IMPACT ASSESSMENT

TABLE 1: IMPACTS ASSESSMENT

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
Removal of / damage to natural vegetation	Duration: Medium Term (3) Extent: Localised (2) Frequency: Very Frequent (4) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (16) High	 Boreholes and access tracks will be located in areas that will result in minimal ground disturbance. Permission will be obtained from landowners before trees are felled. Where an access road is needed, the relevant occupant and owner will be consulted prior to the development of that access to ensure that consensus is reached on the matter and the access will be rehabilitated at the end of the drilling programme. Vegetation clearance will be limited to 0.01 ha per drill hole 	Duration: Short Term (1) Extent: Localised (2) Frequency: Unusual (2) Probability: Improbable (1) Intensity: Low (1) Significance Rating: (7) Medium
The stripping of soil, incorrect stockpiling, erosion and storm water run-off can lead to the loss of topsoil	Duration: Medium Term (3) Extent: Localised (2) Frequency: Very Frequent (4) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (16) High	 Topsoil will be stripped to a depth of 250 mm from all disturbed areas and stored outside the 1:50 year flood levels of Kolobeng River and its streams, within the firebreak area. Topsoil will be adequately protected from being blown away or being eroded. 	Duration: Short Term (1) Extent: Localised (2) Frequency: Unusual (2) Probability: Improbable (1) Intensity: Low (1) Significance Rating: (7) Medium

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
Changes to the shape or form of the land	Duration: Medium Term (3) Extent: Localised (2) Frequency: Very Frequent (4) Probability: Very Likely (4) Intensity: Medium (3)	 Boreholes and access tracks will be located in areas that will result in minimal ground disturbance. During the planning phase for each borehole, specific controls will be identified and implemented, based on site conditions. 	Duration: Medium Term (2) Extent: Localised (2) Frequency: Unsual (2) Probability: Probable (2) Intensity: Low(2)
	Significance Rating: (16) High		Significance Rating: (10) Medium
Impact on current land use	Duration: Short Term (1) Extent: Footprint (1) Frequency: Unusual (2) Probability: Improbable (1) Intensity: Low (2) Significance Rating: (7) Medium	 Land disturbed will be rehabilitated to a stable and permanent form suitable for subsequent land use. Exact location of drill holes and new access routes will be determined through communication with land owner 	Duration: Short Term (1) Extent: Footprint (1) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Very Low (1) Significance Rating: (6) Low
Destruction of cultural heritage sites and artefacts	Duration: Long Term (4) Extent: Regional (3) Frequency: Very Rare (1) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (15) Medium–High	 Potential heritage sites will be identified during the planning phase to ensure that such areas are avoided. Each prospecting site will be visited prior to any work starting to identify possible heritage sites. Local knowledge will be used to identify and confirm heritage sites. Prospecting activities will be kept away from excluded and exempted areas. 	Duration: Short Term (2) Extent: Local (2) Frequency: Very Rare (1) Probability: Likely (3) Intensity: Low (2) Significance Rating: (10) Medium

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
	ii not miligated	Where boreholes are sited in proximity to heritage sites and depending on the proximity to the drilling site, appropriate measures such as flagging, pegging or installation of temporary fencing will be undertaken to ensure that the site is not impacted on during prospecting.	
Damage to sensitive biodiversity areas	Duration: Short Term (2) Extent: Local (2) Frequency: Very Frequent (4) Probability: Very Likely (4) Intensity: High (5) Significance Rating: (17) High	 A field survey will be undertaken before drilling commences at each drilling site to confirm that no ecologically sensitive areas or conservation areas are present in sections to be cleared. Areas of ecological significance will be avoided and if disturbance is required, it will be undertaken in accordance with legislation. 	Duration: Short Term (2) Extent: Footprint (1) Frequency: Occasional (2) Probability: Probable (2) Intensity: Medium (3) Significance Rating: (10) Medium
Disturbance of Kolobeng River riparian habitats	Duration: Short Term (2) Extent: Local (2) Frequency: Very Frequent (4) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (15) Medium-High	No prospecting operations will be undertaken within 100 metres from the Kolobeng River and 32 meters from the nearby wetland areas.	Duration: Short Term (2) Extent: Local (2) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Low (2) Significance Rating: (8) Medium
Dust pollution	Duration: Short Term (2) Extent: Local (2) Frequency: Very Frequent (4) Probability: Very Likely (4) Intensity: Medium (3)	Dust will be effectively controlled in all areas cleared from vegetation through water spraying.	Duration: Short Term (2) Extent: Local (2) Frequency: Occasional (2) Probability: Probable(2) Intensity: Low (2)

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MI	TIGATION MEASURES	Significant of impact after mitigation
Storm water run- off from cleared areas could lead to siltation of surface water	Significance Rating: (15) Medium-High Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (3) Probability: Likely (3) Intensity: Medium (3) Significance Rating: (13) Medium-High	•	Controls will be aimed at minimising erosion and sediment washing from drill pads, access roads and other disturbed areas. Sediment and erosion controls will be designed to prevent runoff from the prospecting site into rivers & streams. Sediment and erosion controls may include cut-off trenches and drains, culverts for tracks, silt fences, straw bales, rock armouring or mulching.	Extent: Local (2) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Low (2) Significance Rating: (8) Medium
Disturbance of grazing activities	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (3) Probability: Likely (3) Intensity: Low (2) Significance Rating: (12) Medium-High	•	Prospecting activities will be discussed with landowners prior to work commencing. Drill holes and access routes not wanted by land owners on completion of prospecting activities will be rehabilitated	Duration: Short Term (2) Extent: Footprint (1) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Very Low (1) Significance Rating: (6) Medium
Contamination of soils through spills from sanitation facilities & litter	Duration: Short Term (2) Extent: Local (2) Frequency: Very Frequent (4) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (15) Medium-High	•	A chemical toilet will be used on site during prospecting and will be used in such a way as to prevent water pollution. The use of a chemical toilet will be undertaken in consultation with the landowner.	Extent: Local (2)

POTENTIAL	SIGNIFICANCE	MITIGATION MEASURES	Significant of impact after mitigation
IMPACT	If not mitigated	INITION INEXCORES	
		 Full or leaking toilets must be reported to the Supervisor for corrective action or replacement. Prospecting areas will be maintained in a clean and tidy condition at all times. All waste will be collected, separated and stored in properly constructed containers with lids and removed to an approved landfill or another site according to local municipal requirements. Full waste bins must be reported to the Supervisor for collection and disposal at an approved landfill. 	
Poaching	Duration: Short Term (2) Extent: Local (2) Frequency: Unusual (2) Probability: Likely (3) Intensity: Medium (3) Significance Rating: (12) Medium-High	 No employees will be permitted to stay on the site. Hunting / poaching will not be allowed. Only one drill site at any given time. All employees present at the one drill site with appropriate supervision 	Duration: Short Term (2) Extent: Footprint (1) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Very Low (1) Significance Rating: (6) Medium
Fire	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (4) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (15) Medium-High	 Vegetation around each exploration site within a 5m radius will be kept short to create a fire management zone. Collection of firewood will not be allowed. Open fires will be prohibited to people involved in prospecting. 	Duration: Short Term (2) Extent: Local (2) Frequency: Occasional (2) Probability: Probable(2) Intensity: Low (2) Significance Rating: (10) Medium

POTENTIAL	SIGNIFICANCE	MITIGATION MEASURES	Significant of impact after mitigation
IMPACT	If not mitigated	WITIGATION WEASONES	
Collection of fire	Duration: Short Term (2)	 No burning cigarettes or matches may be thrown down within the prospecting area. A bucket with sand will be provided for the disposal of cigarettes and matches No smoking will be allowed near gas, paints or fuel storage areas. Suitable welding blankets are to be used when welding or operating grinders and this equipment is to be serviced regularly. Rubbish or vegetation may under no circumstances be burnt. All waste will be removed off site and disposed of at an approved landfill. Collection of firewood will not be 	Duration: Short Term (2)
wood, damage to property	Extent: Local (2) Frequency: Unusual (2) Probability: Likely (3) Intensity: Medium (3) Significance Rating: (12) Medium-High	 allowed. Only one drill site at any given time. All employees present at the one drill site with appropriate supervision Complaints and outcomes of subsequent investigations will be recorded in a Complaints Register in the format of a spreadsheet. If damage to private property occurs as a result of prospecting activities, such damage will be repaired or owners will be compensated as appropriate. 	Extent: Local (2) Frequency: Occasional (2) Probability: Improbable(1) Intensity: Very Low (1) Significance Rating: (8) Medium
Contribution to the economy through employment	Duration: Short Term (2) Extent: Regional (3) Frequency: Very frequent (4)	Due to the nature of prospecting, employment opportunities will be minimal. The prospecting crew is	Duration: Short Term (2) Extent: Regional (3) Frequency: Very frequent (4)

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
	Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (16) High	 small (3 people) with specialised skills. Were possible, local people will however be employed during the project. Local people and businesses with appropriate skills will be identified and included in the project tender process. The applicant is committed to employ local people and businesses during the project, where possible. 	Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (16) High
Spread of HIV/Aids to farm workers and local community	Duration: Permanent (5) Extent: National (5) Frequency: Unusual (2) Probability: Probable (2) Intensity: Medium-High (4) Significance Rating: (19) High	 Due to the nature of prospecting, employment opportunities will be minimal. The prospecting crew is small (3 people) with specialised skills. Were possible, local people will however be employed during the project. No employees will be permitted to stay on site. Aids awareness talks 	Duration: Short(2) Extent: Local (2) Frequency: Unusual (2) Probability: Probable (2) Intensity: Low (2) Significance Rating: (10) Medium
Resource consumption (diesel - non- renewable resource)	Duration: Short Term (2) Extent: Local (2) Frequency: Unusual (2) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (13) Medium-High	Vehicles and equipment to be serviced regularly and maintained in good working condition	Duration: Short Term (2) Extent: Local (2) Frequency: Occasional (2) Probability: Probable(2) Intensity: Low (2) Significance Rating: (10) Medium
Contamination of soils through hydrocarbon leaks and spills from	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (3)	 All chemicals, fuels and oils to be stored on site will be appropriately bunded. 	\ \ /

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
machinery & equipment	Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (14) Medium-High	 Precautions will be taken to prevent spills and soil contamination. Material Safety Data Sheets for the item(s) spilled will be consulted for information concerning clean-up requirements top ensure correct clean-up procedure. Any contaminated soil will be collected into non-permeable bags and disposed of to an approved landfill site. 	Probability: Probable (2) Intensity: Low (2) Significance Rating: (10) Medium
Use of groundwater for drilling activities	Duration: Short Term (2) Extent: Regional (3) Frequency: Unusual (2) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (14) Medium-High	 Existing water supply locations will be identified for use and agreements will be reached with landowners regarding on-site water use. The drilling rig will require approximately 1,000l/day. Where a suitable water supply is not available, water will be sourced from a commercial supplier and delivered to site by water tanker. If required, a water use license will be applied for to DWS for the abstraction of surface- and/or groundwater during prospecting. Adequate provision will be made for storing drinking water on site in the form of 2500 litre plastic water tanks. 	Extent: Local (2) / Frequency: Unusual (2)
Contamination of surface water	Duration: Long Term (3) Extent: Regional (3)	The drilling fluid that will be used during prospecting must be	\ ,

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
through hydrocarbon leaks and spills from machinery & equipment	Frequency: Frequent (3) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (16) High	 biodegradable and not pose a water pollution threat. Drilling sumps and containment measures will be designed to contain all drilling fluid. Material Safety Data Sheets for the item(s) spilled will be consulted for information concerning clean-up requirements top ensure correct clean-up procedure. Any contaminated soil will be collected into non-permeable bags and disposed of to an approved landfill site. Drill sites to be located 100 m from rivers & stream. 	Probability: Probable (2)
Contamination of groundwater through hydrocarbon leaks and spills from machinery & equipment	Duration: Long Term (3) Extent: Regional (3) Frequency: Frequent (3) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (16) High	 Machinery and equipment will only be maintained over a drip tray, a thin concrete slab or a PVC lining to prevent soil and water contamination. No vehicle will be extensively repaired on site. Material Safety Data Sheets for the item(s) spilled will be consulted for information concerning clean-up requirements to ensure correct clean-up procedure. Any contaminated soil will be collected into non-permeable bags and disposed of to an approved landfill site. 	Extent: Footprint (1)

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
Compaction of soils through movement of heavy vehicles and machinery on site	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (3) Probability: Likely (3) Intensity: Medium (3) Significance Rating: (13) Medium High	 Stay on predefined areas and routes. Scarify access roads and stockpile areas to a depth of 500 mm and restore topsoil cover. Re-seed or plant vegetation indigenous to the area. 	Duration: Short(1) Extent: Footprint(1) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Very Low (1) Significance Rating: (5) Low
Damage to vegetation	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (4) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (15) Medium-High	 Vehicles will only stay on dedicated roads (turning circles). No movement of heavy machinery outside dedicated routes. All routes and turning circles will be scarified and re-seeded with seeds from vegetation indigenous to the area. 	Duration: Short(2) Extent: Local (2) Frequency: Unusual (2) Probability: Probable (2) Intensity: Low (2) Significance Rating: (10) Medium
Release of gaseous emissions	Duration: Short Term (1) Extent: Footprint (1) Frequency: Unusual (2) Probability: Improbable (1) Intensity: Low (1) Significance Rating: (6) Medium	Vehicles and equipment will be maintained in a good working order.	Duration: Short(1) Extent: Footprint(1) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Very Low (1) Significance Rating: (5) Low
Dust Fallout	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (4) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (15)	 Speed limits on gravel roads will be 40 km/hr to minimise dust and noise generation. Dust will be effectively controlled in all disturbed areas through water spraying. 	Duration: Short(2) Extent: Local (2) Frequency: Unusual (2) Probability: Probable (2) Intensity: Very Low (1) Significance Rating: (9)

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
	Medium-High		Medium
Increase in ambient noise levels	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (4) Probability: Very Likely (4) Intensity: Medium (3)	 Speed limits on gravel roads will be 40 km/hr to minimise dust and noise generation. Prospecting activities will be restricted to day light hours. 	Duration: Short(2) Extent: Local (2) Frequency: Unusual (2) Probability: Probable (2) Intensity: Very Low (1)
	Significance Rating: (15) Medium-High		Significance Rating: (9) Medium
Visual intrusion	Duration: Short Term (2) Extent: Site (1) Frequency: Frequent (3) Probability: Likely (4) Intensity: Low (2) Significance Rating: (12) Medium-High	 Only one site to be drilled at any one time Undertake concurrent rehabilitation Measures will be undertaken by the applicant to ensure that visual aspects from the site are complying with the relevant visual 	Duration: Short Term (2) Extent: Site (1) Frequency: Frequent (3) Probability: Improbable (1) Intensity: Very Low (1) Significance Rating: (8) Medium
Disturbance of fauna species in the vicinity	Duration: Long Term (3) Extent: Regional (3) Frequency: Frequent (3) Probability: Very Likely (4) Intensity: Medium (3) Significance Rating: (16) High	 standards objectives Prospecting activities will be kept away from excluded and exempted areas. A field survey will be undertaken before drilling commences at each drilling site to confirm that no threatened species, ecologically sensitive areas or conservation areas are present in sections to be cleared Areas of ecological significance will be avoided and if disturbance is required, it will be undertaken in accordance with legislation. 	Duration: Short Term (2) Extent: Local (2) Frequency: Occasional (2) Probability: Probable (2) Intensity: Low (2) Significance Rating: (10) Medium

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
Release of methane gas from exploration boreholes		 One site to be drilled at a time. Concurrent rehabilitation. Exploration boreholes are to be capped when no drilling work is being undertaken. Exploration boreholes which will not be used during production to be sealed with cement once exploration work has been completed. 	Duration: Short Term (1) Extent: Footprint (1) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Very Low (1) Significance Rating: (5) Low
Cross- contamination of aquifers due to borehole construction	Duration: Medium Term (3) Extent: Regional (3) Frequency: Unusual (2) Probability: Likely (3) Intensity: Medium (3) Significance Rating: (14) Medium-High	 For the purpose of future monitoring programmes, impact assessments and concurrent rehabilitation, the depth of water strikes will be recorded during exploration drilling. The static groundwater level will be monitored in prospecting boreholes that intersected water after completion and before concurrent rehabilitation for future monitoring, impact assessment and concurrent rehabilitation purposes. Any completed hole that is not required for groundwater monitoring, will be sealed to prevent groundwater contamination. 	Duration: Short Term (2) Extent: Local (2) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Low (2) Significance Rating: (8) Medium
Proliferation of invasive plant species	Duration: Medium Term (2) Extent: Localise (2) Frequency: Likely (3)	Machinery will be cleared of dust/mud and seed prior to relocation to the next site to	Duration: Short Term (2) Extent: Site (1) Frequency: Very rare (1)

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation	
	Probability: Probable (2) Intensity: Low (2)	prevent the spread of alien invasive species.	Probability: Improbable (1) Intensity: Very Low (1)	
	Significance Rating: (11) Medium-High		Significance Rating: (6) Medium	
CLOSURE				
Reducing soil compaction of disturbed area and access roads to improve drainage and control erosion	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (4) Probability: Very Likely (4) Intensity: Medium-High (4)	 Chemicals, fuels and waste materials will be removed from the site following the completion of the prospecting programme. Such waste will be disposed of to an approved landfill. Erosion and sediment controls as 	Duration: Short Term (2) Extent: Site (1) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Very Low (1)	
	Significance Rating: (16) High	 well as the disturbed area will be rehabilitated An inspection on whether there is evidence of weeds or pest invasion as a result of prospecting activities will be undertaken and appropriate remediation actions will be implemented as required. 	Significance Rating: (6) Medium	
Use stockpiled top soil to close sumps	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (4) Probability: Very Likely (4) Intensity: Medium-High (4) Significance Rating: (16) High	 Scarify access roads and stockpile storage areas to a depth of 500 mm. Restore topsoil cover. Re-seed or plant vegetation indigenous to the area. 	Duration: Short Term (2) Extent: Site (1) Frequency: Very rare (1) Probability: Improbable (1) Intensity: Very Low (1) Significance Rating: (6) Medium	
Restoration of land use and land capability	Duration: Short Term (2) Extent: Local (2) Frequency: Frequent (4)	Exploration boreholes are to be capped when no drilling work is being undertaken.	Duration: Short Term (2) Extent: Site (1) Frequency: Very rare (1)	

POTENTIAL IMPACT	SIGNIFICANCE If not mitigated	MITIGATION MEASURES	Significant of impact after mitigation
	Probability: Very Likely (4) Intensity: Medium-High (4)	Exploration boreholes which will not be used during production to be sealed with cement once	• • • • • • • • • • • • • • • • • • • •
	Significance Rating: (16) High	exploration work has been completed.	Significance Rating: (6) Medium