites		
	Waste rock dumps		
	Water dams		
	Weighbridge		
	Weighbridge control rooms		
	Workshop		

REGULATION 50(f)

11. Identification of interested and affected parties. (Including the community, and list as identified according to the scoping report guideline and identified in the scoping report.)

The following parties were identified as interested and/or affected parties:

Description	Owner	Description
Remaining Extent of Portion 2 (Lemoenpoort) of the Farm Kapstewel 436	Maremane Communal Property Association	Surface owner
Remaining Extent of Portion 3 (a ptn of ptn 2) of the Farm Kapstewel 436	Samancor Manganese (Pty) Ltd	Surface owner
Remaining Extent of the Farm Paling 434	Associated Manganese Mines of South Africa Ltd	Surrounding owner
Remaining Extent of the Farm Driehoeks Pan 435	Maremane Communal Property Association	Surrounding owner
Remaining Extent of the Farm Kapstewel 436	Schalk Willem & Marieta Victor	Surrounding owner
Portion 1 of the Farm Kapstewel 436	Transnet Ltd	Surrounding owner
Portion 4 (Vaalkop) of the Farm Kapstewel 436	Golden Falls Prop (Pty) Ltd	Surrounding owner
Portion 5 (a ptn of ptn 3) of the Farm Kapstewel 436	Kapstevel Boerdery CC	Surrounding owner
Portion 9 (a ptn of ptn 2) of the Farm Kapstewel 436	Transnet Ltd	Surrounding owner
Farm Klipfontein 437	Provincial Government of the Northern Cape	Surrounding owner
Remaining Extent of the Farm 445	Maremane Communal Property Association	Surrounding owner
Portion 1 (Doornpan) of the Farm 445	Maremane Communal Property Association	Surrounding owner
Portion 3 of the Farm 445	Provincial Government of the Northern Cape	Surrounding owner
Sedibeng Iron Ore (Pty) Ltd	-	Adjacent Mining Operation
Tsantsabane Local Municipality	-	Local Municipality
Siyanda District Municipality	-	District Municipality
ESKOM	-	Parastatal
SANRAL	-	National Agency
Transnet	-	Parastatal
Department of Agriculture and Land Reform	-	Government Department
Department of Environmental Affairs	-	Government Department
Department of Public Works		Government Department
Department of Rural Development and Land Reform	-	Government Department
Department of Water Affairs	-	Government Department
Tshiping Water User Association		Water User Association

12. The details of the engagement process. (Including the community, and list as identified according to the scoping report guideline and identified in the scoping report and any further consultation since the compilation of the scoping report.)

The above parties were notified per registered post of the mining right application of Autumn Skies.

- **Maremane Communal Property Association:**
  To date no written response has been received from the notification letter.

- **Samancor Manganese (Pty) Ltd:**
  To date no written response has been received from the notification letter.

- **Associated Manganese Mines of South Africa Ltd:**
  To date no written response has been received from the notification letter.

- **Mr. S.W. Victor:**
  To date no written response has been received from the notification letter.

- **Transnet:**
  To date no written response has been received from the notification letter.

- **Golden Falls Prop (Pty) Ltd:**
  To date no written response has been received from the notification letter.

- **Kapstevel Boerdery CC:**
  To date no written response has been received from the notification letter.

- **Provincial Government of the Northern Cape:**
  To date no written response has been received from the notification letter.

- **Sedibeng Iron Ore:**
  To date no written response has been received from the notification letter.

- **Tsantsabane Local Municipality:**
  To date no written response has been received from the notification letter.

- **Siyanda District Municipality:**
  To date no written response has been received from the notification letter.

- **Eskom:**
  To date no written response has been received from the notification letter.

- **SANRAL:**
  To date no written response has been received from the notification letter.

- **Department of Agriculture and Land Reform:**
  To date no written response has been received from the notification letter.

- **Department of Environmental Affairs:**
  To date no written response has been received from the notification letter.

- **Department of Public Works:**
  To date no written response has been received from the notification letter.

- **Department of Rural Development and Land Reform:**
  To date no written response has been received from the notification letter.

- **Department of Water Affairs:**
  To date no written response has been received from the notification letter.

- **Tshiping Water User Association:**
  To date no written response has been received from the notification letter.

Two advertisements were placed, one in the Volksblad (Regional newspaper) and one in the Diamond Fields Advertiser (local newspaper).

Two written responses were received from these advertisements.

- **Mr. C. Victor:**
  Mr. Victor's major concern is the fact that Autumn Skies Trading 128 CC, of which company he is a member, is the holder of the current prospecting right on the same properties for the same minerals. Mr. Victor requested to know the shareholding of Autumn Skies Resources and Logistics (Pty) Ltd.

- **Mr. G. Gool:**
  Mr. Gool's Attorney, Mr. Gary Botha of Gary Botha Attorneys, responded on behalf of Mr. Gool. Mr. Gool's major concern is the fact that Autumn Skies Trading 128 CC, of which company he is a member, is the holder of the current prospecting right on the same properties for the same minerals. Mr. Gool requested to know the shareholding of Autumn Skies Resources and Logistics (Pty) Ltd. Mr. Gool objected to the mining right application for the above reason. Find attached hereto under Annexure 'N' the objection.

Interested and affected parties were notified of the public meeting by means of notification letters, advertisements (one in Volksblad and one in the Ghaap), telephone calls, sms' and e-mails. The following identified interested and affected parties were invited:

Party	Notification method
Mr. S.W. Victor	Notification letter / newspaper advert / telephone call
Maremane CPA	Notification letter / newspaper advert / telephone call / sms
Samancor	Notification letter / newspaper advert
Kapstevel Boerdery	Notification letter / newspaper advert / telephone call
Golden Falls	Notification letter / newspaper advert
ASSMANG	Notification letter / newspaper advert
Transnet	Notification letter / newspaper advert
Provincial Government of NC	Notification letter / newspaper advert
Eskom	Notification letter / newspaper advert
National Government of SA	Notification letter / newspaper advert
Sedibeng Iron Ore	Notification letter / newspaper advert
Tsantsabane Municipality	Notification letter / newspaper advert
Siyanda Municipality	Notification letter / newspaper advert
Dept. Agriculture	Notification letter / newspaper advert
Deprt. Environmental Affairs	Notification letter / newspaper advert
Dept. Public Works	Notification letter / newspaper advert

Dept. Rural Development	**Notification letter / newspaper advert**
Dept. Water Affairs	**Notification letter / newspaper advert**
Tshiping WUA	**Notification letter / newspaper advert / telephone call / e-mail**
Mr. C. Victor	**Newspaper advert / telephone call / e-mail**
Mr. G. Gool	**Newspaper advert / telephone call / e-mail**

The following responses were received:

- **Mr. S.W. Victor:**
  Mr. Victor confirmed telephonically that he will attend the public meeting. Mr. Victor stated that his attorney will be present.

- **Transnet:**
  Transnet responded per e-mail. This e-mail stated that Transnet does not have an objection against the planned mining activities.

- **Tshiping WUA:**
  Mr. Viljoen of Tshiping WUA confirmed telephonically that he would attend the public meeting.

- **Mr. C. Victor:**
  Mr. Victor confirmed telephonically that he would attend the public meeting. Mr. Victor stated that his attorney will be present.

  Mr. Victor's attorney, Mr. Graeme Falck of Falck Attorneys, submitted an objection to the mining right application. Find attached hereto under Annexure 'N' the objection.

- **Mr. G. Gool:**
  Mr. Gool stated telephonically that he had sold his membership share in Autumn Skies Trading 128 CC and that he would withdraw the objection that he lodged as he no longer has an interest in the mining right application. Mr. Gool further stated that he would not attend the public meeting.

- **Mr. John Shone:**
  Mr. Shone, a representative of Admiral Mining (Pty) Ltd, attorney, Mr. David Marcusse of Marcusse Law Firm, submitted an objection to the mining right application. Find attached hereto under Annexure 'N' the objection.

  Mr. Shone confirmed telephonically that he would attend the meeting.

- **Mr. Edward Smit:**
  Mr. Smit, a representative of Media24 confirmed per e-mail that he would attend the meeting.

- **Mr. Johan Kotze:**
  Mr. Kotze telephonically requested a locality map of the application area. The map was sent to him per e-mail whereafter Mr. Kotze confirmed telephonically that he has no concerns with regards to the mining right application.

The public meeting was held on 11 March 2014 at the Ammossal Recreational Club, Beeshoek. The following interested and/or affected parties were present:

a. **Mr. John Shone – Admiral Mining (Pty) Ltd**
b. **Mr. Tom Botha – Self employed**
c. **Mr. Chris Victor – Autumn Skies Trading 128 CC**
d. **Mr. Christo Nipis – Autumn Skies Trading 128 CC**
e. **Mr. Arthur Shone – Lime-Chem**
f. **Mr. Tau Koaho – Sedibeng Iron Ore (Pty) Ltd**
g. **Ms. Annalie Victor – representative of the surface owner – Remaining Extent of the Farm Kapstewel 436**
h. **Ms. Alida Franchohanna – Katz Building Contractors**
i. **Mr. Abram Oliphant – Never Give Up (to be corrected)**
j. **Mr. Tshwaro Motlhabedi – Maremane CPA**
k. **Mr. Daniel Matlhare – Maremane CPA**
l. **Mr. Alister Davids – Tsantsabane Black Business Chamber**
m. **Mr. Boitumelo Matlhape – Tsantsabane Black Business Chamber (to be corrected)**
n. **Mr. Vincent Pule – Pule Pula Gen**
o. **Mr. A.J. Viljoen – Tshiping Water User Association**
p. **Ms. Sharifa Ferris – Autumn Skies Resources & Logistics (Pty) Ltd**
q. **Mr. B.H. Erasmus – Self employed Environmental Consultant**
r. **Ms. Tanja Jooste – M&S Consulting**

Response sheets were provided at the meeting for all attendees to complete. Only seven attendees completed and submitted the response forms. The minutes of the meeting, attendance register as well as response sheets received are attached as Annexure 'K'.

Please take note the above description has been captured until 12 March 2014. Any further responses received will be forwarded to the DMR.

13. **Details regarding the manner in which the issues raised were addressed.** (Include all the items to be included in the list referred to in the concomitant section of the guideline posted on the official website of the Department.)

A draft EIA/EMPR document will be sent to all registered interested and / or affected parties for comment. All of the responses, comments, concerns and objections will be taken into account during the finalization of the EIA/EMPR Report.

REGULATION 50(g)

14. The appropriate mitigatory measures for each significant impact of the proposed mining operation.

- **Air quality**

Aspect	Management action	Time frame
Operation of vehicles and machinery on roads	Spray all roads within the mining area with water	Every day
Speed of vehicles operating in the mining area	Vehicle speed limit of 30km/h will be enforced throughout the operation. Strict operational procedures will be implemented.	Throughout Life of Mine
Clearing of areas from mining operation	Re-vegetate if necessary all worked out areas and spread top soil evenly across the area.	In areas where it is possible to re-seed it will be done within the following rainy season after an area has been worked out and backfilled. Seeding takes place after one wet and one dry season if natural succession of vegetation is unacceptably slow.
Premature closure within 5 years (cessation of mining operation)	All mining areas disturbed will be rehabilitated as per programme. Dust monitoring will be undertaken in compliance with applicable legislation.	Notification to relevant authorities within 180 days of determining that the mine is likely to cease
Drilling & Blasting activities	Drilling & Blasting activities must be conducted by an authorised person and the dust levels monitored and mitigated accordingly.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Fauna**

Aspect	Management action	Time frame
Potential killing and hunting of wild animals	A speed limit of 30km/h will be enforced on the mining areas. No killing or hunting (snares) will take place within this area. Management will monitor this through regular inspections. Snares found will be removed, investigated and destroyed. The excavations in the area will be backfilled if and when possible and made safe to prevent accidents. Operational areas will be low angled as a preventative measure.	Throughout lifespan.
Aspect	**Management action**	**Time frame**
Potential loss of species	Management will consult with the regulator in regard to this aspect. Corrective measures will be implemented.	Throughout lifespan.

- **Flora**

Aspect	Management action	Time frame
Potential felling of trees for firewood in application area	No tree will be felled for firewood in the application area. Management will monitor this through regular inspections. This aspect will be strictly enforced.	Throughout lifespan. Monitoring will be enforced in this aspect.
Continuous backfilling operation in the mining areas	A seeding process will take place, when necessary, which will be indigenous to the area if natural succession of vegetation is unacceptably slow in backfill areas where re-seeding can be done.	Within 1 wet and 1 dry season of the backfilling operation. Monitoring will be enforced in this aspect.
Potential removal of protected tree species	No protected tree species will be removed in the area except if the necessary permissions from DAFF have been obtained.	Throughout lifespan. Monitoring will be enforced in this aspect.
Control of invasive plant species	Control measures will take place actively as per requirements of the applicable legislation. An initial eradication programme will be implemented and a follow up maintenance.	Throughout lifespan. Monitoring will be enforced in this aspect.
Potential fires	Control measures will take place actively as per requirements of the applicable legislation. Fire controls and extinguishers will be put in place. Firebreaks will be established around the mine site.	Throughout lifespan. Monitoring will be enforced in this aspect.
Signage in the areas	Signs will be placed and clearly displayed. Control measures will take place actively as per requirements of the applicable legislation.	Throughout lifespan. Monitoring will be enforced in this aspect.
Vegetation management and establishment in areas where re-seeding can take place.	Monitoring programmes will be put in place and results maintained. In cases of poor establishment the soil will be analysed and corrective actions taken accordingly.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Ground Water**

Aspect	Management action	Time frame
Vehicle maintenance	A dedicated area will be developed for this operation and pollution prevention measures implemented. Drip trays will be used actively as a control measure. Hydraulic fuels spills will be managed and spills cleaned up using spill management kits. The contaminated material will be managed as hazardous material. Lubricants will be drained before maintenance operation in a dedicated area. Only emergency repairs will be conducted outside this area.	Throughout lifespan. Monitoring will be enforced in this aspect.
Storage of equipment – oil and grease containing	A dedicated area has been developed for this operation and pollution prevention measures implemented. Drip trays will be used actively as a control measure.	Throughout lifespan. Monitoring will be enforced in this aspect.
Storage of petrochemicals	A dedicated area has been developed for this operation and pollution prevention measures such as bunding and drip trays will be used actively as a control measures. The requirements of SANS 10089-1:2003 will be implemented and	Throughout lifespan. Monitoring will be enforced in this aspect

	adhered to at all times. Areas outside the bunding will be lined with an impervious lining to prevent infiltration. An approved bacterial hydrocarbon digestion agent will cover the area.	
Re-fuelling operations for vehicles	A dedicated area will be developed for this operation and pollution prevention measures implemented. Drip trays will be used actively.	Throughout lifespan. Monitoring will be enforced in this aspect.
Monitoring of groundwater levels	Monitoring boreholes will be monitored (water level and quality) on a quarterly basis. Maximum recovery of water from the tailings dam. Make-up water will be as low as possible. Wastage of water will be eliminated.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Noise**

Aspect	Management action	Time frame
Processing plant	Hearing protection will be provided to employees. Appropriate non-metallic washers/insulation will be used with any joining apparatus to join screens such as corrugated iron to other structures and to each other. Such screens (if not mobile units) will be maintained in a fixed position. Should any residential infrastructure be created on the property, a buffer zone of 1.5km will be placed around these areas, within which buffer zone no plant will be established.	Life of mine
Vehicle noise	All vehicles fitted with reverse gear alarms will be appropriately calibrated or adjusted. Every vehicle will be equipped with a silencer on its exhaust system.	Life of mine
Drilling & Blasting activities	Drilling & Blasting noise will be monitored if any complaints from the public are received.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Soils**

Aspect	Management action	Time frame
Creation of excavations	Available topsoil will be removed from site, where available, prior to excavating at the site and the topsoil will be conserved in a scientific manner to save its properties until it is re-used during rehabilitation.	Throughout lifespan. Monitoring will be enforced in this aspect.
Potential spillage of hydrocarbons on soil	Oil, grease and hydraulic fluid spills will be cleaned up immediately by removing the spillage, together with the contaminated soil and disposing of it at a licensed facility.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Surface water**

Aspect	Management action	Time frame
Acquiring applicable	Autumn Skies will apply for an Integrated Water	Throughout lifespan

water registration/ authorisation from DWA	Use License. Autumn Skies will also apply for permission from Sedibeng Water User Association to utilize water from the Vaal Gamagara Pipeline.	
Vehicle maintenance	A dedicated area has been developed for this operation and pollution prevention measures implemented. Drip trays will be used actively.	Throughout lifespan
Re-fuelling operations for vehicles	A dedicated area has been developed for this operation and pollution prevention measures implemented. Drip trays will be used actively when re-fuelling of equipment in excavations by the Service Trucks.	Throughout lifespan
Deposition of mine residue	A dedicated area will be used for deposition.	Deposition of waste on a permanent waste rock dump will take place. Continuous backfilling, when possible, will take place throughout the operation
Potential river diversions	No river diversions will take place.	n/a

- **Topography**

Aspect	Management action	Time frame
Disturbance of topography (open excavations)	The excavations in the area will be backfilled if and when possible.	Throughout lifespan. Monitoring will be enforced in this aspect.
Disturbance of topography (mine deposition sites)	The waste rock dump will be permanent. The tailings dumps will be backfilled into mined out excavations. Topsoil from storage sites will be spread over the rehabilitated areas.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Visual**

Aspect	Management action	Time frame
Mine deposition sites	The waste rock dump will be permanent. The tailings dumps will be backfilled into mined out excavations. Topsoil from storage sites will be spread over the rehabilitated areas.	Throughout life of mine
Processing plant	The processing plant will be removed upon closure.	Mine closure
Permanent structures	All permanent features will be kept neat and well presented.	Throughout life of mine.

14.1. Adequacy of predictive methods utilised.

The abovementioned mitigatory measures are tried and tested over many years in the iron ore and manganese ore mining industry. Autumn Skies will monitor the potential impacts throughout the life of mine, and mitigate any deviations detected. This has been proven to be very effective in existing operations.

14.2. Adequacy of underlying assumptions.

Each of the specialists who had an input into this document and/or it's annexures have extensive knowledge in their field and it is hereby assumed that the above assumptions are adequate.

14.3. Uncertainties in the information provided.

Each of the specialists who had an input into this document and/or it's annexures have extensive knowledge in their field and it is hereby assumed that the information provided is in the region of 85% - 95% correct.

REGULATION 50(h)

15. Arrangements for monitoring and management of environmental impacts.

15.1. List of identified impacts which will require monitoring programmes.

- **Air quality**
- **Flora**
- **Groundwater**
- **Noise**

15.2. Functional requirements for the said monitoring programmes.

- **Establish the context**
  - **Strategic**
  - **Organisational**
  - **Impact management**
- **Identify impact**
- **Analyse impact**
  - **Consequences**
  - **Likelihood**
- **Assess and prioritise impacts**
  - **Acceptability**
  - **Priorities for treatment**
- **Mitigate impact**
  - **Eliminate**
  - **Reduce**
  - **Transfer**
  - **Manage**
- **Monitor and review**

15.3. Roles and responsibilities for the execution of the monitoring programmes.

The General Manager and Environmental Control Officer will at all times be responsible for the execution of the monitoring programmes and the reporting thereof.

15.4. Time frames for monitoring and reporting.

The monitoring of the air quality, flora, groundwater and noise and will be conducted on a monthly basis and the results compiled into a report, which reports will be forwarded to the DMR annually.

REGULATION 50(i)

16. Technical and supporting information. (Include all the items to be included in the list referred to in the concomitant section of the guideline posted on the official website of the Department.)

Attached hereto find:

- **Annexure A – Dust fall-out monitoring report – Kapstewel Mine, compiled by Dustwatch CC.**
- **Annexure B – Heritage Impact Assessment Report compiled by G&A Heritage.**
- **Annexure C – Specialist study on the amphibians, reptiles, birds, mammals and flora of four portions of the Farm Kapstewel 436, Northern Cape Province, compiled by Mr. B.H. Erasmus.**
- **Annexure D – Geological Report: Review of the Geology and Manganese / Iron Ore potential on Kapstewel, compiled by Bomato Trading.**
- **Annexure E – Geological Report: Geological Overview of the Mines at Manganore and Kapstewel in the Postmasburg Manganese Field compiled by Geo-Rock International.**
- **Annexure F – Geological Report: Report on the Kapstewel Iron-Manganese Project, Hay District, Northern Cape Province, South Africa, compiled by Millennium Geoconsulting.**
- **Annexure G – Kapstewel Basic Groundwater Assessment, Northern Cape Province, compiled by SRK Consulting.**
- **Annexure H – Baseline Noise Assessment of Kapstewel, compiled by M&S Consulting.**
- **Annexure I – Social Impact Assessment for the Kapstewel Mining Right Application, compiled by M&S Consulting.**
- **Annexure J - Baseline Soil Survey of the proposed Kapsewel Mine, compiled by Mr. G.P. Stemmet.**
- **Annexure K – SA Report of the Economic Impact of Autumn Skies Resources & Logistics (Pty) Ltd, compiled by MC Viviers Professional Accountants.**

SECTION 2
ENVIRONMENTAL MANAGEMENT PROGRAMME

REGULATION 51 (a)

1. Description of environmental objectives and specific goals for mine closure.

1.1. Environmental aspects that describe the pre-mining environment.

The following baseline environmental aspects were contained in Section 1 of the EIA and can be listed as follows:

- **Air quality**
- **Fauna**
- **Flora**
- **Groundwater**
- **Land uses**
- **Noise**
- **Socio-economic**
- **Soil**
- **Surface water**
- **Sensitive landscapes**
- **Topography**
- **Visual**

1.2. Measures required to contain or remedy any causes of pollution or degradation or the migration of pollutants, both for closure of the mine and post-closure.

Environmental Aspect	Closure	Post-closure
Air quality	**Final rehabilitation of all areas disturbed by mining and re-vegetation thereof**	**No further mitigation required**
Fauna	**Final rehabilitation of all areas disturbed by mining and re-vegetation thereof**	**No further mitigation required**
Flora	• **Final rehabilitation of all areas disturbed by mining** • **Re-vegetation** • **Spreading of topsoil cover** • **Ripping of compacted areas**	**Monitoring of re-vegetated areas for a period of 2-3 years after closure.**
Groundwater	• **Final rehabilitation** • **Removing of all mining equipment**	**No further mitigation required**
Land uses	• **Final rehabilitation of all areas disturbed by**	**Monitoring of re-vegetated areas for a period of 2-3**

	mining • **Re-vegetation** • **Spreading of topsoil cover** • **Ripping of compacted areas**	**years after closure.**
Noise	**Removal of all mining related infrastructure and equipment**	**No further mitigation required**
Socio-Economic	• **Retrenchment** • **The economic income potential of the mine ceases at closure**	**Skills obtained from mining operation can be used for alternative employment opportunities**
Soil	• **Final rehabilitation of all areas disturbed by mining** • **Re-vegetation** • **Spreading of topsoil cover** • **Ripping of compacted areas** • **Removal of all mining equipment**	**Erosion monitoring for a period of 2-3 years after closure.**
Surface Water	• **Final rehabilitation of areas disturbed by mining activities** • **Erosion control measures**	**Erosion monitoring for a period of 2-3 years after closure.**
Sensitive landscapes **- Burial grounds and grave sites** **- Archaeological sites** **- Buildings and structures older than 60 years and walling sites**	**N/A - No mining allowed within these areas. Buffer zones will be enforced.**	**No further mitigation required**
Sensitive landscapes **- Drainage lines**	**N/A – No mining will be allowed within 20m from any drainage line.**	**No further mitigation required.**
Topography	**Rehabilitation of open excavations (by backfilling), mine deposition sites (by backfilling of temporary dumps and sloping of permanent dump) and final rehabilitation of all other**	**No further mitigation required**

	areas disturbed by mining.	
Visual	**Removal of all mining related plant and infrastructure**	**No further mitigation required**

2. **Description of environmental objectives and specific goals for the management of identified environmental impacts emanating from the proposed mining operation.** (As informed by the information provided in the EIA in terms of Regulation 50(h).)

2.1. List of identified impacts which will require monitoring programmes.

- **Air quality**
- **Flora**
- **Groundwater**
- **Noise**

2.2. List of the source activities that are the cause of the impacts which require to be managed.

The following is relevant towards the construction, operational & decommissioning phases:

Potential impact on:	Description	
Air quality	**Impacts on the mine site:**	
	•	Nuisance dust on roads will be created by the mining equipment hauling material between the open excavation areas, the plant area, stockpile areas and waste dump areas on the mine site.
	•	Nuisance dust will be created by the mining equipment during excavation activities.
	•	Nuisance dust will be created by the drilling and blasting activities.
	•	Vehicle and equipment emissions in workshop, stores and office areas.
	•	Nuisance dust will be created at the modular processing plant.
	•	Nuisance dust will be created in the residue deposition site, topsoil storage site, stockpile and waste dump areas when the material is dumped.
	•	Nuisance dust will be created when new infrastructure is established.
	Impacts from area surrounding the mine site:	
	•	Nuisance dust from the roads transecting the property and surrounding area.
	•	Smoke from domestic open fires in the residing communities.
	•	Dust created by surrounding prospecting and mining activities.
	•	Emmissions from vehicles utilizing the road network in the area immediately surrounding the mine.

Potential impact on:	Description
Fauna	**Impacts on the mine site:**
	● Where new haulage roads will be created the natural habitat of the animals will be disturbed and/or destroyed.
	● Road kills.
	● Where the firebreak will be created the natural habitat of the animals will be disturbed and/or destroyed.
	● Where new excavations will be created the natural habitat of the animals will be disturbed and/or destroyed.
	● The natural habitat of the animals will be disturbed and/or destroyed where buildings and infrastructure will be built / established.
	● The natural habitat of the animals will be disturbed and/or destroyed where the modular processing plant will be established.
	● The natural habitat of the animals will be disturbed and/or destroyed where the residue deposition site, topsoil storage site, stockpile and waste dump areas will be established.
	● The natural habitat of the animals will be disturbed and/or destroyed where new infrastructure will be established.
	Impacts from area surrounding the mine site:
	● Hunting & Snaring of animals
	● Hunting on surrounding farms
	● Disturbance and / or destruction of the natural habitat of the animals from surrounding prospecting / mining operations.

Potential impact on:	Description
Flora	**Impacts on the mine site:**
	● Where new haulage roads will be created the vegetation will be disturbed and/or destroyed.
	● Where the firebreak will be created the vegetation will be disturbed and/or destroyed.
	● Where new excavations will be created the vegetation will be disturbed and/or destroyed.
	● The vegetation cover will be disturbed and / or destroyed in the areas where the buildings and infrastructure will be built / established.
	● The vegetation cover will be disturbed and / or destroyed where the modular processing plant will be established.
	● The vegetation cover will be disturbed and / or destroyed where the residue deposition site, topsoil storage site, stockpile and waste dump areas will be established.
	● The vegetation cover will be disturbed and / or destroyed where new infrastructure will be established.
	Impacts from area surrounding the mine site:
	● Grazing of livestock.
	● Runaway veld fires.
	● Disturbance and / or destruction of the natural vegetation cover from surrounding prospecting / mining operations.

Potential impact on:	Description
Groundwater	**Impacts on the mine site:**
	● Possible hydrocarbon spills from mine vehicles.
	● Abstraction of groundwater for the use in the processing and beneficiation (jigging) of ore.
	● The utilization of groundwater for the cleaning of vehicles and equipment.
	Impacts from area surrounding the mine site:
	● Surrounding surface owners extracts groundwater for domestic and livestock farming uses.
	● Abstraction of groundwater by surrounding prospecting / mining operations.

Potential impact on:	Description
Noise	**Impacts on the mine site:**
	● Noise from the mining equipment on the haulage roads.
	● Noise from the mining equipment and vehicles during excavations activities.
	● Noise from drilling and blasting activities.
	● A high noise impact is expected inthe immediate viciinity of the modular processing plant.
	Impacts from area surrounding the mine site:
	● Noise created by traffic on surrounding road network.
	● Noise created by surrounding agricultural equipment / activities.
	● Noise created by surrounding prospecting / mining activities.

Potential impact on:	Description
Soil	**Impacts on the mine site:**
	● Compaction of soil is expected on the roads that are to be used by the mining operation.
	● Possible hydrocarbon spills from mine vehicles.
	● Removal and disturbance of soil structure by excavation activities.
	● Disturbance of soil structure where buildings and infrastructure will be built / established.
	● Disturbance of soil structure where the residue deposition sites, topsoil storage sites, stockpile and waste dump sites will be created.
	● Disturbance of soil structure where new infrastructure will be established.
	Impacts from area surrounding the mine site:
	● Disturbance of soil structure by surrounding prospecting / mining operations.
	● Potential hydrocarboun spills from vehicles and equipment of surrounding prospecting / mining operations.

Potential impact on:	Description
Surface water	**Impacts on the mine site:**
	• If roads are not properly maintained, water erosion after thunder storms can occur.
	• Possible contamination of surface water by hydrocarbon spills during a rain event.
	• Collection of water in open excavations during and after thunderstorms.
	• Water from the Vaal Gamagara Pipeline will potentially be used for the processing and beneficiation of ore.
	• Water from the Vaal Gamagara Pipeline will potentially be used for the cleaning of vehicles and equipment at the wash bay.
	Impacts from area surrounding the mine site:
	• Using of water from the Vaal gamagara Pipeline for processing, beneficiation and domestic purposes by the surrounding prospecting / mining operations.
	• Potential hydrocarboun spills from vehicles and equipment of surrounding prospecting / mining operations.

Potential impact on:	Description
Topography	**Impacts on the mine site:**
	• Changing of natural slopes will take place. The hill areas will be completely mined out, altering the topography permanently.
	• A permanent waste rock dump will be created on site, altering the topography.
	Impacts from area surrounding the mine site:
	• Changing of natural slopes by surrounding prospecting / mining operations.

Potential impact on:	Description
Visual	**Impacts on the mine site:**
	• The haulage roads will be visible to some extent from the immediate surroundings.
	• Changing of natural aesthetic view of environment could take place from mining activities and relating infrastructure.
	• Breaking of natural skyline.
	Impacts from area surrounding the mine site:
	• Changing of natural aesthetic view of the environment could take place from surrounding prospecting and mining activities.

2.3. Management activities which, where applicable, will be conducted daily, weekly, monthly, quarterly, annually or periodically as the case may be in order to control any action, activity or process which causes pollution or environmental degradation.

- **<u>Air quality management actions:</u>**
  - **All roads within the study area used by mining machinery and –vehicles will be sprayed with water on a daily basis to ensure that dust is adequately suppressed.**
  - **The speed of vehicles used within the mining area will be strictly controlled (30km/h) to avoid excessive dust or the excessive deterioration of the roads being used.**

- **All cleared, disturbed or exposed areas will be re-vegetated as soon as practically possible to prevent the formation of additional sources of dust.**
- **Monthly reports on fall-out and nuisance dust monitoring will be conducted as required by legislation. The results of this study will be compiled into monthly reports and forwarded to the Principle Inspector of Mine Health and Safety, Department of Mineral Resources, Kimberley.**
- **If it is determined that the mine, having regard to its known reserves, is likely to cease mining operations within a period of thirty years, Management will promptly notify the Minister of Environmental Affairs and Tourism in writing of (a) the likely cessation of the mining operation and (b) of the plans that are in place or in contemplation for (i) the rehabilitation of the area where the mining operations were conducted after mining operations have stopped; and (ii) the prevention of pollution of the atmosphere by dust after the operations have stopped, as is required by Section 33 of the National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004).**
- **Controlled drilling and blasting activities by an authorised person preferably on non-windy days.**
- **Firebreaks will be established to avoid uncontrolled veldt fires, which could pollute the air.**

- **<u>Rehabilitation and Flora management actions:</u>**
  - **Backfilling of open excavations by returning of mine deposition dumps, when possible, and returning topsoil from storage sites.**
  - **No trees or shrubs will be felled or damaged for the purpose of obtaining firewood.**
  - **All backfilled excavation areas, where applicable and possible, will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the mining operation if the natural succession of vegetation is unacceptably slow.**
  - **If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow in areas where it was possible to re-seed, the soil will be analysed and any deleterious effects on the soil arising from the mining operation will be corrected. The area will then be seeded with a seed mix.**
  - **Seeded or newly vegetated areas will be protected against grazing- and browsing animals for a period of two-three years after seeding if necessary.**
  - **No tree species protected in terms of Section 12 of the National Forests Act, 1998 (Act No 84 of 1998) as amended will be cut, disturbed, damaged or destroyed without a license from the Department of Water Affairs. Its products will furthermore not be possessed, collected, removed,**

transported, exported, donated, purchased or sold by the applicant or any of the applicant's employees, except under a license granted by the aforementioned Department.

- **Invasive or exotic plant species will be controlled in rehabilitated areas. This will be done according to the requirements of Section 15A, 15B and 15E of the Conservation of Agricultural Resources Act, 1983 (Act No.43 of 1983).**
- **Fires will only be allowed in facilities or equipment specifically constructed for this purpose.**
- **The following signs, all of which will conform to the requirements set by SANS 1186-1:2003 (SABS 1186-1:2003) will be clearly displayed in the vicinity of the fuel and diesel storage receptacles: a) Danger; b) No Smoking and; c) No Fire or Open Lights.**
- **A fire extinguisher in a weatherproof casing will be installed in close proximity to fuel and diesel storage receptacles.**
- **Firebreaks will be established to avoid uncontrolled veldt fires, which could damage / destruct the vegetation cover.**

- **<u>Ground Water management actions:</u>**
  - **Vehicle- and equipment maintenance will only be allowed within the maintenance area. Only emergency breakdowns will be allowed in other areas.**
  - **The following procedure will be followed if a vehicle or piece of equipment would break down inside a mining excavation and outside of the maintenance area. Drip pans will be placed at all points where diesel, oil or hydraulic fluid may drip and in so doing contaminate the soil.**
  - **All efforts will be made to move the broken down vehicle or piece of equipment to the maintenance area.**
  - **If the vehicle/piece of equipment cannot be moved, the broken part will firstly be drained of all fluid. The part will then be removed and taken to the maintenance area.**
  - **No repairs will be allowed outside the maintenance area except for emergencies.**
  - **Equipment used as part of the proposed operation will be adequately maintained so as to ensure that oil, diesel, grease or hydraulic fluid does not leak during operation.**
  - **Fuel and other petrochemicals will be stored in steel receptacles that comply with SANS 10089-1:2003 (SABS 089-1:2003) standards. An adequate bund wall, 150% of volume of the largest storage receptacle, will be provided for fuel and diesel areas to accommodate any spillage or overflow of these substances. The area inside the bund wall will be lined with an impervious lining to prevent infiltration of the fuel into the soil. The latter will be covered by an approved bacterial hydrocarbon digestion agent that is effective in water.**
  - **Proper sanitation facilities will be provided for employees.**

- **No person will pollute the workings with faeces or urine, misuse the facilities provided or inappropriately foul the surrounding environment with faeces or urine. Acceptable hygienic and aesthetic practices will be adhered to.**
- **Monthly monitoring of groundwater levels and groundwater quality of all monitoring boreholes.**

- **<u>Noise management actions:</u>**
  - **Should any residential infrastructure be created on the application area, a buffer zone of 1.5km will be placed around these areas, within which buffer zone no plant will be established.**
  - **Noise disturbance that may have an effect on communities, persons lawfully living in the vicinity, or neighbours, or animals, will be kept to a minimum within legal limits.**
  - **When the equivalent noise exposure, as defined in the South African Bureau of Standards code of Practice for the Measurement and Assessment of occupational Noise for Hearing Conservation Purposes, SABS 083 was amended, at or in any operation or works where persons may travel or work, exceeds 85 dB, the holder will take the necessary steps to reduce the noise below this level.**
  - **Hearing protection will be made available to all employees where attenuation cannot be implemented.**
  - **All vehicles in operation will be in good working order and adhere to the relevant noise requirements in terms of the Road Traffic Act, 1997 (Act No. 93 of 1997).**
  - **Every vehicle in operation will be equipped with a silencer on its exhaust system.**
  - **Where appropriate, lubricants will be applied to ensure that surfaces which interact during mechanical movement do not generate undesirable noise levels.**
  - **Safety measures which generate noise, such as the reverse gear alarms on large vehicles, will be appropriately calibrated or adjusted.**
  - **Controlled drilling and blasting activities by an authorised person. Noise levels will be monitored at regular intervals and the results compiled into monthly reports.**

2.4. The roles and responsibilities for the execution of the monitoring and management programmes.

The General Manager, Environmental Control Officer and Mine, Health and Safety Representative will be responsible for the execution of the monitoring and management programmes.

3. **Description of environmental objectives and specific goals for the socio-economic conditions as identified in the social and labour plan.** (Include all the items to be included in the list referred to in the concomitant section of the guideline posted on the official website of the Department.)

Receptor	Impact	Source	Action
Surrounding commercial farmers and employees; Adjacent prospecting &mining operations;	Air quality	Roads	• Speed limits
		Drilling & blasting	• Spraying of surfaces with water
		Excavations	• Re-vegetation
		Workshops	• Monthly monitoring and reporting
		Stores	• Backfilling and rehabilitation
		Processing plant	• Regular maintencae of all equipment and vehicles, which will include tyre pressure checks on trucks.
		Mine deposition sites	• Periodical emission check.
	Noise	Roads	• Non-metallic washers to join plant
		Drilling & Blasting	• Working hours (06h00 - 22h00)
		Excavations	• 1.5km Buffer zones around identified residential areas where no plant will be established
		Workshops	
		Stores	
		Processing plant	
		Temporary mine deposition sites	
	Access	Roads	• Spraying of road surfaces with water
			• Routine maintenance of roads.
	Security	Influx of criminal element	• Security access control

Objectives:

Environmental management of the Autumn Skies mining operation will place people and their needs at the forefront to its concern, and will endeavour to serve their physical, psychological, developmental, cultural and social interest equitably, as is required by Section 2(2) of the National Environmental Management Act, 1998 (Act No. 107 of 1998)

Specific goals:

- **To ensure that the mining operation will contribute towards the socio-economic development within the area where the mining operation will take place;**
- **To advance the social and economic welfare of the people in South Africa, especially those residing within the region of the mining area; and**
- **To contribute to the transformation of the mining industry of South Africa.**

4. Description of environmental objectives and specific goals for historical and cultural aspects.

4.1. Environmental objectives and goals in respect of historical and cultural aspects identified in specialist studies conducted during the EIA phase.

Heritage activity	Goal/objective	Action
Archaeological artefacts	Protect	A buffer zone of 20m around the centre point of each identified lithic site must be fenced before mining take place in that area.
Burial grounds and graves	Protect	A buffer zone of 10m around the outside perimeter of each identified burial ground/grave site must be fenced before mining take place in that area.
Buildings and structures older than sixty years	Protect	A buffer zone of 20m around the centre point of each identified walling site must be fenced before mining take place in that area.

Environmental objectives and specific goals regarding the historical and cultural aspects of the proposed mining operation:

Objectives:
Heritage resources have lasting value in their own right and provide evidence of the origins of the South African society. As these resources are valuable, finite, non-renewable and irreplaceable, buffer zones will be enforced around them strictly.

The disturbance of landscapes or sites that constitute the nation's cultural heritage will therefore be avoided.

Specific goals:
To protect cultural and historical resources from potential negative impacts (no mining).

REGULATION 51 (b) - Outline of the implementation programme

5. The appropriate technical and management options chosen for each environmental impact, socio-economic condition and historical and cultural aspect in each phase of the mining operation, as follows:

5.1. Actions, activities or processes, including any NEMA EIA Regulation listed activities, which cause pollution or environmental degradation. (Include all the items to be included in the list referred to in the concomitant section of the guideline posted on the official website of the Department.)

The following activities include those identified under NEMA Listing Notice 1 - No. R544, Activity 22 and NEMA Listing Notice 2 - No. R545, Activities 15 and 20.

Mining action/activity/process	Potential Impact	Construction	Operational	Closure
Ablution facilities	Air quality Fauna Flora Groundwater Noise Soil Surface water Topography Visual	x	x	x
Access control point		x	x	x
Access road		x	x	x
Chemical toilets		x	x	x
Diesel tank		x	x	x
Electricity (genset)		x	x	x
Excavations		x	x	x
Haul road		x	x	x
Laboratory		x	x	x
Offices		x	x	x
Processing plant		x	x	x
Recycling dam		x	x	x
Salvage yard		x	x	x
Stockpile area		x	x	x
Storage facilities		x	x	x
Topsoil storage site		x	x	x
Wash bay		x	x	x
Waste disposal sites		x	x	x
Waste rock dump		x	x	x
Water dam		x	x	x
Weighbridge & weighbridge control room		x	x	x
Workshop		x	x	x
Socio-Economic action/activity/process	**Potential Impact**	**Construction**	**Operational**	**Closure**
Capital expenditure	Monies spent in local economy	x	x	x
Payroll income		x	x	x
Operating expenditure & maintenance		x	x	x
Revenue		x	x	x
Employment		x	x	x
Employment of contractors		x	x	x
Provision of skills development		No impact	x	x
Opportunities for local SMME's		x	x	x

Community involvement		x	x	x
Poverty alleviation		x	x	x
Community health		x	x	x
Social & Labour Plan		x	x	x
Community Proximity Maremane – adjacent & surface owner	Air quality, noise, visual	x	x	x
Security Risk	Influx of criminal elements	x	x	x
Cultural action/activity/process	**Potential impact**	**Construction**	**Operational**	**Closure**
Collecting of medicinal plants	Flora	x	x	x
Collecting of firewood		x	x	x
Hunting & Snaring	Fauna	x	x	x
Heritage action/activity/process	**Potential impact**	**Construction**	**Operational**	**Closure**
Archaeological artefacts	N/A - NO MINING	No impact	No impact	No impact
Burial grounds and graves		No impact	No impact	No impact
Buildings and structures older than 60 years and walling sites		No impact	No impact	No impact

5.2. 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.)

Herewith management plans for the most significant potential environmental impacts:

- **Archaeology**

Management Actions:

- **No identified burial grounds or graves sites, lithic sites or walling sites of historic significance will be destroyed, damaged, altered, exhumed or removed from its original position without a license from the South African Heritage Resources Agency.**
- **No mining will be allowed as follows:**
  - **Archaeological artefacts (Lithic sites) - Any area, identified in G&A Heritage's recent study (Annexure B), containing archaeological artefacts must be protected. All identified areas containing archaeological artefacts have been logged and no mining will be conducted within 20m from their midpoint.**
  - **Burial grounds and graves - Any area, identified in G&A Heritage's recent study (Annexure B), containing burial grounds and graves must be protected. All identified burial sites and graves on the property have been logged, must be fenced, and no mining will be allowed within 10m of each identified site.**

- **Air quality**

  Management Actions:
  - **All roads within the study area used by mining machinery and –vehicles will be sprayed with water on a daily basis to ensure that dust is adequately suppressed.**
  - **The speed of vehicles used within the mining area will be strictly controlled (30km/h) to avoid excessive dust or the excessive deterioration of the roads being used.**
  - **All cleared, disturbed or exposed areas will be re-vegetated as soon as practically possible to prevent the formation of additional sources of dust.**
  - **Monthly reports on fall-out and nuisance dust monitoring will be conducted as required by legislation. The results of this study will be compiled into monthly reports and forwarded to the Principle Inspector of Mine Health and Safety, Department of Mineral Resources, Kimberley on an annual basis.**
  - **If it is determined that the mine, having regard to its known reserves, is likely to cease mining operations within a period of seventeen years, Management will promptly notify the Minister of Environmental Affairs and Tourism in writing of (a) the likely cessation of the mining operation and (b) of the plans that are in place or in contemplation for (i) the rehabilitation of the area where the mining operations were conducted after mining operations have stopped; and (ii) the prevention of pollution of the atmosphere by dust after the operations have stopped, as is required by Section 33 of the National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004).**
  - **Controlled blasting activities by an authorised person preferably on non-windy days.**
  - **Firebreaks will be established to avoid uncontrolled veldt fires, which could pollute the air.**

- **Fauna**

  Management actions:
  - **A speed limit will be enforced in the mining areas (30km/h).**
  - **No wild or domestic animals will deliberately be killed or disturbed within the boundaries of the study area or surrounds during or as part of the proposed mining operation.**
  - **Speed limits (30km/h) will be strictly enforced to avoid road kills.**
  - **No snares or traps will be set by the applicant or employees of the applicant for the purpose of killing or hurting any animal species. Any snares and/or traps found in the mining area will be removed and destroyed immediately.**

- **As soon as a specific excavation is completely worked out, it will be backfilled in part as and when it is possible and made safe to a level that prevents animals from falling into depressions.**
- **Operational excavations will have a low angle access ramp in order to provide an escape route for animals.**
- **All operational excavations will be inspected daily for signs of trapped animals. If a trapped animal is found, it will be helped to escape immediately.**
- **If species diversity does not reflect that of the surrounding non-mining areas after the closure of the operation, advice will be sought from the Northern Cape Nature Conservation Service.**
- **All recycling dams will have a bund wall to prevent overflow/spillages and will be fenced to prevent livestock entering the areas.**
- **Firebreaks will be established to avoid uncontrolled veldt fires, which could destruct / disturb the habitat of fauna.**

- **Natural flora**

Management Actions:

- **No trees or shrubs will be felled or damaged for the purpose of obtaining firewood.**
- **All backfilled excavation areas where applicable and possible will be seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the mining operation if the natural succession of vegetation is unacceptably slow.**
- **If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow in areas where it was possible to re-seed, the soil will be analysed and any deleterious effects on the soil arising from the mining operation will be corrected. The area will then be seeded with a seed mix.**
- **Seeded or newly vegetated areas will be protected against grazing- and browsing animals for a period of one year after seeding if necessary.**
- **No tree species protected in terms of Section 12 of the National Forests Act, 1998 (Act No 84 of 1998) as amended will be cut, disturbed, damaged or destroyed without a license from the Department of Water Affairs. Its products will furthermore not be possessed, collected, removed, transported, exported, donated, purchased or sold by the applicant or any of the applicant's employees, except under a license granted by the aforementioned department.**
- **Invasive or exotic plant species will be controlled in rehabilitated areas. This will be done according to the requirements of Section 15A, 15B and 15E of the Conservation of Agricultural Resources Act, 1983 (Act No.43 of 1983).**
- **Fires will only be allowed in facilities or equipment specifically constructed for this purpose.**
- **The following signs, all of which will conform to the requirements set by SANS 1186-1:2003 (SABS 1186-1:2003) will be clearly displayed in the**

vicinity of the fuel and diesel storage receptacles: a) Danger; b) No Smoking and; c) No Fire or Open Lights.

- **A fire extinguisher in a weatherproof casing will be installed in close proximity to fuel and diesel storage receptacles.**
- **All recycling dams will have a bund wall to prevent overflow/spillages and will be fenced to prevent livestock entering the areas.**
- **Firebreaks will be established to avoid uncontrolled veldt fires, which could destruct / disturb the natural vegetation.**

- **Ground Water**

Management Actions:

- **Vehicle- and equipment maintenance will only be allowed within the maintenance area. Only emergency breakdowns will be allowed in other areas.**
- **The following procedure will be followed if a vehicle or piece of equipment would break down inside a mining excavation and outside of the maintenance area. Drip pans will be placed at all points where diesel, oil or hydraulic fluid may drip and in so doing contaminate the soil.**
- **All efforts will be made to move the broken down vehicle or piece of equipment to the maintenance area.**
- **If the vehicle/piece of equipment cannot be moved, the broken part will firstly be drained of all fluid. The part will then be removed and taken to the maintenance area.**
- **No repairs will be allowed outside the maintenance area except for emergencies.**
- **Equipment used as part of the proposed operation will be adequately maintained so as to ensure that oil, diesel, grease or hydraulic fluid does not leak during operation.**
- **Fuel and other petrochemicals will be stored in steel receptacles that comply with SANS 10089-1:2003 (SABS 089-1:2003) standards. An adequate bund wall, 150% of volume of the largest storage receptacle, will be provided for fuel and diesel areas to accommodate any spillage or overflow of these substances. The area inside the bund wall will be lined with an impervious lining to prevent infiltration of the fuel into the soil. The latter will be covered by an approved bacterial hydrocarbon digestion agent that is effective in water.**
- **Proper sanitation facilities will be provided for employees.**
- **No person will pollute the workings with faeces or urine, misuse the facilities provided or inappropriately foul the surrounding environment with faeces or urine. Acceptable hygienic and aesthetic practices will be adhered to.**
- **Monthly monitoring of groundwater levels and groundwater quality of all monitoring boreholes.**
- **Maximum recovery of water from the tailings dam for re-use to reduce the requirement of make-up water.**

- **Noise**

  Management Actions:
  - **Should any residential infrastructure be created on the property, a buffer zone of 1.5km will be placed around these areas, within which buffer zone no plant will be established.**
  - **Noise disturbance that may have an effect on persons lawfully living in the vicinity, or neighbours, or animals, will be kept to a minimum within legal limits.**
  - **When the equivalent noise exposure, as defined in the South African Bureau of Standards code of Practice for the Measurement and Assessment of occupational Noise for Hearing Conservation Purposes, SABS 083 was amended, at or in any operation or works where persons may travel or work, exceeds 85 dB, the holder will take the necessary steps to reduce the noise below this level.**
  - **Hearing protection will be made available to all employees where attenuation cannot be implemented.**
  - **All vehicles in operation will be in good working order and adhere to the relevant noise requirements in terms of the Road Traffic Act, 1997 (Act No. 93 of 1997).**
  - **Every vehicle in operation will be equipped with a silencer on its exhaust system.**
  - **Where appropriate, lubricants will be applied to ensure that surfaces which interact during mechanical movement do not generate undesirable noise levels.**
  - **Safety measures which generate noise, such as the reverse gear alarms on large vehicles, will be appropriately calibrated or adjusted.**
  - **Controlled blasting activities by an authorised person. Noise levels will be monitored at regular intervals and the results compiled into monthly reports.**

- **Soils**

  Management Actions:
  - **Topsoil / growth medium (defined for the purpose of this document as the first 300 mm of loose or weathered material covering the surface of the earth) will be removed, where possible, from all areas where physical disturbance of the surface will occur.**
  - **The original topsoil removed will be replaced after the area has been worked out when available or any other available soft material will be replaced when there is not enough topsoil where this is practically possible.**
  - **Removed topsoil/growth medium will be stored temporarily on a dedicated topsoil stockpile on the high ground side of the mining area, next to the open excavation.**
  - **The maximum height of each topsoil stockpile will be 2m.**

- **Stored topsoil will be adequately protected from being eroded or blown away.**
- **Topsoil will be kept separate from overburden and will not be used for the construction or maintenance of roads.**
- **The chemical and physical properties of stored topsoil to be used for rehabilitation purposes will not be altered by introducing foreign material, gravel, rock, rubble or mine residue to such soil.**
- **When necessary portions of backfilled excavations will be covered with a final layer of topsoil and seeded with a vegetation seed mix adapted to reflect the local indigenous flora that was present prior to the mining operation.**
- **Compacted areas will be ripped to a depth of 300 mm, where possible, during the continuous rehabilitation, decommissioning- and closure phase of the operation in order to establish a growth medium for plants.**
- **If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the soil will be analysed and any deleterious effects on the soil arising from the mining operation will be corrected.**
- **Seeded, backfilled areas will be protected against soil erosion by covering such areas with the branches of invasive plant species, if necessary.**
- **Erosion control measures will be implemented in backfilled areas where found to be necessary.**
- **Rehabilitated areas will be inspected for signs of erosion at regular monthly intervals, as well as after every storm event. If signs of erosion are noted, remedial action will be taken immediately.**
- **Care will be taken to prevent the spillage of hydrocarbon fluids onto soils or its escape or migration into surrounding soils.**
- **Oil, grease and hydraulic fluid spills will be cleaned up immediately by removing the spillage, together with the contaminated soil and disposing of it at a licensed facility.**
- **Vehicle movement will be confined to established roads for as far as it practical in order to prevent the compaction of soils.**

- **Surface water**

  Management actions:

  <u>Industrial waste disposal sites:</u>
  The disposal of oil, grease and related industrial waste from the mining and processing equipment is transported to the stores area where it is stored in steel containers supplied by an oil recycling contractor. All oil and grease will be removed on a regular basis from the mine by a registered approved contractor. The oil and grease are trapped in oil and grease traps before handled on the impermeable area at the mine to prevent ground and surface water pollution.

Domestic waste disposal sites:

All refuse and waste from the different mine sections will be handled according to NEMA Guidelines. Recycling of waste is encouraged in all the consumer sections of the mine, where recyclable materials will be collected before dumping them in the domestic waste disposal area.

All non-biodegradable (recyclable) refuse such as glass bottles, plastic bags and metal scrap will be stored in a separate container in the industrial waste area and collected on a regular basis and disposed of at a recognized disposal facility.

Mine residue disposition sites:

- **Erosion and storm water control measures at and around the temporary and permanent mine deposition sites.**
- **All recycling dams will have a bund wall to prevent overflow/spillages.**

Natural drainage lines:

All natural drainage lines on the property have been logged. No mining will be allowed within 20m from any natural drainage line.

Management Actions:

- **The necessary applications will be prepared for the Department of Water Affairs for all actions to be performed which requires authorisation (e.g. registering existing lawful use, storage and recycling dams).**
- **Vehicle repairs will only take place within the maintenance area for vehicles. Repairs within open mining excavations will be limited to emergency break downs with drip trays.**
- **Re-fuelling will only take place in the re-fuelling area. If this is found not be practical, drip trays will be used whenever re-fuelling takes place outside of this area.**
- **During rehabilitation the applicant will endeavour to reconstruct flow patterns in such a way that surface water flow is in accordance with the natural drainage of the area as far as practically possible.**

- **Topography**

Management actions:

- **All open excavations will be backfilled if and when possible and made safe so as to reflect as far as possible the pre-mining topography of the area.**
- **The topography of the hills has been, and will be in future, permanently altered by the mining operation. It will none-the-less be aesthetically pleasing and will comply with the relevant legislation.**
- **The permanent waste rock dump will attain a maximum height of 120m. The waste rock dump will have a bench width of 45m and 20m lifts resulting in an overall angle of 16°. This will result in a face angle of 18° with a 10m road on every bench after being reshaped.**

- **All temporary features, e.g. plant, containers and stockpiling, will be removed and handled in the prescribed manner during rehabilitation.**

- **Visual**

  Management Actions:
  - **Open excavations will be subject to progressive backfilling and made safe (including the re-establishment of vegetation).**
  - **Permanent structures or features that are part of the proposed mining operation will be kept neat and well presented.**
  - **Waste material of any description will be removed from the mining area upon completion of the operation and be disposed of at a recognized landfill facility.**
  - **All the plant and equipment will be removed from the site upon completion of the mining operation.**
  - **The topography of the hills has been, and will be in future, permanently altered by the mining operation. It will none-the-less be aesthetically pleasing and will comply with the relevant legislation.**
  - **The permanent waste rock dump will attain a maximum height of 120m. The waste rock dump will have a bench width of 45m and 20m lifts resulting in an overall angle of 16°. This will result in a face angle of 18° with a 10m road on every bench after being reshaped.**

- **Security**

  Management Actions:
  - **Security access control with attendance register for non-employees.**

6. Action plans to achieve the objectives and specific goals contemplated in Regulation 50(a).

6.1. Time schedules of deadlines for each action to be undertaken to implement each technical or management option chosen. (Include all the items to be included in the list referred to in the concomitant section of the guideline posted on the official website of the Department.)

- **Air quality**

Aspect	Management action	Time frame
Operation of vehicles and machinery on roads	Spray all roads within the mining area with water	Every day
Speed of vehicles operating in the mining area	Vehicle speed limit of 30km/h will be enforced throughout the operation. Strict operational procedures will be implemented.	Throughout Life of Mine
Clearing of areas from mining operation	Re-vegetate if necessary all worked out areas and spread top soil evenly across the area.	In areas where it is possible to re-seed it will be done within the following rainy season after an area has

		been worked out and backfilled. Seeding takes place after one wet and one dry season if natural succession of vegetation is unacceptably slow.
Premature closure within 5 years (cessation of mining operation)	All mining areas disturbed will be rehabilitated as per programme. Dust monitoring will be undertaken in compliance with applicable legislation.	Notification to relevant authorities within 180 days of determining that the mine is likely to cease
Blasting activities	Blasting activities must be conducted by an authorised person and the dust levels monitored and mitigated accordingly.	Throughout lifespan. Monitoring will be enforced in this aspect.
Clearing of vegetation	Firebreaks will be established to avoid uncontrolled veldt fires, which could pollute the air.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Fauna**

Aspect	Management action	Time frame
Potential killing and hunting of wild animals	A speed limit of 30km/h will be enforced on the mining areas. No killing or hunting (snares) will take place within this area. Management will monitor this through regular inspections. Snares found will be removed, investigated and destroyed. The excavations in the area will be backfilled if and when possible and made safe to prevent accidents. Operational areas will be low angled as a preventative measure.	Throughout lifespan.
Aspect	**Management action**	**Time frame**
Potential loss of species	Management will consult with the regulator in regard to this aspect. Corrective measures will be implemented.	Throughout lifespan.
Potential loss of species	Firebreaks will be established to avoid uncontrolled veldt fires, which could disturb / destruct the habitat of fauna.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Flora**

Aspect	Management action	Time frame
Potential felling of trees for firewood in application area	No tree will be felled for firewood in the application area. Management will monitor this through regular inspections. This aspect will be strictly enforced.	Throughout lifespan. Monitoring will be enforced in this aspect.
Continuous backfilling operation in the mining areas	A seeding process will take place, when necessary, which will be indigenous to the area if natural succession of vegetation is unacceptably slow in backfill areas where re-seeding can be done.	Within 1 wet and 1 dry season of the backfilling operation. Monitoring will be enforced in this aspect.

Potential removal of protected tree species	No protected tree species will be removed in the area except if the necessary permissions from DAFF have been obtained.	Throughout lifespan. Monitoring will be enforced in this aspect.
Control of invasive plant species	Control measures will take place actively as per requirements of the applicable legislation. An initial eradication programme will be implemented and a follow up maintenance.	Throughout lifespan. Monitoring will be enforced in this aspect.
Potential fires	Control measures will take place actively as per requirements of the applicable legislation. Fire controls and extinguishers will be put in place. Firebreaks will be established around the mine site.	Throughout lifespan. Monitoring will be enforced in this aspect.
Signage in the areas	Signs will be placed and clearly displayed. Control measures will take place actively as per requirements of the applicable legislation.	Throughout lifespan. Monitoring will be enforced in this aspect.
Vegetation management and establishment in areas where re-seeding can take place.	Monitoring programmes will be put in place and results maintained. In cases of poor establishment the soil will be analysed and corrective actions taken accordingly.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Ground Water**

Aspect	Management action	Time frame
Vehicle maintenance	A dedicated area will be developed for this operation and pollution prevention measures implemented. Drip trays will be used actively as a control measure. Hydraulic fuels spills will be managed and spills cleaned up using spill management kits. The contaminated material will be managed as hazardous material. Lubricants will be drained before maintenance operation in a dedicated area. Only emergency repairs will be conducted outside this area.	Throughout lifespan. Monitoring will be enforced in this aspect.
Storage of equipment – oil and grease containing	A dedicated area has been developed for this operation and pollution prevention measures implemented. Drip trays will be used actively as a control measure.	Throughout lifespan. Monitoring will be enforced in this aspect.
Storage of petrochemicals	A dedicated area has been developed for this operation and pollution prevention measures such as bunding and drip trays will be used actively as a control measures. The requirements of SANS 10089-1:2003 will be implemented and adhered to at all times. Areas outside the bunding will	Throughout lifespan. Monitoring will be enforced in this aspect

	be lined with an impervious lining to prevent infiltration. An approved bacterial hydrocarbon digestion agent will cover the area.	
Re-fuelling operations for vehicles	A dedicated area will be developed for this operation and pollution prevention measures implemented. Drip trays will be used actively.	Throughout lifespan. Monitoring will be enforced in this aspect.
Monitoring of groundwater levels	Monitoring boreholes will be monitored (water level and quality) on a quarterly basis.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Noise**

Aspect	Management action	Time frame
Processing plant	Hearing protection will be provided to employees. Appropriate non-metallic washers/insulation will be used with any joining apparatus to join screens such as corrugated iron to other structures and to each other. Such screens (if not mobile units) will be maintained in a fixed position. Should any residential infrastructure be created on the property, a buffer zone of 1.5km will be placed around these areas, within which buffer zone no plant will be established.	Life of mine
Vehicle noise	All vehicles fitted with reverse gear alarms will be appropriately calibrated or adjusted. Every vehicle will be equipped with a silencer on its exhaust system.	Life of mine
Blasting activities	Blasting noise will be monitored if any complaints from the public are received.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Soils**

Aspect	Management action	Time frame
Creation of excavations	Available topsoil will be removed from site, where available, prior to excavating at the site.	Throughout lifespan. Monitoring will be enforced in this aspect.
Potential spillage of hydrocarbons on soil	Oil, grease and hydraulic fluid spills will be cleaned up immediately by removing the spillage, together with the contaminated soil and disposing of it at a licensed facility.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Surface water**

Aspect	Management action	Time frame
Acquiring applicable water registration/ authorisation from DWA	Autumn Skies will apply for an Integrated Water Use License. Autumn Skies will also apply for permission from Sedibeng WUA to utilize water from the Vaal Gamagara Pipeline.	Throughout lifespan
Vehicle maintenance	A dedicated area has been developed for this operation and pollution prevention measures implemented. Drip trays will be used actively.	Throughout lifespan
Re-fuelling operations for vehicles	A dedicated area has been developed for this operation and pollution prevention measures implemented. Drip trays will be used actively when re-fuelling of equipment in excavations by the Service Trucks.	Throughout lifespan
Deposition of mine residue	A dedicated area will be used for deposition.	Deposition of waste on a permanent waste rock dump will take place. Continuous backfilling, when possible, will take place throughout the operation
Potential river diversions	No river diversions will take place.	n/a
Storm water control	Erosion and storm water control measures will be implemented.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Topography**

Aspect	Management action	Time frame
Disturbance of topography (open excavations)	The excavations in the area will be backfilled if and when possible.	Throughout lifespan. Monitoring will be enforced in this aspect.
Disturbance of topography (mine deposition sites)	The waste rock dump will be permanent. The tailings dumps will be backfilled into mined out excavations. Topsoil from storage sites will be spread over the rehabilitated areas.	Throughout lifespan. Monitoring will be enforced in this aspect.

- **Visual**

Aspect	Management action	Time frame
Mine deposition sites	The waste rock dump will be permanent. The tailings dumps will be backfilled into mined out excavations. Topsoil from storage sites will be spread over the rehabilitated areas.	Throughout life of mine
Processing plant	The processing plant will be removed upon closure.	Mine closure
Permanent structures	All permanent features will be kept neat and well presented.	Throughout life of mine.

Complaints received will be managed actively within 60 days upon receipt. This process will take place throughout the mining operation and will be registered for corrective actions. The results will be forwarded to the Principle Inspector of Mine Health and Safety of the DMR and records maintained throughout the lifespan of the mine.

7. **Procedures for environmentally related emergencies and remediation.** (An environmental emergency plan that includes all the items referred to in the concomitant section of the guideline posted on the official website of the Department.)

- **A suitable first aid kit will be available on site at all times, and at least one person will be available on site at all times that is trained in first aid.**
- **The first aid kit will contain all treatments identified in the various Material Safety Data Sheets for all hazardous materials to be used on site.**
- **Emergency response plans will be prepared, be available on site, and be known to all personnel as well as to the emergency facilities in the region. At a minimum, the following hazards will be addressed in the emergency response plans:**

<u>Oil, grease or hydraulic fluid spills</u>

Care will be taken to prevent the spillage of hydrocarbons onto soils or its escape or migration into surrounding soils.

In the event of an oil, grease and hydraulic fluid spill, such spill will be cleaned up immediately by removing the spillage, together with the contaminated soil, and disposing of it at a licensed facility, as is required by Regulation 70(5) of the Mineral and Petroleum Resources Development Act, 2002 (Act N. 28 of 2002). This will be done according to the following spill response plan:

Contamination and spills:

- **Suitable spill kits will be available on site, and there will be at least one person on site at all times (with appropriate authority) who is trained in its use.**
- **Delivery trucks should have dedicated vehicle spill kits in case of leaking diesel and oil when not on mine premises.**
- **All hydrocarbon contaminated soil should be collected on a weekly basis and placed in suitable non-leak containers.**
- **Should no containers be available contaminated soil must not be stockpiled on bare ground but on a suitable cement pad and/or impervious materials such as metal sheet, polyethylene sheet etc.**
- **Contaminated soil can be bio-remediated by a recognized company; once the soil is cleaned it can be re-used on the mine site for rehabilitation purposes.**
- **A dedicated bio-remediation pad must be used.**

- **Spillages will not be disposed of in the environment, in ditches, in drains or in water courses.**
- **The relevant local authorities will be notified immediately if a significant spillage cannot be contained.**
- **As is required by Section 30(3) of the National Environment Management Act (Act No. 107 of 1998 (hereinafter "NEMA), an incident as is described in Section 30(a) (including the nature of the incident; any risks posed by the products released by the incident; and any steps that would be taken in order to avoid or minimise the effects of the incident to public health and the environment) will be reported through the most effective means reasonably available to the following parties:**
  - **The Director-General;**
  - **The South African Police Services;**
  - **The local fire prevention service;**
  - **The relevant provincial head of department or municipality; and**
  - **All persons whose health may be affected by the incident.**

- **As is required by Section 30(5) of NEMA, an incident as described in Section 30(a) of the Act will furthermore be reported to the Director-General, provincial head of department of the Department of Tourism, Environment and Conservation, and the relevant local municipality via an emergency incident report.**

<u>Fire</u>

The following fire prevention and –control plan will be implemented:

- **The following three safety signs, all of which will conform to the requirement of SANS 1186-1:2003 (SABS 1186-1:2003), will be prominently displayed on fuel storage receptacles: a) No smoking; b) Danger; and c) No fire or open lights.**
- **The above mentioned signs will be well maintained.**
- **All employees will be adequately trained in fire prevention and handling.**
- **No fires may be lit on site. Any fires which occur shall be reported to the site manager immediately. Smoking is not permitted in those areas where it is a fire hazard. Such areas include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to make liable the rapid spread of an initial flame.**
- **Rubbish and anything combustible will be kept away from fuel storage receptacles.**
- **Grasses growing in the vicinity of fuel storage receptacles will be kept down.**
- **An Evacuation Marshall and Fire Team will be appointed, who is responsible for ensuring immediate and appropriate actions in the event of a fire, and shall ensure that employees are aware of the procedure to be followed. The Fire Officer is to be approved by the Engineer prior to appointment.**
- **Fire fighting equipment will be available on site at all times. This shall include at least rubber beaters, for working near buildings and vegetated areas, and at least one fire extinguisher of the appropriate type when welding or other high**

temperature activities are undertaken. The fire extinguisher will be inspected according to regulatory requirements.

- **A fire extinguisher in a weather proof casing will be installed in close proximity to fuel storage receptacles.**
- **All employees will be briefed on the correct use of a fire extinguisher prior the commencement of the proposed operation.**
- **Runoff from fire control or dilution will be prevented from entering streams or sewers.**
- **Major fires or explosions as defined by Section 30(a) of the NEMA, will be reported through the most effective means reasonably available to the following parties:**
  - **The Director-General;**
  - **The South African Police Services;**
  - **The local fire prevention service;**
  - **The relevant provincial head of department or municipality; and**
  - **All persons whose health may be affected by the incident.**
  - **Such a report will include the nature of the incident, any risks posed by the incident to public health, safety and property; the toxicity of substances or by-products released by the incident; and any steps that would be taken in order to avoid or minimise the effects of the incident to public health and the environment.**
- **As is required by Section 30(5) of NEMA, an incident as described in Section 30(a) of the said Act will furthermore be reported to the Director-General, provincial head of the Department of Tourism, Environment and Conservation, and the relevant local municipality via an emergency incident report.**
- **Fires will only be allowed in facilities or equipment specially constructed for this purpose.**
- **Firebreaks will be established around the mine site to avoid uncontrolled veld fires.**

<u>Other Emergency Incidents</u>

Any other emergency incidents will be handled as is prescribed by NEMA, as amended.

8. Planned monitoring and environmental management programme performance assessment.

8.1. Description of planned monitoring of the aspects of the environment which may be impacted upon. (Include all the items referred to in the concomitant section of the guideline posted on the official website of the Department.)

Air quality
Flora
Groundwater
Noise

- **Air quality**

Manner:

A single bucket monitoring system has been implemented to measure the air quality levels and to ensure that Autumn Skies' mining operation adheres to the Management Standards as set out in the Atmospheric Pollution Prevention Act (Act 45 of 1965), the Regulations to the Mineral and Petroleum Resources Development Act (Act 28 of 2002) and the Mine, Health and Safety Act (Act 29 of 1996) during their mining operations.

Locality:

The dust monitoring points are located at the following coordinates:

	Coordinates	
	East	South
DM1	23°4'46.743"	28°09'08.827"
DM2	23°6'13.992"	28°07'47.249"
DM3	23°5'56.978"	28°09'17.116"
DM4	23°5'46.072"	28°10'50.909"

Standards:

Applicable Legislation:

- **The National Environment Management: Air Quality Act, 2004 (Act No.39 of 2004) (All Sections of this Act, except Section 21,22,36 to 49, 51 (1)(e), 51(1)(f), 51(3), 60 and 61 have taken effect on 11 September 2005);**
- **The Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965) (This Act will be repealed by the national Environment management: Air Quality Act, 2004 (Act No. 39 of 2004) ;**
- **Regulations to the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) – Regulation 64.**
- **The Mining Health and Safety Act, 1996 (Act No. 29 of 1996) as amended; and**
- **The Occupational Diseases in Mines and Works Act, 1973 (Act No 78 of 1973).**

Frequency:
Monthly fall-out dust sampling and quarterly reporting.

Analyses to be conducted:
Measured weights of fall-out dust will be compared to baseline values and measured against applicable Legislation. Should any dust sample deviate from normal dust levels, mitigation will be enforced. Air quality records will be kept for life-of-mine.

Standard procedures - non-compliance:

1. **Identify source/s**
2. **Identify mitigation**
3. **Mitigate**
4. **Monitor & review**

- **Flora**

Manner
A registered mine surveyor will conduct monthly measurements of open excavations, mine deposition sites, rehabilitated areas and any other infrastructure developments. The measurements will be plotted on plans and summarized in monthly production report.

Location
Active mining and rehabilitated mine areas.

Standards:
The Mine Health and Safety Act, 1996 (Act No. 39 of 1996) as amended;

Frequency:
Monthly surveying.

Analyses to be conducted:
Measurements contained in the monthly report received from the mine surveyor will be compared to the planned mine progression and rehabilitation plans. Records will be kept for life-of-mine.

Standard procedures - non-compliance:
Increase tempo of rehabilitation activities to align with acceptable standards and rehabilitation guarantee.

- **Groundwater**

Manner:
The groundwater levels and groundwater quality will be monitored monthly at the monitoring boreholes of the Kapstewel operation.

Locality:
The monitoring points where the groundwater quality and levels will be monitored must still be drilled.

Standards:
Applicable Legislation:
- **National Water Act, 1998 (Act No. 36 of 1998); and**
- **Government Notice No. 704 of 1991.**

Frequency:
Monthly groundwater quality and groundwater level monitoring and quarterly reporting.

Analyses to be conducted:
The groundwater quality and groundwater levels will be measured monthly. Should any reading / analyses at the monitoring points, deviate from expected levels/quality, mitigation will be enforced. Records will be kept for life-of-mine.

Standard procedures - non-compliance:

1. **Identify source/s**
2. **Identify mitigation**
3. **Mitigate**
4. **Monitor & review**

- **Noise**

Manner

Quarterly noise readings will be taken at each of the below-mentioned monitoring points. Each noise sample will be taken over a three hour period, with eighteen readings, each of which consisting of continuous 10 minute averages.

Field measurements will be carried out using:
Rion NL-62 - Sound level meter Class 1

Locality

Monitoring Point	Position	
NS 1	23°6’13.307”E	28°7’47.962”S
NS 2	23°5'56.199"E	28°9'14.373"S
NS 3	23°5'37.745"E	28°10'56.705"S

Standards

- **The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) – Section 7;**
- **The Mine Health and Safety Act, 1996 (Act No. 39 of 1996) as amended;**
- **The Road Traffic Act, 1997 (Act No. 93 of 1997);**
- **The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) – Section 34; and**
- **Regulations of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) – Regulation 66.**
- **SANS 10103 (Edition 6) - The measurement and rating of environmental noise with respect to annoyance and to speech communication.**
- **SANS 10328 (Edition 3) - Methods for environmental noise impact assessment**

Frequency:
Quarterly ambient noise sampling and monitoring during blasting activities.

Analyses to be conducted:
Ambient noise levels will be compared to baseline values and measured against applicable Legislation. Should any noise reading at the monitoring points, deviate from expected levels, mitigation will be enforced. Noise level records will be kept for life-of-mine.

Standard procedures - non-compliance:

1. **Identify source/s**
2. **Identify mitigation**
3. **Mitigate**
4. **Monitor & review**

8.2. Provide a description as to how the implementation of the action plans contemplated in regulation 51 (b) (ii) as described will be monitored as described in paragraph 6 of the EMP will be monitored.

In compliance with Regulation 55 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), the applicant will, in order to ensure the continued appropriateness and adequacy of this Environmental Management Programme, conduct monitoring and performance assessment thereof an a continued basis. Performance assessment reports will be submitted to the Minister in this regard.

Every performance assessment report will be in the format provided in the guidelines issued by the Department of Minerals and Energy from time to time and will include, as a minimum, the following information:

- **The period applicable to the performance assessment;**
- **The scope of the assessment;**
- **The procedure used for the assessment;**
- **The interpreted information gained from monitoring the approved Environmental Management Programme;**
- **The evaluation criteria used during the assessment;**
- **The results of the assessment; and**
- **Recommendations on how and when non-compliances and deficiencies will be rectified.**

8.3. Frequency of proposed reporting for assessment purposes.

The monitoring of the air quality, flora, groundwater and noise will be conducted on a monthly basis and the results compiled into a report, which reports will be forwarded to the DMR quarterly.

Performance Assessment Reports will be conducted every two years as is prescribed by the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

9. Financial provision in relation to the execution of the environmental management programme:-

9.1. Plan showing the location and aerial extent of the aforesaid main mining actions, activities, or processes anticipated. (Include all the items referred to in the concomitant section of the guideline posted on the official website of the Department.)

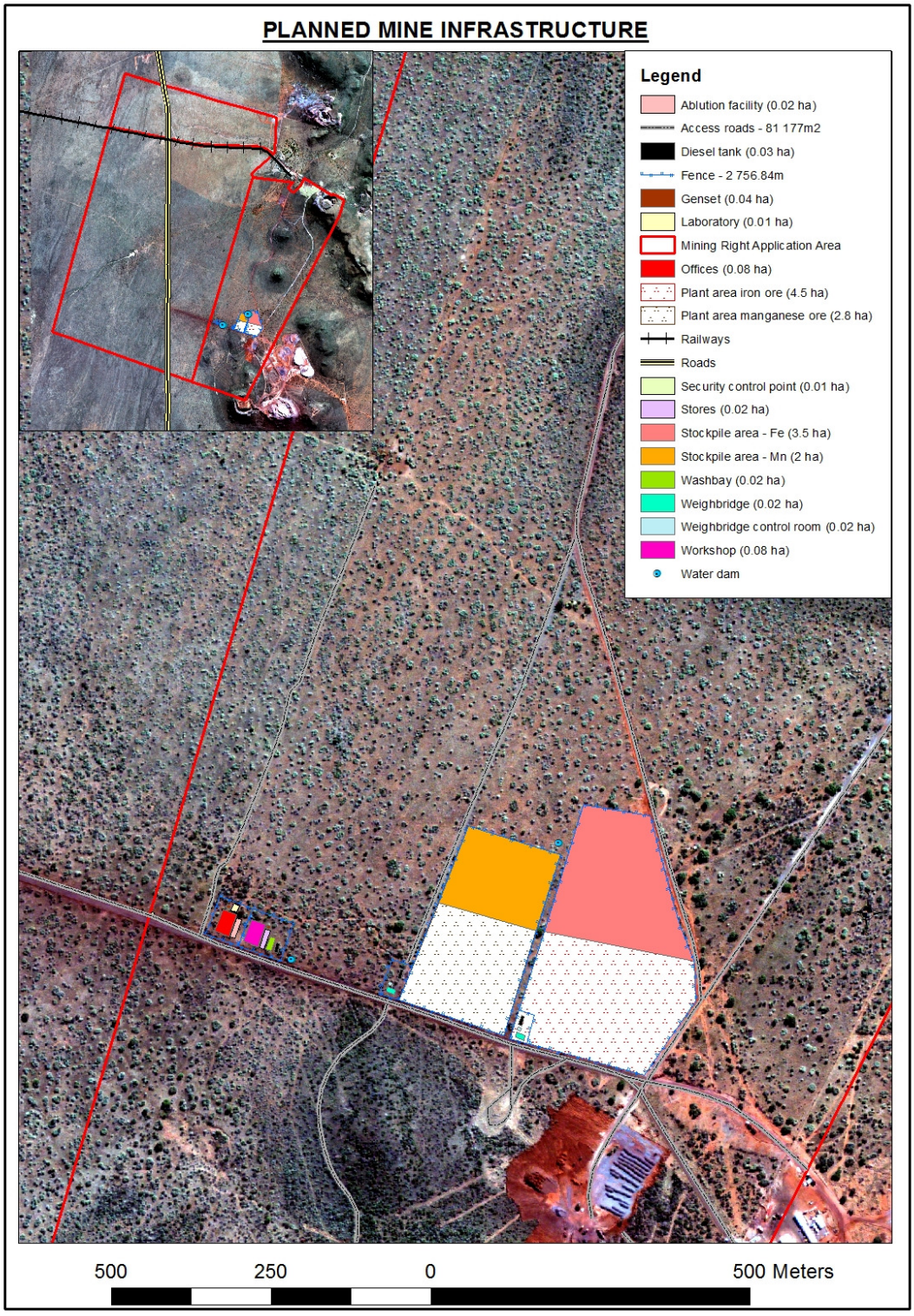

Figure 29 - Detailed mine infrastructure map

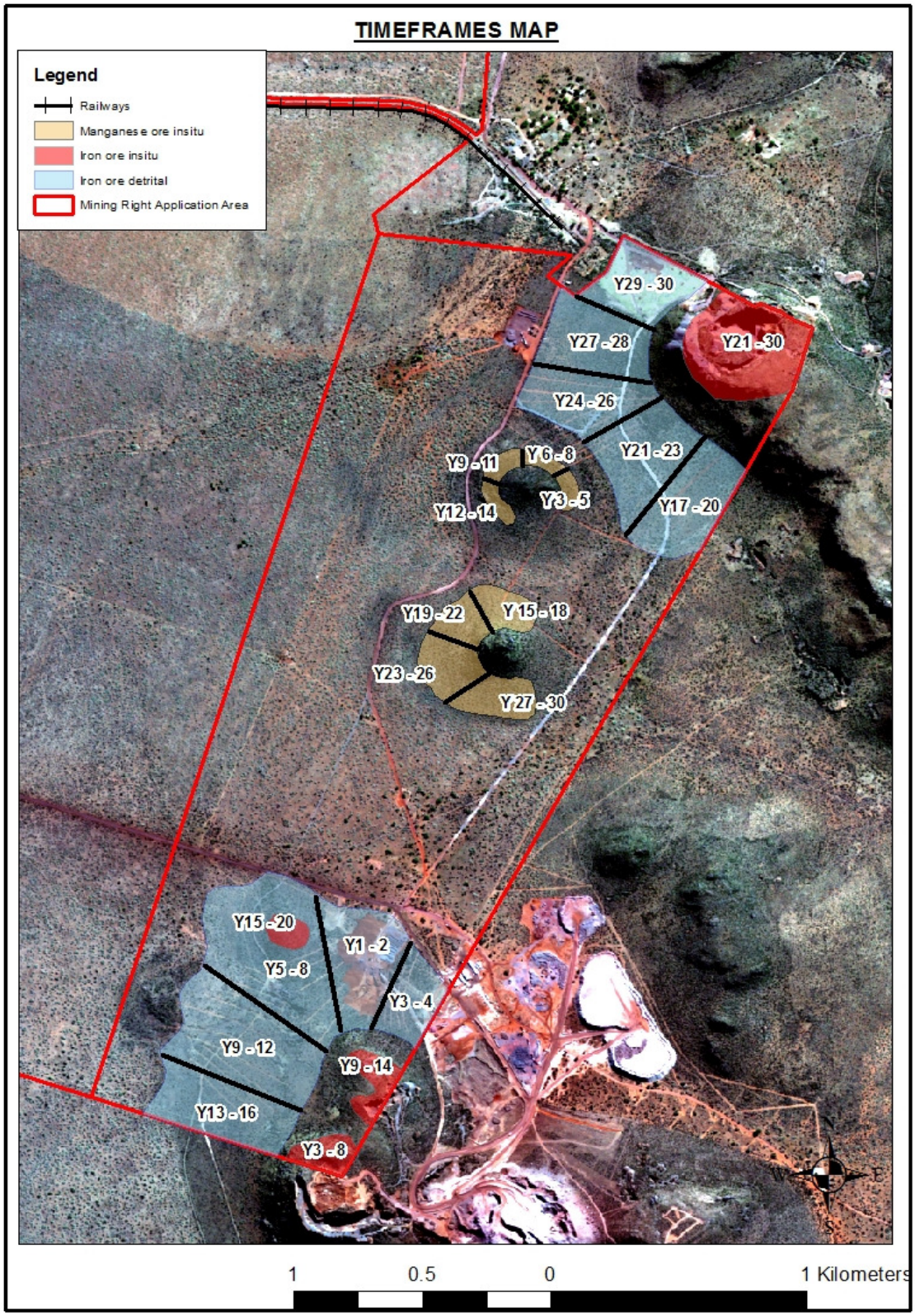

Figure 30 – Mine progression plan

Mining will be done simultaneously on two ore bodies at a time to allow the mine to blend its products from the ore bodies in the mining area. Access to the opencast mining areas will be provided by a number of haul roads to the modular crushing & screening facility, jigging plant and waste dumps.

The mining process in the different opencast pits is initiated by drilling, then blasting and is then followed by loading and hauling of both ore and waste. Working shifts are arranged to achieve the targeted production.

9.1.1 Rehabilitation plan

Rehabilitation Plan according to NEMA Guidelines:

- **<u>Commissioning Phase:</u>**
  Mining will be done by opencast mining method. It is designed based on the nature of the ore-bodies on the site, which proposes that each resource area be treated as a separate pit. Autumn Skies plans to produce a maximum of 360 000 tonnes or iron ore per annum (from year 3 onwards) and a maximum of 120 000 tonnes of manganese ore per annum (from year 3 onwards). This production will be accomplished by the establishment of two modular processing plants with associated beneficiation (jigging) plant. As mining progresses new plant sites, with associated infrastructure, could be established through the life-of-mine.

  When a new plant site is established, the previous plant site will be rehabilitated as follows:

  - **All compacted areas will be ripped and covered by a topsoil layer. In areas where it is necessary to re-seed, it will be done within the following rainy season. Seeding takes place after one wet and one dry season if natural succession of vegetation is unacceptably slow.**

  - **All plant infrastructure and equipment will be removed from the previous plant site and moved to the new plant site.**

- **<u>Operational phase</u>**

  <u>Demarcation & preparation of excavation areas:</u>
  - **Any protected tree specimen within the area must be identified and marked and not disturbed.**
  - **The mining process in the different opencast pits is initiated by drilling, then blasting and is then followed by loading and hauling of both ore and waste.**
  - **Ensure that the area to be blasted (or excavated) do not enclose any part of an identified watercourse or area of archaeological interest.**
  - **Topsoil must be removed (where found) and hauled to the topsoil storage area, before mining in the area can commence.**
  - **Identify the side on which ADT's will enter and exit the excavation and ensure that the eventual (if needed) incline ramps will connect to the one-way haul road system in a safe manner.**

- **Start excavating at the far end- opposite the incline ramps- and work backwards towards the ramps.**
- **The material will be excavated, loaded onto ADT's for removal from the excavation and deposition in the allotted areas at the plant area, sub-grade stockpile area or waste dump area.**
- **Whenever the side wall height exceeds two meters, the excavator (tracks) and/or any other TMM will not be allowed within two meters of the sidewall (LDV's must stay 4m clear).**
- **At the start of each shift, the excavation supervisor will inspect the sidewall for signs of instability. This will involve a visual inspection for cracks both inside and on the surrounding surface areas.**
- **If he is satisfied that the sidewalls are safe, he will declare the area safe for operations.**
- **If unsafe areas are found, these will be made safe under his supervision by drawing the unsafe sections down in a controlled manner.**
- **Once he is satisfied that the area is safe, he will declare it so on the prescribed form.**
- **Mining will be done simultaneously on two ore bodies at a time to allow the mine to blend its products from the ore bodies in the mining area. Access to the opencast mining areas will be provided by a number of haul roads to the modular crushing & screening facility, jigging plant and waste dumps.**
- **Under no circumstances will overhangs be allowed to develop during excavations.**

Recycling dams:

- **Erosion and storm water control measures at and around the temporary mine deposition sites.**
- **All recycling dams will have a bund wall to prevent overflow/spillages.**
- **Puddle from the processing plant and beneficiation plant will be pumped to the recycling dams, which will ultimately be dried and returned as surface cover to the excavations during rehabilitation.**
- **When a new plant site is established the recycling dams will be rehabilitated by removal of all dried puddle and spreading thereof over rehabilitated areas. The bund walls will be flattened and the fence surrounding the recycling dams removed.**

Roads:

It is foreseen that approximately 8km of new haulage roads will be created for use by the mining operation. Hauling roads will be rehabilitated as soon as the area where excavations is taking place has been mined out and rehabilitated before a new haulage road is created.

Sensitive areas:

Sensitive landscapes on the application area were identified as follows:

- **Archaeological artefacts sites**
- **Burial grounds and grave sites**

- **Walling sites**

Buffer zones around these areas will be strictly enforced and no mining will be allowed within the buffer zones. No rehabilitation will be required in these areas.

- **Drainage lines**
  All natural drainage lines on the property have been logged. No mining will be allowed within 20m from any natural drainage line.

<u>Deposition sites, including waste rock dumps, tailings dumps and topsoil storage sites:</u>

- **Backfilling of open excavations by returning of temporary mine deposition dumps and returning topsoil from storage sites to ensure that a minimum of open excavations and permanent deposition sites are present on the site.**
- **Erosion and storm water control measures at and around the mine deposition sites throughout the life-of-mine.**
- **The permanent waste rock dump will attain a maximum height of 120m. The waste rock dump will have a bench width of 45m and 20m lifts resulting in an overall angle of 16°. This will result in a face angle of 18° with a 10m road on every bench after being reshaped.**

<u>Workshops, stores and other infrastructure:</u>
Autumn Skies will establish a workshop, office buildings, a series of stores, a laboratory and related infrastructure which is utilized by the mining operation. This infrastructure will remain throughout the life-of-mine and will only be demolished and removed from site during the decommissioning phase. Should the surface owner request that the buildings remain after mine closure, the buildings will be left on site.

- **<u>Decommissioning phase</u>**

<u>Excavations:</u>

- **Final rehabilitation by backfilling of temporary deposition dumps into all open excavations (to ground level) will take place.**
- **Stored topsoil will be used as a final cover over rehabilitated excavation areas.**
- **In areas where it is necessary to re-seed, it will be done within the following rainy season. Seeding takes place after one wet and one dry season if natural succession of vegetation is unacceptably slow.**

<u>Recycling dams:</u>

- **When mining seizes any remaining recycling dams will be rehabilitated by removal of all dried puddle and spreading thereof over rehabilitated areas. The bund walls will be flattened and the fence surrounding the recycling dams removed.**

Plant sites:

- **All compacted areas will be ripped and covered by a topsoil layer. In areas where it is necessary to re-seed, it will be done within the following rainy season. Seeding takes place after one wet and one dry season if natural succession of vegetation is unacceptably slow.**
- **All plant infrastructure and equipment will be removed from site.**

Roads:

- **All roads created by the mining operation will be rehabilitated by ripping thereof.**
- **In areas where it is necessary to re-seed, it will be done within the following rainy season. Seeding takes place after one wet and one dry season if natural succession of vegetation is unacceptably slow.**

Sensitive areas:

Sensitive landscapes on the application area were identified as follows:

- **Archaeological artefacts sites**
- **Burial grounds and grave sites**
- **Walling sites**

Buffer zones around these areas will be strictly enforced and no mining will be allowed within the buffer zones. No rehabilitation will be required in these areas.

- **Drainage lines**

All natural drainage lines on the property have been logged. No mining will be allowed within 20m from any natural drainage line.

Deposition sites, including waste rock dumps, tailings dumps and topsoil storage sites:

- **Backfilling of open excavations by returning of temporary mine deposition dumps and returning topsoil from storage sites to ensure that all excavation areas and temporary deposition sites are completely rehabilitated to the previous land capability.**
- **The permanent waste rock dump will attain a maximum height of 120m. The waste rock dump will have a bench width of 45m and 20m lifts resulting in an overall angle of 16°. This will result in a face angle of 18° with a 10m road on every bench after being reshaped.**

Workshops, stores and other infrastructure:

- **All compacted areas will be ripped and covered by a topsoil layer. In areas where it is necessary to re-seed, it will be done within the following rainy season. Seeding takes place after one wet and one dry season if natural succession of vegetation is unacceptably slow.**

- **All infrastructure created by Autumn Skies' mining operation will be demolished and removed from site during the decommissioning phase, unless the surface owner requires the infrastructure to remain.**

9.1.2 Quantum

The planned mining activities were used to calculate the financial quantum for environmental rehabilitation.

No	Description	Quantity
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines) - Modular Iron Ore Plant - Modular Manganese Ore Plant Total	 3 000m^3 2 000m^3 5 000m^3
2(A)	Demolition of steel buildings and structures - Workshop - Stores Total	 800m² 200m² 1 000m²
2(B)	Demolition of reinforced concrete buildings and structures Weighbridge support structures (2 x weighbridges): 4 slabs per weighbridge - each 3m x 1m x 0.6m thick	 14.4m³
3	Rehabilitation of access roads Roads (8 117.7m x 10m wide)	 81 177m²
4(A)	Demolition and rehabilitation of electrified railway lines There are no electrified railway lines on the site.	 0
4(B)	Demolition and rehabilitation of non-electrified railway lines There are no non-electrified railway lines on the site.	 0
5	Demolition of housing and/or administration facilities - Ablution facility - Diesel tank x 3 (bund wall surrounding diesel tank) - Genset building - Laboratory - Offices - Security control point - Washbay - Weighbridge control room (x2) Total	 200m² 300m^2 400m^2 100m^2 800m^2 100m^2 200m^2 200m^2 2 300m²
6	Opencast rehabilitation including final voids and ramps - Current opencast areas	 5 Ha
7	Sealing of shafts adits and inclines There are no shafts, adits or inclines on the site.	 0

8(A)	Rehabilitation of overburden and spoils - Existing stockpile areas - Stockpile area (planned) Total	 3.39 Ha 5.5 Ha 8.89 Ha
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential) There are no processing waste deposits and evaporation ponds on site.	0
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential) There are no processing waste deposits and evaporation ponds on site	0
9	Rehabilitation of subsided areas There are no subsided areas on the site.	0
10	General surface rehabilitation - Plant area (iron ore) (planned) - Plant area (manganese ore (planned) Total	 4.5 Ha 2.8 Ha 7.3 Ha
11	River diversions There are no rivers on the site	0
12	Fencing (planned)	2 756.84m
13	Water management There are no areas where water management is necessary	0
14	2 to 3 years maintenance and aftercare Provision for 10 hectares is made	10 Ha
15 (A) & 15(B)	Specialist study	0

Autumn Skies undertakes to provide the financial provision as per the quantum calculation, when requested by DMR. The quantum was used to escalate the master rates per annum for a period of ten years.

CALCULATION OF THE QUANTUM

Applicant: **AUTUMN SKIES RESOURCES AND LOGISTICS (PTY) LTD**

Ref No: To be announced
Date: August 2013

No.	Description	Unit	A Quantity	B Master Rate	2004	102.065 January 2005	102.096 January 2006	105.181 January 2007	108.273 January 2008	108.386 January 2009	105.899 January 2010	103.562 January 2011	106.437 January 2012	105.42 January 2013	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	5 000.00	10.79	6.82	6.96	7.11	7.47	8.09	8.77	9.29	9.62	10.24	10.79	1	1	53 973.24
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	150.37	95.00	96.96	98.99	104.12	112.74	122.19	129.40	134.01	142.63	150.37	1	1	150 365.34
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	221.59	140.00	142.89	145.89	153.44	166.14	180.07	190.69	197.49	210.20	221.59	1	1	3 190.91
3	Rehabilitation of access roads	m2	81 177.00	26.91	17.00	17.35	17.71	18.63	20.17	21.87	23.16	23.98	25.52	26.91	1	1	2 184 268.72
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	261.16	165.00	168.41	171.94	180.85	195.81	212.23	224.75	232.75	247.73	261.16	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	142.45	90.00	91.86	93.78	98.64	106.80	115.76	122.59	126.96	135.13	142.45	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	300.73	190.00	193.92	197.99	208.25	225.47	244.38	258.80	268.02	285.27	300.73	1	1	691 680.58
6	Opencast rehabilitation including final voids and ramps	ha	5.00	153 056.09	96 700.00	98 696.86	100 765.54	105 986.20	114 754.44	124 377.75	131 714.79	136 406.47	145 186.96	153 056.09	1	1	765 280.46
7	Sealing of shafts adits and inclines	m3	0.00	80.72	51.00	52.05	53.14	55.90	60.52	65.60	69.47	71.94	76.57	80.72	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	101 931.88	64 400.00	65 729.86	67 107.56	70 584.40	76 423.85	82 832.75	87 719.06	90 843.61	96 691.21	101 931.88	1	1	906 174.37
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	130 896.99	82 700.00	84 407.76	86 176.94	90 641.77	98 140.56	106 370.63	112 645.43	116 657.86	124 167.13	130 896.99	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	380 186.90	240 200.00	245 160.13	250 298.69	263 266.66	285 046.71	308 950.73	327 175.73	338 829.73	360 640.20	380 186.90	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	88 003.30	55 600.00	56 748.14	57 937.58	60 939.33	65 980.84	71 513.99	75 732.60	78 430.20	83 478.75	88 003.30	1	1	0.00
10	General surface rehabilitation	ha	7.30	83 254.92	52 600.00	53 686.19	54 811.45	57 651.23	62 420.72	67 655.32	71 646.31	74 198.35	78 974.50	83 254.92	1	1	607 760.89
11	River diversions	ha	0.00	83 254.92	52 600.00	53 686.19	54 811.45	57 651.23	62 420.72	67 655.32	71 646.31	74 198.35	78 974.50	83 254.92	1	1	0.00
12	Fencing	m	2 756.84	94.97	60.00	61.24	62.52	65.76	71.20	77.17	81.73	84.64	90.08	94.97	1	1	261 810.44
13	Water management	ha	0.00	31 655.86	20 000.00	20 413.00	20 840.86	21 920.62	23 734.11	25 724.46	27 241.94	28 212.30	30 028.33	31 655.86	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	11 079.55	7 000.00	7 144.55	7 294.30	7 672.22	8 306.94	9 003.56	9 534.68	9 874.31	10 509.91	11 079.55	1	1	110 795.52
15 (A)	Specialist study	Sum														1	0.00
15 (B)	Specialist study	Sum														1	0.00
															Total of 1 - 15 above		**5 735 300.48**

weighting factor 2
1

Subtotal 1	**5 735 300.48**

1	Preliminary and General	344 118.03	344 118.03
2	Contingencies	573 530.05	573 530.05
		Subtotal 2	**6 652 948.56**
		VAT (14%)	931 412.80
		Grand Total	**7 584 361.35**

Please note that an escalation at inflation cost per annum of the master rate was calculated from 2004 to 2013 according to the Consumer Price Index as is published on the Internet.

9.2. Annual forecasted financial provision calculation. (Refer to the concomitant section of the EIA and EMP guideline.)

CALCULATION OF THE QUANTUM - YEAR 1 (2014)

Applicant: **Autumn Skies Resources and Logistics (Pty) Ltd** **Ref No:** **NC 10038 MR**
Kapstewel Mine **Date:** **August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	5 000.00	10.79	1	1	53 973.24
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	150.37	1	1	150 365.34
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	221.59	1	1	3 190.91
3	Rehabilitation of access roads	m2	81 177.00	26.91	1	1	2 184 268.72
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	261.16	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	142.45	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	300.73	1	1	691 680.58
6	Opencast rehabilitation including final voids and ramps	ha	5.00	153 056.09	1	1	765 280.46
7	Sealing of shafts adits and inclines	m3	0.00	80.72	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	101 931.88	1	1	906 174.37
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	130 896.99	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	380 186.90	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	88 003.30	1	1	0.00
10	General surface rehabilitation	ha	7.30	83 254.92	1	1	607 760.89
11	River diversions	ha	0.00	83 254.92	1	1	0.00
12	Fencing	m	2 756.84	94.97	1	1	261 810.44
13	Water management	ha	0.00	31 655.86	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	11 079.55	1	1	110 795.52
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**5 735 300.48**

weighting factor 2
1

Subtotal 1	**5 735 300.48**

1	Preliminary and General	344 118.03	344 118.03
2	Contingencies	573 530.05	573 530.05
		Subtotal 2	**6 652 948.56**

Please note that an escalation at inflation cost per annum of the master rate was calculated from 2004 to 2013 according to the Consumer Price Index as is published on the Internet.

VAT (14%)	931 412.80
Grand Total	**7 584 361.35**

CALCULATION OF THE QUANTUM - YEAR 2 (2015)

Applicant:	**Autumn Skies Resources and Logistics (Pty) Ltd**	**Ref No:**	**NC 10038 MR**
	Kapstewel Mine	**Date:**	**August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and pow erlines)	m3	5 000.00	11.33	1	1	56 671.91
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	157.88	1	1	157 883.61
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	232.67	1	1	3 350.46
3	Rehabilitation of access roads	m2	81 177.00	28.25	1	1	2 293 482.15
4 (A)	Demolition and rehabilitation of electrified railw ay lines	m	0.00	274.22	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railw ay lines	m	0.00	149.57	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	315.77	1	1	726 264.61
6	Opencast rehabilitation including final voids and ramps	ha	15.00	160 708.90	1	1	2 410 633.45
7	Sealing of shafts adits and inclines	m3	0.00	84.76	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	107 028.47	1	1	951 483.09
8 (B)	Rehabilitation of processing w aste deposits and evaporation ponds (non-polluting potential)	ha	0.00	137 441.84	1	1	0.00
8 (C)	Rehabilitation of processing w aste deposits and evaporation ponds (polluting potential)	ha	0.00	399 196.25	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	92 403.46	1	1	0.00
10	General surface rehabilitation	ha	7.30	87 417.66	1	1	638 148.94
11	River diversions	ha	0.00	87 417.66	1	1	0.00
12	Fencing	m	2 756.84	99.72	1	1	274 900.96
13	Water management	ha	0.00	33 238.65	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	11 633.53	1	1	116 335.29
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**7 629 154.47**
					weighting factor 2		
					1		
					Subtotal 1		**7 629 154.47**
1	Preliminary and General			457 749.27			457 749.27
2	Contingencies			762 915.45			762 915.45
					Subtotal 2		**8 849 819.19**
					VAT (14%)		1 238 974.69
					Grand Total		**10 088 793.87**

Please note that an escalation at inflation cost per annum of the master rate was calculated from 2004 to 2013 according to the Consumer Price Index as is published on the Internet. An escalation of 5% per annum was utilized for the calculation from 2014 onwards.

CALCULATION OF THE QUANTUM - YEAR 3 (2016)

Applicant:	**Autumn Skies Resources and Logistics (Pty) Ltd**	**Ref No:**	**NC 10038 MR**
	Kapstewel Mine	**Date:**	**August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	5 000.00	11.90	1	1	59 505.50
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	165.78	1	1	165 777.79
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	244.30	1	1	3 517.98
3	Rehabilitation of access roads	m2	81 177.00	29.67	1	1	2 408 156.26
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	287.93	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	157.05	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	331.56	1	1	762 577.84
6	Opencast rehabilitation including final voids and ramps	ha	15.00	168 744.34	1	1	2 531 165.13
7	Sealing of shafts adits and inclines	m3	0.00	89.00	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	112 379.89	1	1	999 057.24
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	144 313.93	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	419 156.06	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	97 023.63	1	1	0.00
10	General surface rehabilitation	ha	7.30	91 788.55	1	1	670 056.38
11	River diversions	ha	0.00	91 788.55	1	1	0.00
12	Fencing	m	2 756.84	104.70	1	1	288 646.01
13	Water management	ha	0.00	34 900.59	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	12 215.21	1	1	122 152.06
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**8 010 612.20**
					weighting factor 2		
					1		
					Subtotal 1		**8 010 612.20**
1	Preliminary and General		480 636.73				480 636.73
2	Contingencies		801 061.22				801 061.22
					Subtotal 2		**9 292 310.15**
Please note that an escalation at inflation cost per annum of the master rate was calculated							
from 2004 to 2013 according to the Consumer Price Index as is published on the Internet.					VAT (14%)		1 300 923.42
An escalation of 5% per annum was utilized for the calculation from 2014 onwards.							
					Grand Total		**10 593 233.57**

CALCULATION OF THE QUANTUM - YEAR 4 (2017)

Applicant:	**Autumn Skies Resources and Logistics (Pty) Ltd**	**Ref No:**	**NC 10038 MR**
	Kapstewel Mine	**Date:**	**August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	5 000.00	12.50	1	1	62 480.78
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	174.07	1	1	174 066.68
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	256.52	1	1	3 693.88
3	Rehabilitation of access roads	m2	81 177.00	31.15	1	1	2 528 564.07
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	302.33	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	164.91	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	348.13	1	1	800 706.73
6	Opencast rehabilitation including final voids and ramps	ha	15.00	177 181.56	1	1	2 657 723.38
7	Sealing of shafts adits and inclines	m3	0.00	93.45	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	117 998.89	1	1	1 049 010.11
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	151 529.63	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	440 113.86	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	101 874.82	1	1	0.00
10	General surface rehabilitation	ha	7.30	96 377.97	1	1	703 559.20
11	River diversions	ha	0.00	96 377.97	1	1	0.00
12	Fencing	m	2 756.84	109.94	1	1	303 078.31
13	Water management	ha	0.00	36 645.62	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	12 825.97	1	1	128 259.66
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**8 411 142.81**
					weighting factor 2		
					1		
					Subtotal 1		**8 411 142.81**
1	Preliminary and General		504 668.57				504 668.57
2	Contingencies		841 114.28				841 114.28
					Subtotal 2		**9 756 925.65**
Please note that an escalation at inflation cost per annum of the master rate was calculated from 2004 to 2013 according to the Consumer Price Index as is published on the Internet. An escalation of 5% per annum was utilized for the calculation from 2014 onwards.					VAT (14%)		1 365 969.59
					Grand Total		**11 122 895.25**

CALCULATION OF THE QUANTUM - YEAR 5 (2018)

Applicant:	**Autumn Skies Resources and Logistics (Pty) Ltd**	**Ref No:**	**NC 10038 MR**
	Kapstewel Mine	**Date:**	**August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	5 000.00	13.12	1	1	65 604.82
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	182.77	1	1	182 770.02
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	269.35	1	1	3 878.57
3	Rehabilitation of access roads	m2	81 177.00	32.71	1	1	2 654 992.28
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	317.44	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	173.15	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	365.54	1	1	840 742.07
6	Opencast rehabilitation including final voids and ramps	ha	15.00	186 040.64	1	1	2 790 609.55
7	Sealing of shafts adits and inclines	m3	0.00	98.12	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	123 898.83	1	1	1 101 460.61
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	159 106.11	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	462 119.55	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	106 968.56	1	1	0.00
10	General surface rehabilitation	ha	7.30	101 196.87	1	1	738 737.16
11	River diversions	ha	0.00	101 196.87	1	1	0.00
12	Fencing	m	2 756.84	115.43	1	1	318 232.22
13	Water management	ha	0.00	38 477.90	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	13 467.26	1	1	134 672.64
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**8 831 699.95**
					weighting factor 2		
					1		
					Subtotal 1		**8 831 699.95**
1	Preliminary and General		529 902.00				529 902.00
2	Contingencies		883 169.99				883 169.99
					Subtotal 2		**10 244 771.94**
Please note that an escalation at inflation cost per annum of the master rate was calculated from 2004 to 2013 according to the Consumer Price Index as is published on the Internet. An escalation of 5% per annum was utilized for the calculation from 2014 onwards.					VAT (14%)		1 434 268.07
					Grand Total		**11 679 040.01**

CALCULATION OF THE QUANTUM - YEAR 6 (2019)

Applicant:	**Autumn Skies Resources and Logistics (Pty) Ltd**	**Ref No:**	**NC 10038 MR**
	Kapstewel Mine	**Date:**	**August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and pow erlines)	m3	5 000.00	13.78	1	1	68 885.06
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	191.91	1	1	191 908.52
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	282.81	1	1	4 072.50
3	Rehabilitation of access roads	m2	81 177.00	34.34	1	1	2 787 741.89
4 (A)	Demolition and rehabilitation of electrified railw ay lines	m	0.00	333.31	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railw ay lines	m	0.00	181.81	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	383.82	1	1	882 779.17
6	Opencast rehabilitation including final voids and ramps	ha	15.00	195 342.67	1	1	2 930 140.03
7	Sealing of shafts adits and inclines	m3	0.00	103.02	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	130 093.77	1	1	1 156 533.64
8 (B)	Rehabilitation of processing w aste deposits and evaporation ponds (non-polluting potential)	ha	0.00	167 061.41	1	1	0.00
8 (C)	Rehabilitation of processing w aste deposits and evaporation ponds (polluting potential)	ha	0.00	485 225.53	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	112 316.98	1	1	0.00
10	General surface rehabilitation	ha	7.30	106 256.72	1	1	775 674.02
11	River diversions	ha	0.00	106 256.72	1	1	0.00
12	Fencing	m	2 756.84	121.21	1	1	334 143.84
13	Water management	ha	0.00	40 401.79	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	14 140.63	1	1	141 406.28
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**9 273 284.94**
					weighting factor 2		
					1		
					Subtotal 1		**9 273 284.94**
1	Preliminary and General			556 397.10			556 397.10
2	Contingencies			927 328.49			927 328.49
					Subtotal 2		**10 757 010.53**
Please note that an escalation at inflation cost per annum of the master rate was calculated from 2004 to 2013 according to the Consumer Price Index as is published on the Internet. An escalation of 5% per annum was utilized for the calculation from 2014 onwards.					VAT (14%)		1 505 981.47
					Grand Total		**12 262 992.01**

CALCULATION OF THE QUANTUM - YEAR 7 (2020)

Applicant:	**Autumn Skies Resources and Logistics (Pty) Ltd**	**Ref No:**	**NC 10038 MR**
	Kapstewel Mine	**Date:**	**August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	5 000.00	14.47	1	1	72 329.31
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	201.50	1	1	201 503.94
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	296.95	1	1	4 276.13
3	Rehabilitation of access roads	m2	81 177.00	36.06	1	1	2 927 128.98
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	349.98	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	190.90	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	403.01	1	1	926 918.13
6	Opencast rehabilitation including final voids and ramps	ha	15.00	205 109.80	1	1	3 076 647.03
7	Sealing of shafts adits and inclines	m3	0.00	108.18	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	136 598.46	1	1	1 214 360.33
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	175 414.48	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	509 486.81	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	117 932.83	1	1	0.00
10	General surface rehabilitation	ha	7.30	111 569.55	1	1	814 457.72
11	River diversions	ha	0.00	111 569.55	1	1	0.00
12	Fencing	m	2 756.84	127.27	1	1	350 851.03
13	Water management	ha	0.00	42 421.88	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	14 847.66	1	1	148 476.59
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**9 736 949.19**
					weighting factor 2		
					1		
					Subtotal 1		**9 736 949.19**
1	Preliminary and General			584 216.95			584 216.95
2	Contingencies			973 694.92			973 694.92
					Subtotal 2		**11 294 861.06**
Please note that an escalation at inflation cost per annum of the master rate was calculated					VAT (14%)		1 581 280.55
from 2004 to 2013 according to the Consumer Price Index as is published on the Internet.							
An escalation of 5% per annum was utilized for the calculation from 2014 onwards.					**Grand Total**		**12 876 141.61**

CALCULATION OF THE QUANTUM - YEAR 8 (2021)

Applicant:	**Autumn Skies Resources and Logistics (Pty) Ltd**	**Ref No:**	**NC 10038 MR**
	Kapstewel Mine	**Date:**	**August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	5 000.00	15.19	1	1	75 945.78
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	211.58	1	1	211 579.14
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	311.80	1	1	4 489.93
3	Rehabilitation of access roads	m2	81 177.00	37.86	1	1	3 073 485.43
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	367.48	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	200.44	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	423.16	1	1	973 264.04
6	Opencast rehabilitation including final voids and ramps	ha	15.00	215 365.29	1	1	3 230 479.38
7	Sealing of shafts adits and inclines	m3	0.00	113.58	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	143 428.38	1	1	1 275 078.34
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	184 185.21	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	534 961.15	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	123 829.48	1	1	0.00
10	General surface rehabilitation	ha	7.30	117 148.03	1	1	855 180.61
11	River diversions	ha	0.00	117 148.03	1	1	0.00
12	Fencing	m	2 756.84	133.63	1	1	368 393.58
13	Water management	ha	0.00	44 542.98	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	15 590.04	1	1	155 900.42
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**10 223 796.65**
					weighting factor 2		
					1		
					Subtotal 1		**10 223 796.65**
1	Preliminary and General		613 427.80				613 427.80
2	Contingencies		1 022 379.67				1 022 379.67
					Subtotal 2		**11 859 604.11**
Please note that an escalation at inflation cost per annum of the master rate was calculated					VAT (14%)		1 660 344.58
from 2004 to 2013 according to the Consumer Price Index as is published on the Internet.							
An escalation of 5% per annum was utilized for the calculation from 2014 onwards.					**Grand Total**		**13 519 948.69**

CALCULATION OF THE QUANTUM - YEAR 9 (2022)

Applicant:	**Autumn Skies Resources and Logistics (Pty) Ltd**	**Ref No:**	**NC 10038 MR**
	Kapstewel Mine	**Date:**	**August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and pow erlines)	m3	5 000.00	15.95	1	1	79 743.06
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	222.16	1	1	222 158.10
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	327.39	1	1	4 714.43
3	Rehabilitation of access roads	m2	81 177.00	39.75	1	1	3 227 159.71
4 (A)	Demolition and rehabilitation of electrified railw ay lines	m	0.00	385.85	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railw ay lines	m	0.00	210.47	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	444.32	1	1	1 021 927.24
6	Opencast rehabilitation including final voids and ramps	ha	15.00	226 133.56	1	1	3 392 003.35
7	Sealing of shafts adits and inclines	m3	0.00	119.26	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	150 599.80	1	1	1 338 832.26
8 (B)	Rehabilitation of processing w aste deposits and evaporation ponds (non-polluting potential)	ha	0.00	193 394.47	1	1	0.00
8 (C)	Rehabilitation of processing w aste deposits and evaporation ponds (polluting potential)	ha	0.00	561 709.21	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	130 020.95	1	1	0.00
10	General surface rehabilitation	ha	7.30	123 005.43	1	1	897 939.64
11	River diversions	ha	0.00	123 005.43	1	1	0.00
12	Fencing	m	2 756.84	140.31	1	1	386 813.26
13	Water management	ha	0.00	46 770.13	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	16 369.54	1	1	163 695.44
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**10 734 986.48**
					weighting factor 2		
					1		
					Subtotal 1		**10 734 986.48**
1	Preliminary and General		644 099.19				644 099.19
2	Contingencies		1 073 498.65				1 073 498.65
					Subtotal 2		**12 452 584.32**
Please note that an escalation at inflation cost per annum of the master rate was calculated							
from 2004 to 2013 according to the Consumer Price Index as is published on the Internet.					VAT (14%)		1 743 361.80
An escalation of 5% per annum w as utilized for the calculation from 2014 onwards.							
					Grand Total		**14 195 946.12**

CALCULATION OF THE QUANTUM - YEAR 10 (2023)

Applicant:	**Autumn Skies Resources and Logistics (Pty) Ltd**	**Ref No:**	**NC 10038 MR**
	Kapstewel Mine	**Date:**	**August 2013**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	5 000.00	16.75	1	1	83 730.22
2 (A)	Demolition of steel buildings and structures	m2	1 000.00	233.27	1	1	233 266.00
2(B)	Demolition of reinforced concrete buildings and structures	m2	14.40	343.76	1	1	4 950.15
3	Rehabilitation of access roads	m2	81 177.00	41.74	1	1	3 388 517.69
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0.00	405.15	1	1	0.00
4 (A)	Demolition and rehabilitation of non-electrified railway lines	m	0.00	220.99	1	1	0.00
5	Demolition of housing and/or administration facilities	m2	2 300.00	466.53	1	1	1 073 023.60
6	Opencast rehabilitation including final voids and ramps	ha	15.00	237 440.23	1	1	3 561 603.52
7	Sealing of shafts adits and inclines	m3	0.00	125.23	1	1	0.00
8 (A)	Rehabilitation of overburden and spoils	ha	8.89	158 129.79	1	1	1 405 773.87
8 (B)	Rehabilitation of processing waste deposits and evaporation ponds (non-polluting potential)	ha	0.00	203 064.19	1	1	0.00
8 (C)	Rehabilitation of processing waste deposits and evaporation ponds (polluting potential)	ha	0.00	589 794.67	1	1	0.00
9	Rehabilitation of subsided areas	ha	0.00	136 522.00	1	1	0.00
10	General surface rehabilitation	ha	7.30	129 155.70	1	1	942 836.62
11	River diversions	ha	0.00	129 155.70	1	1	0.00
12	Fencing	m	2 756.84	147.33	1	1	406 153.92
13	Water management	ha	0.00	49 108.63	1	1	0.00
14	2 to 3 years of maintenance and aftercare	ha	10.00	17 188.02	1	1	171 880.21
15 (A)	Specialist study	Sum	0.00			1	0.00
15 (B)	Specialist study	Sum	0.00			1	0.00
					Total of 1 - 15 above		**11 271 735.81**
					weighting factor 2		
					1		
					Subtotal 1		**11 271 735.81**
1	Preliminary and General		676 304.15				676 304.15
2	Contingencies		1 127 173.58				1 127 173.58
					Subtotal 2		**13 075 213.54**
Please note that an escalation at inflation cost per annum of the master rate was calculated					VAT (14%)		1 830 529.90
from 2004 to 2013 according to the Consumer Price Index as is published on the Internet.							
An escalation of 5% per annum was utilized for the calculation from 2014 onwards.					**Grand Total**		**14 905 743.43**

9.3. Confirmation of the amount that will be provided should the right be granted.

Autumn Skies Resources and Logistics (Pty) Ltd shall provide a financial guarantee for environmental rehabilitation, should the mining right be granted.

9.4. The method of providing financial provision contemplated in Regulation 53.

Financial guarantee.

10. **Environmental Awareness Plan (Section 39 (3) (c)).** (Include all the items referred to in the concomitant section of the guideline posted on the official website of the Department.)

Natural resources are limited and not always renewable and it is the responsibility of management to ensure that all employees are trained to understand the impacts of their tasks on the environment and to reduce these where possible.

Environmental awareness forms a key component of successful implementation and maintenance of environmental standards. Mine management realizes the need to ensure that all employees are aware of the environmental aspects and impacts associated with mining operation and how to positively contribute to conservation of our environmental resources.

- **Training**

In meeting these objectives the company will employ dedicated SHE Personnel to conduct awareness sessions for all employees and contractors performing duties on the mine.

- **All site personnel will be inducted prior to commencing work, and they will sign acknowledgement of the induction.**
- **Weekly "toolbox talks" will be held prior to commencing work, which will include discussions on health, safety and environmental considerations. The toolbox talks should be led by the Head of Departments and Supervisors.**

A dedicated quarterly briefing plan will be followed which will cover various aspects such as operational procedures (waste management, spill management), awareness topics (water, air and soil pollution) and celebration of national environmental awareness days (arbour day, water week etc.).

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

- **RESOURCE MANAGEMENT**
  - **a. The importance of saving water**
    - **i. South Africa is a water scarce country and rivers are polluted**
    - **ii. Do not throw litter into rivers or water drains**
    - **iii. Do not dispose of oils in sewers**
  - **b. Air pollution - Climate change**
    - **i. The use of fossil fuels is increasing the amount of greenhouse gases that are discharged to the atmosphere. Share transport or use public transport**
    - **ii. Don't burn any rubbish, the smoke pollutes the air**
    - **iii. Plant trees, they clean the air, provide us with oxygen and remove the greenhouse gas carbon dioxide from the air.**
  - **c. Soil conservation**
    - **i. Prevent overgrazing of farmlands, keep vegetation on the surface of the land to prevent soil erosion**
    - **ii. Plant trees**

- **HAZARDOUS SUBSTANCE USE AND STORAGE**
  - **a. Solvents, petrol, diesel, insecticides, chlorine, detergents, chemical fertilisers are harmful to the environment and to your health. Use them sparingly and do not let them get into the water systems. Containers must be disposed of to a licensed hazardous waste disposal facility**
  - **b. Hazardous substances must be stored and used correctly**
  - **c. Ensure that 16 point Material Substances Safety Data Sheets (MSDS) are available at point of store**
  - **d. Compressed gas storage requirements**
  - **e. Flammable substances store requirements**

- **INCIDENT & EMERGENCY REPORTING**
  - **a. The company must have an emergency / incident reporting system whereby environmental incidents can be reported and actioned to mitigate and follow up on.**

- **OIL / DIESEL/ PETROL SPILL CLEAN UP**
  - **a. All employees who work with machines and vehicles must be instructed how to prevent and clean up an oil or diesel spill appropriately. Spill kits must be available on site, drip trays must be used when servicing vehicles.**

- **CONSERVATION OF WATER**
  a. **Campaign to save water on site**
  b. **Clean water is expensive and potable water must be used carefully**
  c. **Prevent pollution of water by preventing spills and dispose of wastes properly**

- **CONSERVATION OF VEGETATION**

  Plants, grasses and trees are very important to our existence on the earth, they provide food, fuel, shelter, raw materials and they clean the air. Indigenous plants are especially important for *muti* and the whole ecology of life. Human activities are destroying the natural forests of the earth. The natural forests are the "lungs" of the planet and unfortunately they are being cleared faster than they can be regenerated.

  a. **EIA's are to be done before virgin bush can be cleared**
  b. **Vegetation cover reduces water and topsoil loss from the ground, do not clear vegetation unnecessarily**
  c. **Indigenous trees provide shade, attract wild birds**
  d. **Do not chop down indigenous trees without good reason**
  e. **Implement a tree planting programme**
  f. **Remove alien invasive trees in your area such as Prosopis, Syringa, Pepper trees and cactus plants.**

- **WASTE MANAGEMENT**
  a. **Employees must be instructed on how to tell the difference between hazardous waste and general waste**
  b. **They must know how to separate hazardous and general waste and where to dispose of these wastes in the correct way**
  c. **Examples of hazardous waste which must be recycled or sent to WasteTech for disposal:**
     i. **Oil, diesel, batteries, acids, paint, thinners, electronic waste**
     ii. **Pesticides, Jik, Handy Andy**
     iii. **Old oil, old oil filters, old paint is hazardous and must not be disposed of to a general land fill. Oilkol of the Rose Foundation will collect old oil.**
     iv. **Mercury in fluorescent light bulbs is hazardous. Fluorescent lights must be handled with great care so as not to break the glass and release the mercury vapour into the air which you breathe.**
  d. **Examples of general wastes which can go to the municipal landfill:**
     i. **Wood, paper, plastic, glass, old PPE**
  e. **Recycle, Reuse, Reduce, Recover where ever possible**

- **ENVIRONMENTAL COMPLIANCE PREREQUISITES**

Autumn Skies shall compile an "Environmental Compliance Prerequisites" form to be completed by all persons/institutions conducting work on their premises. This form is attached to any quote/tender of a prospective contractor/sub-contractor who wishes to do work for Autumn Skies.

- **PROCEDURES FOR ENVIRONMENTALLY RELATED EMERGENCIES AND REMEDIATION**

- **Emergency Preparedness and Response**

  - **A suitable first aid kit will be available on relevant areas on the site at all times, and at least one person will be available on site at all times that is trained in first aid.**
  - **The first aid kit will contain all treatments identified in the various Material Safety Data Sheets for all hazardous materials to be used on site.**
  - **Emergency response plans will be prepared, be available on site, and be known to all personnel as well as to the emergency facilities in the region. At a minimum, the following hazards will be addressed in the emergency response plans:**

- **Oil, grease or hydraulic fluid spills**

Care will be taken to prevent the spillage of chemicals onto soils or its escape or migration into surrounding soils.

In the event of an oil, grease and hydraulic fluid spill, such spill will be treated with Enretech-H and cleaned up immediately by removing the spillage, together with the contaminated soil, and disposing of it at a licensed facility, as is required by Regulation 70(5) of the Mineral and Petroleum Resources Development Act, 2002 (Act N. 28 of 2002). This will be done according to the following spill response plan:

- **Contamination and spills:**
  - **Suitable spill kits will be available on site, and there will be at least one person on site at all times (with appropriate authority) who is trained in its use.**
  - **Delivery trucks should have dedicated vehicle spill kits in case of leaking diesel and oil when not on mine premises.**
  - **All hydrocarbon contaminated soil should be collected on a weekly basis and placed in suitable non-leak containers.**

- **Should no containers be available contaminated soil must not be stockpiled on bare ground but on a suitable cement pad.**
- **Contaminated soil can be bio-remediated by a recognized company; once the soil is cleaned it can be re-used on the mine site for rehabilitation purposes.**
- **A dedicated bioremediation pad must be used.**
- **Spillages will not be disposed of in the environment, in ditches, in drains or in water courses.**
- **The relevant local authorities will be notified immediately if a significant spillage cannot be contained.**
- **As is required by Section 30(3) of the National Environment Management Act (Act No. 107 of 1998 (hereinafter "NEMA"), an incident as is described in Section 30(a) (including the nature of the incident; any risks posed by the products released by the incident; and any steps that would be taken in order to avoid or minimise the effects of the incident to public health and the environment) will be reported through the most effective means reasonably available to the following parties:**
  - **The Director-General;**
  - **The South African Police Services;**
  - **The local fire prevention service;**
  - **The relevant provincial head of department or municipality; and**
  - **All persons whose health may be affected by the incident.**
- **As is required by Section 30(5) of NEMA, an incident as described in Section 30(a) of the Act will furthermore be reported to the Director-General, provincial head of department of the Department of Tourism, Environment and Conservation, and the relevant local municipality via an emergency incident report.**

- **Fire**

The following fire prevention and –control plan will be implemented:

- **The following three safety signs, all of which will conform to the requirement of SANS 1186-1:2003 (SABS 1186-1:2003), will be prominently displayed on fuel storage receptacles: a) No smoking; b) Danger; and c) No fire or open lights.**
- **The above mentioned signs will be well maintained.**
- **All employees will be adequately trained in fire prevention and handling.**
- **No fires may be lit on site. Any fires which occur shall be reported to the site manager immediately. Smoking is not permitted in those areas where it is a fire hazard. Such areas include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to make liable the rapid spread of an initial flame.**

- **Rubbish and anything combustible will be kept away from fuel storage receptacles.**
- **Grasses growing in the vicinity of fuel storage receptacles will be kept down.**
- **An Evacuation Marshall and Fire Team will be appointed, who is responsible for ensuring immediate and appropriate actions in the event of a fire, and shall ensure that employees are aware of the procedure to be followed. The Fire Officer is to be approved by the Engineer prior to appointment.**
- **Firefighting equipment will be available on site at all times. This shall include at least rubber beaters, for working near buildings and vegetated areas, and at least one fire extinguisher of the appropriate type when welding or other high temperature activities are undertaken. The fire extinguisher will be inspected according to regulatory requirements.**
- **A fire extinguisher in a weather proof casing will be installed in close proximity to fuel storage receptacles.**
- **All employees will be briefed on the correct use of a fire extinguisher prior to the commencement of the proposed operation.**
- **Runoff from fire control or dilution will be prevented from entering streams or sewers.**
- **Major fires or explosions as defined by Section 30(a) of the NEMA, will be reported through the most effective means reasonably available to the following parties:**
  - **The Director-General;**
  - **The South African Police Services;**
  - **The local fire prevention service;**
  - **The relevant provincial head of department or municipality; and**
  - **All persons whose health may be affected by the incident.**
  - **Such a report will include the nature of the incident, any risks posed by the incident to public health, safety and property; the toxicity of substances or by-products released by the incident; and any steps that would be taken in order to avoid or minimise the effects of the incident to public health and the environment.**
- **As is required by Section 30(5) of NEMA, an incident as described in Section 30(a) of the said Act will furthermore be reported to the Director-General, provincial head of the Department of Tourism, Environment and Conservation, and the relevant local municipality via an emergency incident report.**
- **Fires will only be allowed in facilities or equipment specially constructed for this purpose.**
- **Firebreaks must be established to avoid uncontrolled veld fires.**

- **Other Emergency Incidents**

  Any other emergency incidents will be handled as is prescribed by NEMA.

11. Attachment of specialist reports, technical and supporting information. (Provide a list)

This EIA/EMPR document was compiled by M&S Consulting (Mr. J.H. Posthumus) and Mr. B.H. Erasmus (Environmentalist).

- **Annexure A – Dust fall-out monitoring report – Kapstewel Mine, compiled by Dustwatch CC.**
- **Annexure B – Heritage Impact Assessment Report compiled by G&A Heritage.**
- **Annexure C – Specialist study on the amphibians, reptiles, birds, mammals and flora of four portions of the Farm Kapstewel 436, Northern Cape Province, compiled by Mr. B.H. Erasmus.**
- **Annexure D – Geological Report: Review of the Geology and Manganese / Iron Ore potential on Kapstewel, compiled by Bomato Trading.**
- **Annexure E – Geological Report: Geological Overview of the Mines at Manganore and Kapstewel in the Postmasburg Manganese Field compiled by Geo-Rock International.**
- **Annexure F – Geological Report: Report on the Kapstewel Iron-Manganese Project, Hay District, Northern Cape Province, South Africa, compiled by Millennium Geoconsulting.**
- **Annexure G – Kapstewel Basic Groundwater Assessment, Northern Cape Province, compiled by SRK Consulting.**
- **Annexure H – Baseline Noise Assessment of Kapstewel, compiled by M&S Consulting.**
- **Annexure I – Social Impact Assessment for the Kapstewel Mining Right Application, compiled by M&S Consulting.**
- **Annexure J - Baseline Soil Survey of the proposed Kapsewel Mine, compiled by Mr. G.P. Stemmet.**
- **Annexure K – SA Report of the Economic Impact of Autumn Skies Resources & Logistics (Pty) Ltd, compiled by MC Viviers Professional Accountants.**

12. **SECTION 39 (4) (a) (iii), Capacity to manage and rehabilitate the environment.** (Include all the items referred to in the concomitant section of the guideline posted on the official website of the Department.)

Rehabilitation - 10 year forecast (as calculated in MWP and 9.2 above)	**R14 905 743.43**
Environmental consultant (specialists)	**R240 000.00**
Total	**R15 145 743.43**

The abovementioned amounts have been budgeted for in the cash flow forecast, for year 1, which is contained in the MWP. (see section 9.1.2 above).

13. UNDERTAKING

13.1. The Environmental Management Programme will, should it comply with the provisions of section 39 (4) (a) of the Act and the right be granted, be approved and become an obligation in terms of the right issued. As part of the proposed Environmental Management Programme, the applicant is required to provide an undertaking that it will be executed as approved and that the provisions of the Act and regulations thereto will be complied with.

14. IDENTIFICATION OF THE REPORT

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 regards.	
Full names and surname	**PHEMELO OHENTSE ROBERT SEHUNELO**
Identity number	**660320 5609 08 9**