



**mineral resources**

Department:  
Mineral Resources  
REPUBLIC OF SOUTH AFRICA

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Reference:  
Date:

EC30/5/1/3/3/2/1/0432EM  
20 April 2010

South African Heritage Resources Agency  
P.O. Box 758  
GRAHAMSTOWN  
6140

ATTENTION: MR. T. LUNGILE

caseid: 2346

Sir

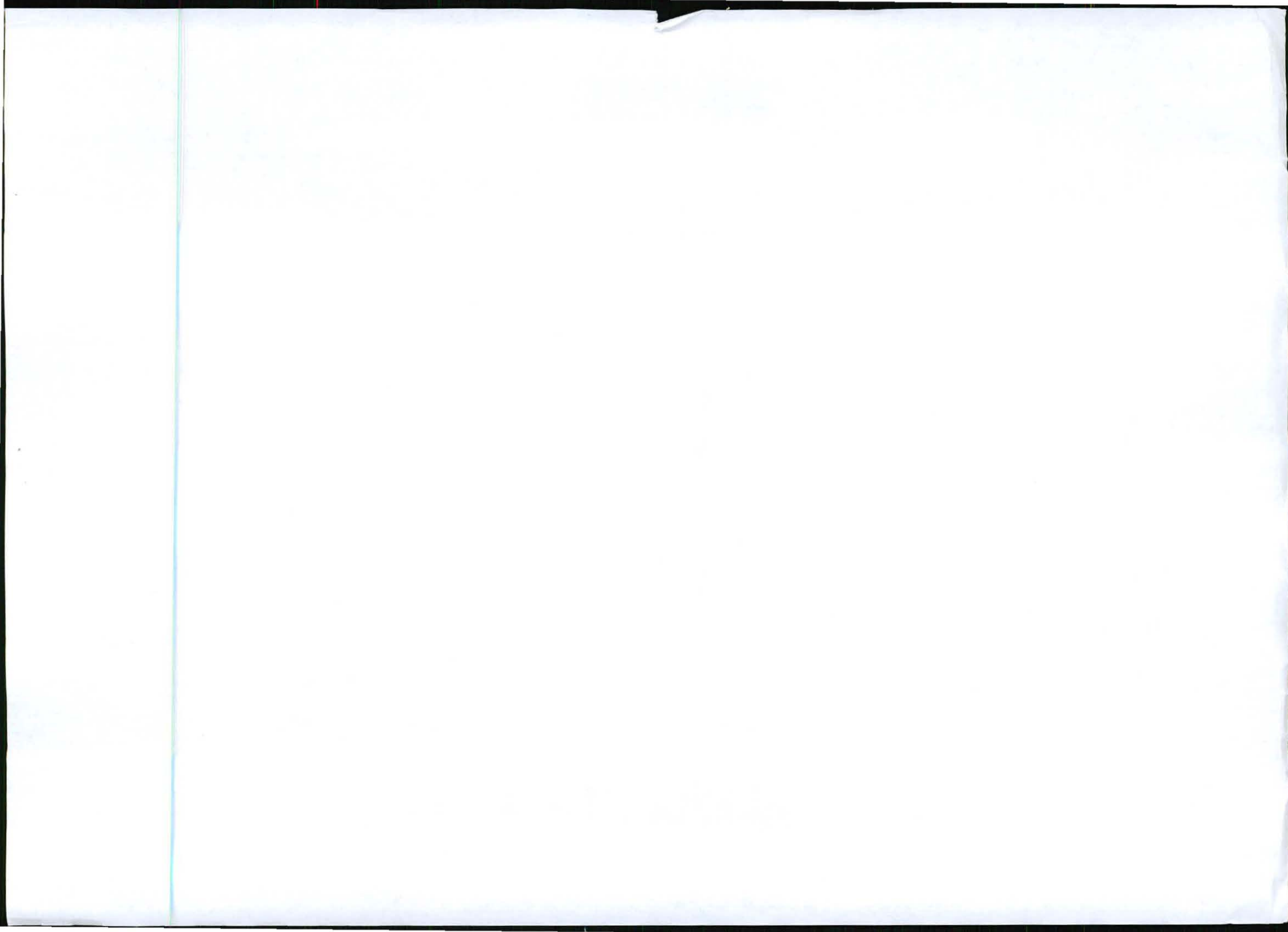
**CONSULTATION IN TERMS OF SECTION 40 OF THE MPRDA OF 2002:**

LAND DESCRIPTION	FILE REFERENCE NUMBER
1. SAND (MANUFACTURED) FROM HARDROCK; SAND (GENERAL); GRAVEL AND AGGREGATE ON THE FARM ROBERTS KRAAL NO 281, DIVISION OF BEDFORD, EASTERN CAPE	EC30/5/1/1/3/2/1/0146EM
2. SAND (MANUFACTURED) FROM HARDROCK; SAND (GENERAL); GRAVEL AND AGGREGATE ON PORTION 2 OF THE FARM KLIP FONTEYN NO. 150, DIVISION OF BEDFORD, EASTERN CAPE	EC30/5/1/1/3/2/1/0147EM

1. The above refers.
2. Attached, copies of the EMP are received from Afrimat Aggregates (Trading) (Pty) Ltd.
3. Any written comments or requirements your department may have in this regard can be forwarded to this office no later than **25 June 2010**. Failure to do so, will lead to the assumption that your department has no objection(s) or comments with regard to the said documents. Comments may be submitted at your earliest convenience e.g. 30 days from the date hereof in order to reduce the turn around time for the application process.
4. Consultation in this regard has also been initiated with other relevant State Departments.
5. Please use the reference numbers as indicated in all future correspondence.
6. Your co-operation is appreciated.

Yours faithfully

REGIONAL MANAGER  
EASTERN CAPE



146PR

**ENVIRONMENTAL MANAGEMENT PROGRAMME FOR PROSPECTING FOR STONE &  
ASSOCIATED MINERALS ON THE FARM ROBERTS KRAAL 281, BEDFORD DISTRICT**

(REF. EC 30/5/1/1/2/0146 PR)

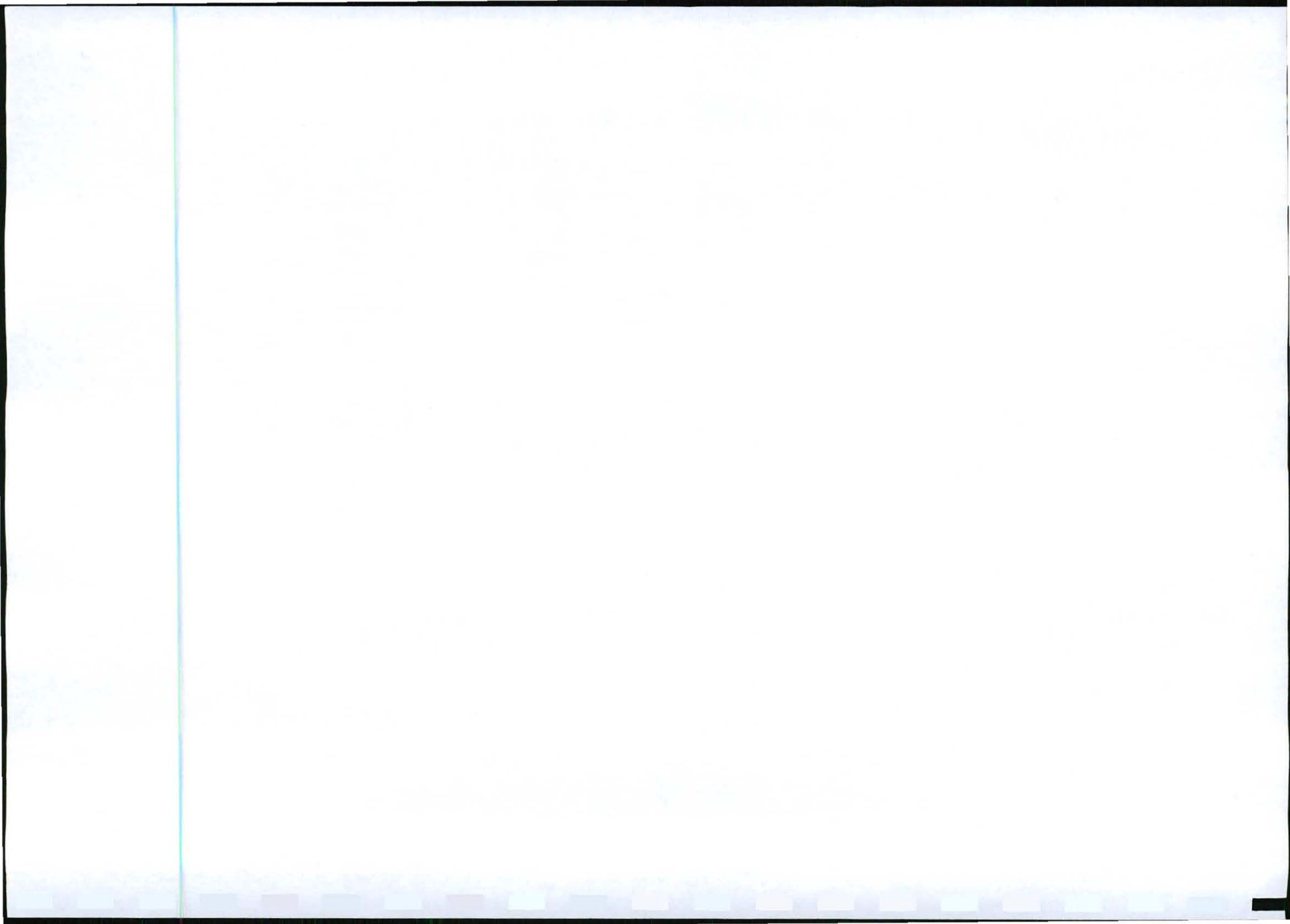
REGIONAL MANAGER  
MINERALS AND ENERGY  
EASTERN CAPE REGION  
PRIVATE BAG / PRIVAATSAK X6076  
2010 -04- 26  
PORT ELIZABETH, 6000  
STREEKBESTUURDER  
MINERALE EN ENERGIË  
OOS-KAAPSTREEK

Prepared by:



**Afrimat Aggregates (Trading) (Pty) Ltd**  
**P O Box 768**  
**BELLVILLE**  
**7535**

**April 2010**



## COMPANY BACKGROUND

The company Afrimat Aggregates (Trading) (Pty) Ltd has been in business since July 1994.

The Afrimat Group of Companies are developers of mineral resources and commodity-related business processes such as, including amongst others, providing construction materials, mining, etc.

## APPLICATION

Afrimat Aggregates (Trading) (Pty) Ltd has applied for a prospecting right during February 2010 in the Bedford area and were accepted. The following farm area are involved:

1. Roberts Kraal 281, Cacadu District Municipality.

## APPLICATION DETAILS

### Particulars of Applicant

Afrimat Aggregates (Trading) (Pty) Ltd  
P O Box 768  
Bellville  
7535

Reg.No 1994/005271/07

Tel.: 021 – 917 8840                      Fax: 086 617 7910  
Email: [mining@afriat.co.za](mailto:mining@afriat.co.za)

### Particulars of Contact Person

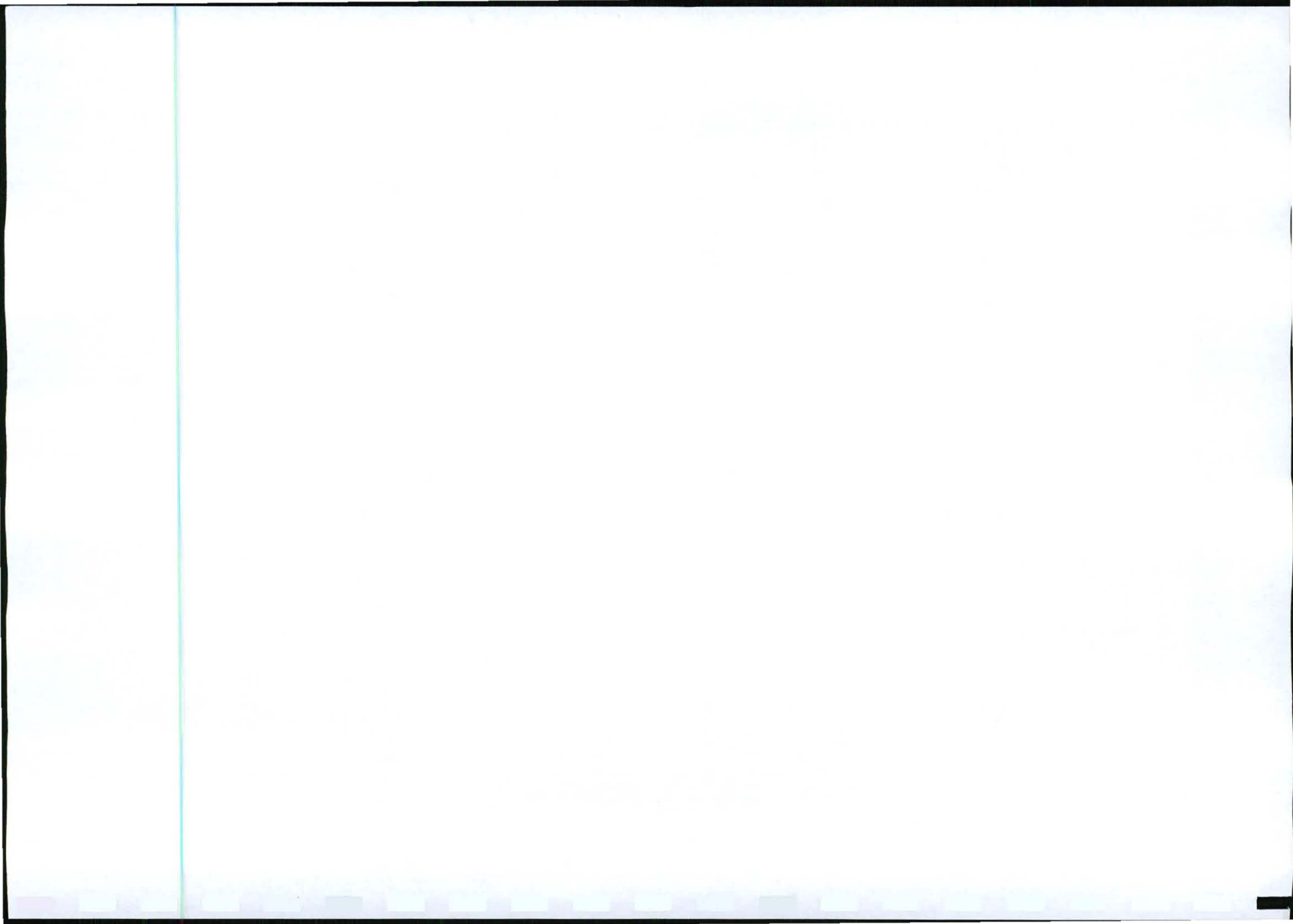
Mr G Odendaal  
P O Box 768  
Bellville  
7535

Tel.: 021 – 917 8840                      Cell: 082 370 3777                      Fax: 086 617 7910

### Particulars of Land Owners

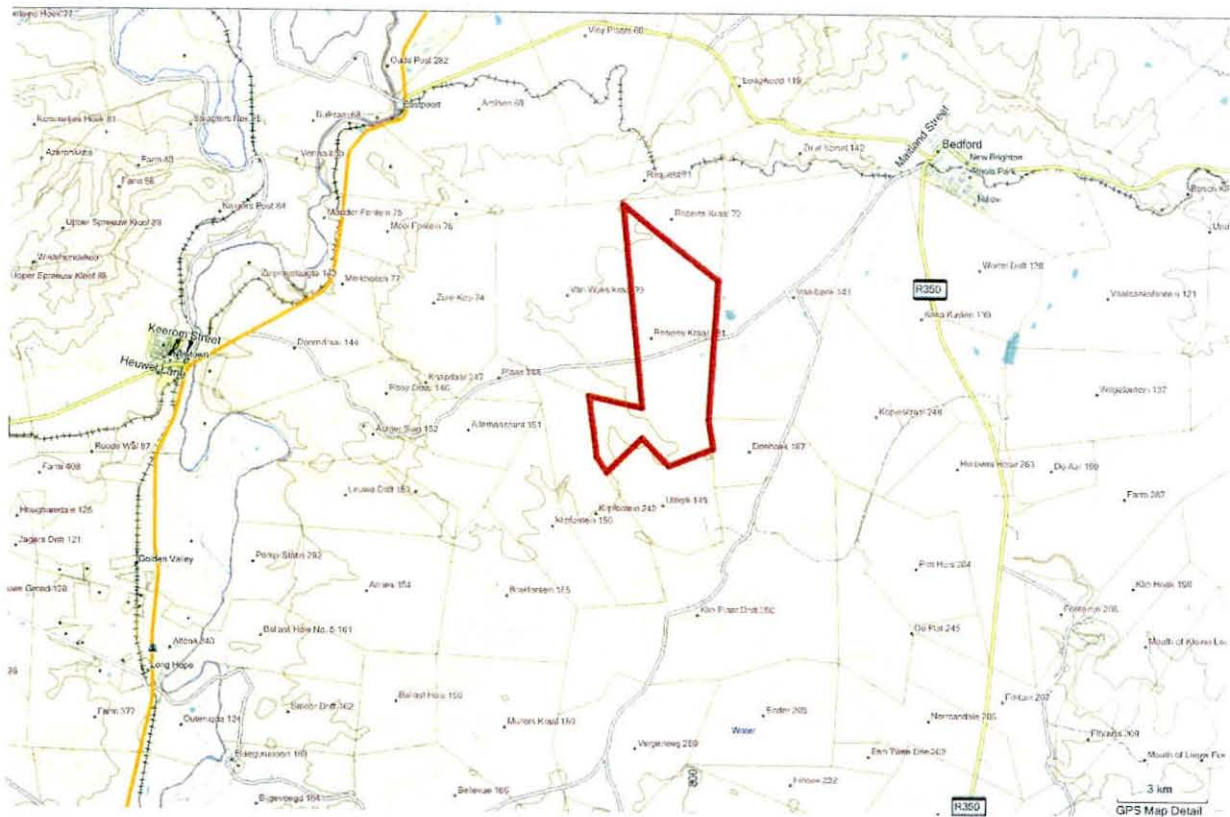
Mr A F van Niekerk  
P O Box 171  
Bedford  
5780

Cell: 083 277 0793



## Regional setting

The proposed site is situated 9 km WSW of Bedford, 15 km east of Cookhouse and 35 km east of Somerset East. The R350 road runs north to south 8km to the east and the R63 road runs west to east 6 km to the north as well as north to south 10 km to the west.



## BROAD PROJECT DESCRIPTION

The main focus of the prospecting programme is the sandstone outcrops on the farm concerned. The proposed prospecting programme will on average include the drilling of 5-6 boreholes in each of the study areas by means of a wheel mounted drilling rig to establish the depth and nature of overburden, if any and depth and quality of the sandstone deposits. The occurrence of sand as well as decomposed gravel will also be investigated.

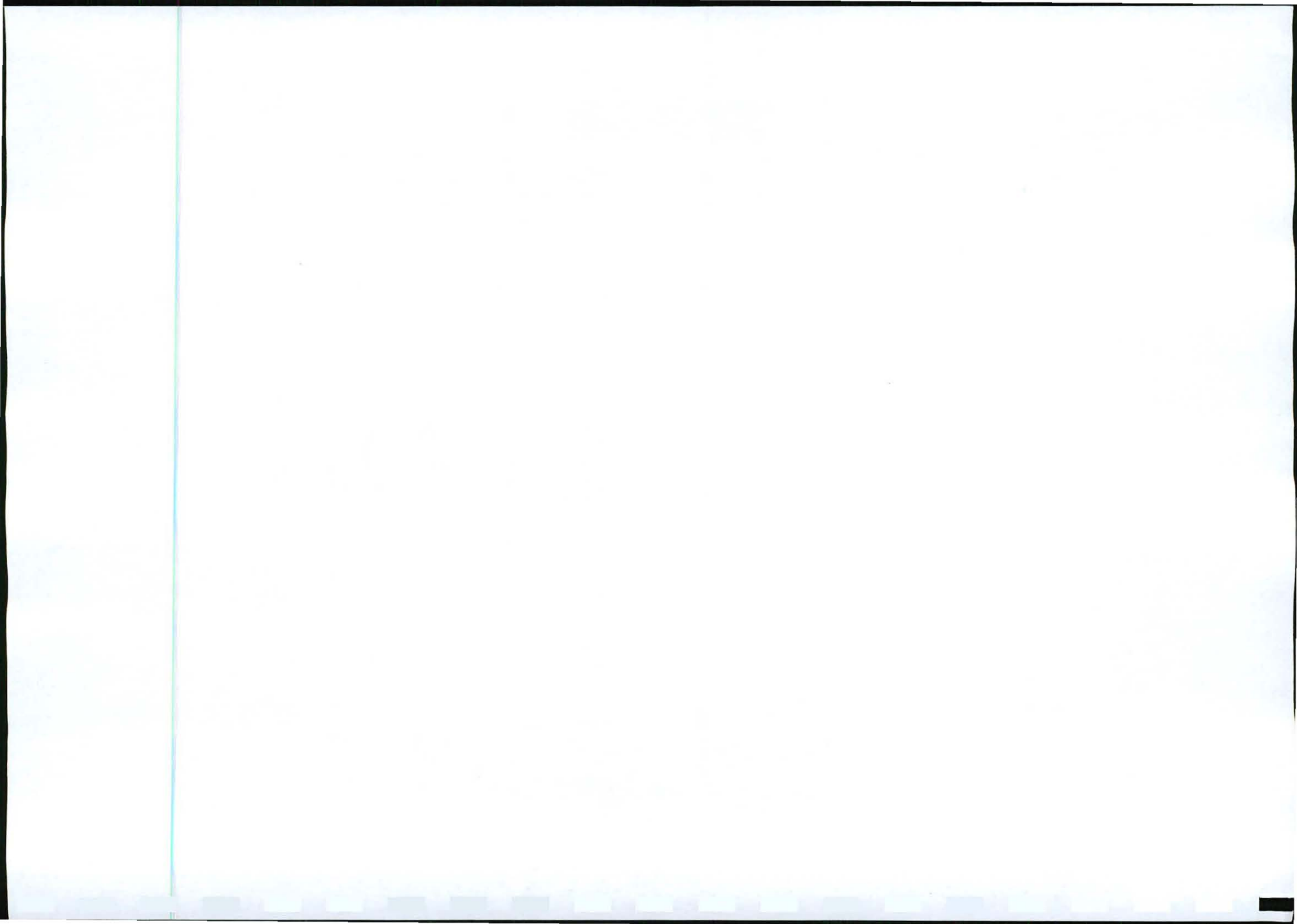
## DETAILS OF THE MINERAL

The intention of this exercise is to find a suitable stone and rock source for the utilization of concrete fine and course aggregates as well as suitable natural gravels for road and civil construction. Homogenous areas of sandstone will suffice for this exploration exercise.

## REGIONAL GEOLOGY

### Overview

Geology of the Beaufort Group and more specific Balfour formation in the Adelaide subgroup. The Balfour formation contains a presence of varying amounts of sandstone and grey shale.





It will consist of alternating layers a few meters to a few tens of metres thick of grey, fine-grained sandstone. These sandstones show horizontal lamination ("flat bedding") with a primary current-lineation on the bedding-planes, trough cross-bedding and micro-cross-lamination.

The top of the Adelaide Subgroup can be defined as a horizon above which sandstone predominates over mudstone.

## **Site Geology**

### Structural Geology

The southern edge of the area is close to the northern limit of the Cape Fold Belt and dips of up to 30° are encountered. The dip angles decrease progressively northwards, and most of the area mapped is characterized by gentle (1° to 3°) northward dips. A few minor localized folds occur in the south.

## **DESCRIPTION OF HOW THE MINERAL RESOURCE AND MINERAL DISTRIBUTION OF THE PROSPECTING AREA WILL BE DETERMINED (PROSPECTING PROGRAMME)**

Prospecting will consist of the following activities and the time frames are determined on the basis that the right will be granted in 2010:

1. Literature survey, desktop studies
2. Initial site evaluations and target identification
3. Core drilling
4. Analysis of samples
5. Complete preliminary environmental feasibility study
6. Complete surface use agreement with landowner
7. Mining right application

## **TECHNICAL DATA DETAILING THE PROSPECTING METHOD**

### **Prospecting areas**

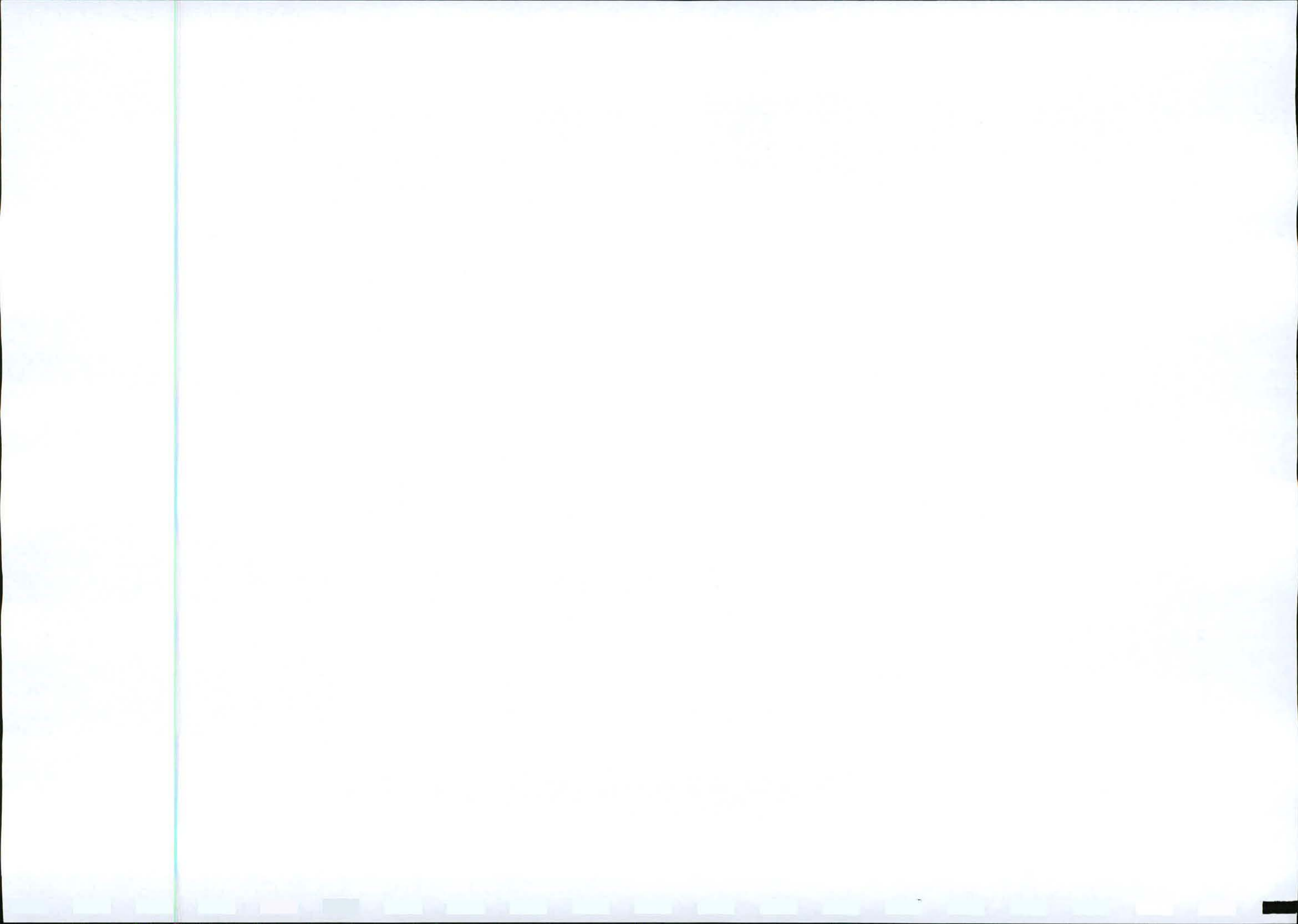
The prospecting venture will occur over the extent of the farm area applied for.

### **Non-Invasive Prospecting Activities**

The non-invasive prospecting programme will entail geological mapping of the area and probably ground magnetic to define the nature of the sediments of the area in order to determine possible future mining procedures and exclusion zones. The appointed geologist may use a hand carried Geotron instrument for ground magnetic. Final decisions in this regard will be made once detailed planning for the prospecting areas have been concluded and any decision in this regard will be communicated to the affected landowners and the DMR timeously.

#### **1. Literature survey & desktop studies**

A study will be done on the information available for the proposed site with specific reference to the geology and environmental sensitivity. Information gathered will be documented and mapped. This information will be used to determine whether certain areas need to be excluded from invasive prospecting activities. No impact on the proposed prospecting area will be applicable.



## 2. Initial site evaluation and target identification

The information gathered from the literature survey and desktop studies will be used in conjunction with information gathered during detailed site visits to determine whether the initial position determined for invasive prospecting are correct insofar as rock reserves and exclusion areas are concerned.

## 3. Core drilling

### Initial assessment

To perform a preliminary assessment of the quartzitic sandstone reserves, diamond core drilling (7,5 cm in diameter) will be conducted as indicated on plans provided and the amount of drill sites will be restricted to between 4 and 9. The drilling process will determine the out of overburden, depth and continuity of rock deposits as well as any fault or fracture zones.

The drilling rig will be transported on a low-bed via existing proclaimed road to the prospecting area. The wheel-mounted exploration drill rig to be deployed will be drawn by a truck and are able to move easily over rough terrain and do not require the establishment of large drilling platforms, which would entail substantial earthmoving activities that could pose post-prospecting rehabilitation challenges. No road construction will take place since site can be accessed via existing roads and overland transport. All access roads will be planned in conjunction with the land owner. If needed, large stones will be removed from travelling routes with minor to no impact on surface cover.

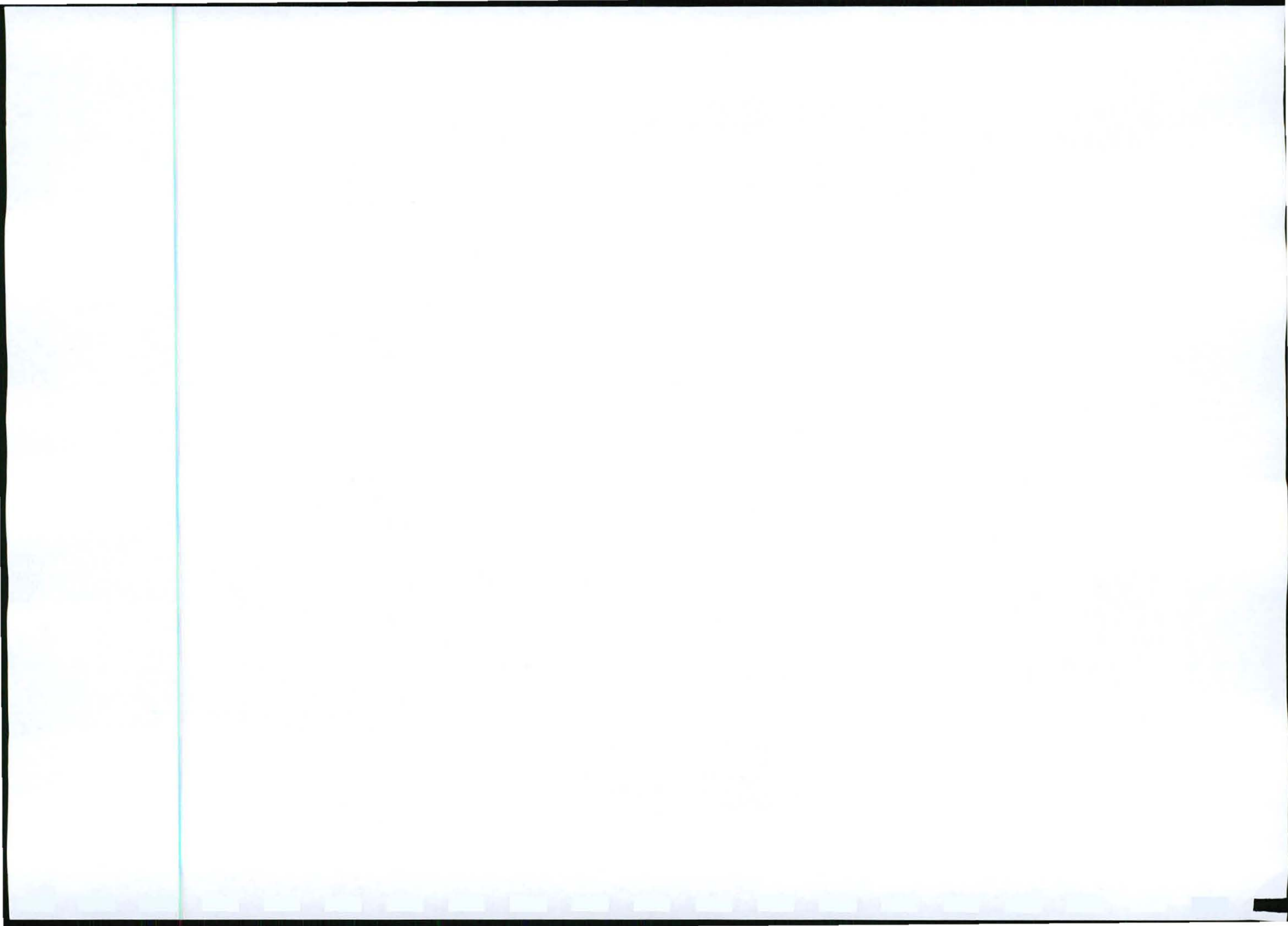
The drilling rigs are diesel powered hence neither Eskom power nor freestanding generators are required. In order to prevent hydrocarbon spills during drilling or refueling, plastic liners will be positioned underneath the drilling rigs. Water, for cooling down the drill bits, will be stored in 5000L tanks and will be filled from water sources still to be negotiated with landowners involved.

Holes will be drilled to a depth between 20-30m at each drilling site. Drill orientations will be mostly vertical to near-vertical. Once the prospecting borehole has been stopped, borehole cores will be placed within core trays and the borehole will be capped with a steel plate to obsolete the drill casing. The casing will be wedged into the borehole with locking pins and finally capped with a concrete beacon, which will include the relevant borehole number.

GPS readings for each drill hole will be depicted on a drilling grid and submitted to the DMR for record purposes. Drill cores will be logged and stored in a core tray for analysis by the appointed geologist. No drill cores will be left in the veld and the drilling rig will be fitted with a dust bag to remove excess dust from the environment. Fine drill chips and dust that accumulate around the drill hole, will be recovered and returned to the hole or removed off site or if available, covered with topsoil on completion of each hole. A pre- and post drilling photographic record of the site will be kept for record purposes.

Once the core data has been interpreted, a prospecting report will be compiled and will determine whether infill drilling is required. On completion of these reports it will be clear which areas should be excluded because of excessive overburden or inferior stone quality.

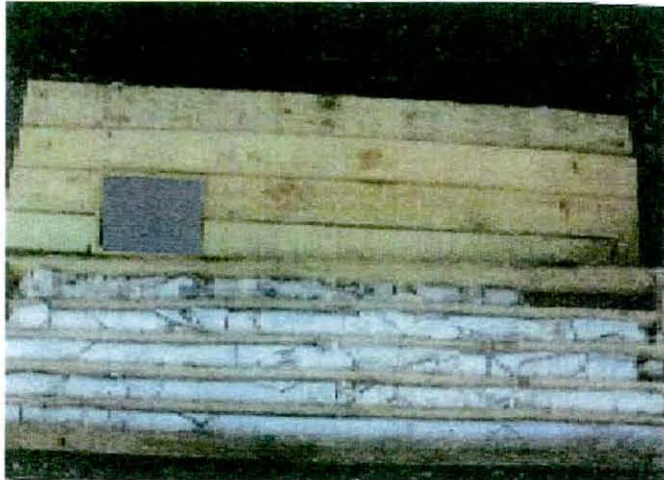
If needed, at drill site a caravan will be parked at a convenient locality for storage of limited equipment for the drilling rig, facility where meals can be enjoyed and for use by the night-watchman, if to be appointed. To ensure that the venture is compliant with



Mine Health and Safety Regulations a chemical toilet will be positioned close to drilling site.

The borehole drilling strategy is conceptual and final borehole positions will depend on the borehole data extrapolated from individual boreholes in each phase. Borehole densities and drilling patterns could be revised in areas where anomalies are found.

#### **An example of drilling core & core tray**



#### **4. Samples analysis**

Once the quartzite core body has been determined, samples of boreholes will be tested at a competent laboratory. Samples will be taken from each borehole on site to statistically determine the competency of the rock. Samples will *inter alia* be tested for 1) moisture content, 2) fineness modulus, 3) flakiness index, 4) compactability and 5) strength. The outcome of the laboratory analysis will dictate for which applications crushed material obtained from the core body can be used.

### **TECHNICAL COMPETENCE**

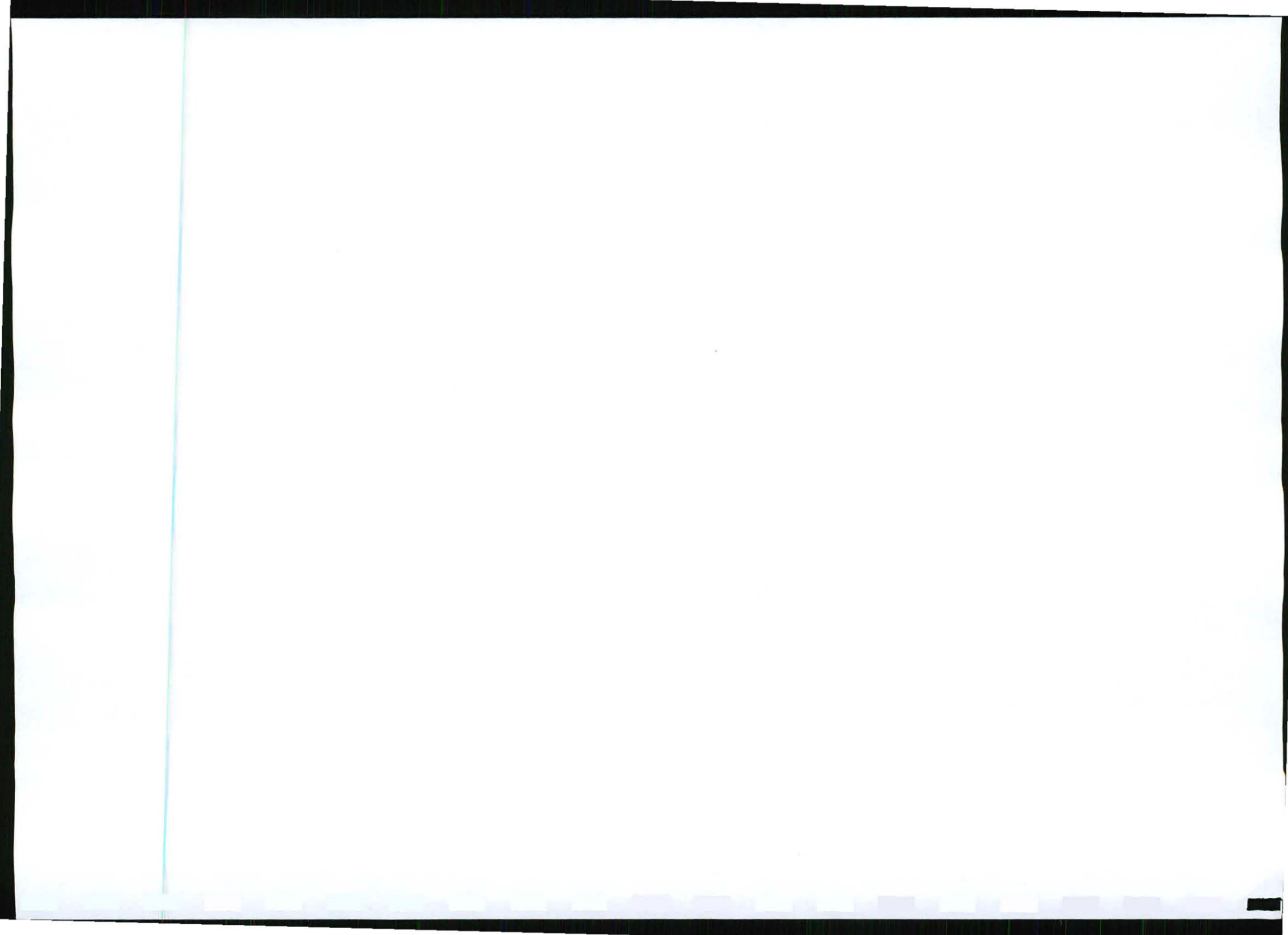
Technical competency and equipment will be provided by Afrimat Aggregates (Trading) (Pty) Ltd and the projects will be managed by Mr G Odendaal through his mine manager based at Denver Quarries in Port Elizabeth.

#### Prospecting expertise

Afrimat owns various hard rock quarry concerns throughout South Africa and employees that will champion the prospecting ventures are therefore fully conversant with core drilling activities and related safety and environmental impacts. The company also own the required equipment, which is currently based as Denver Quarries in Port Elizabeth.

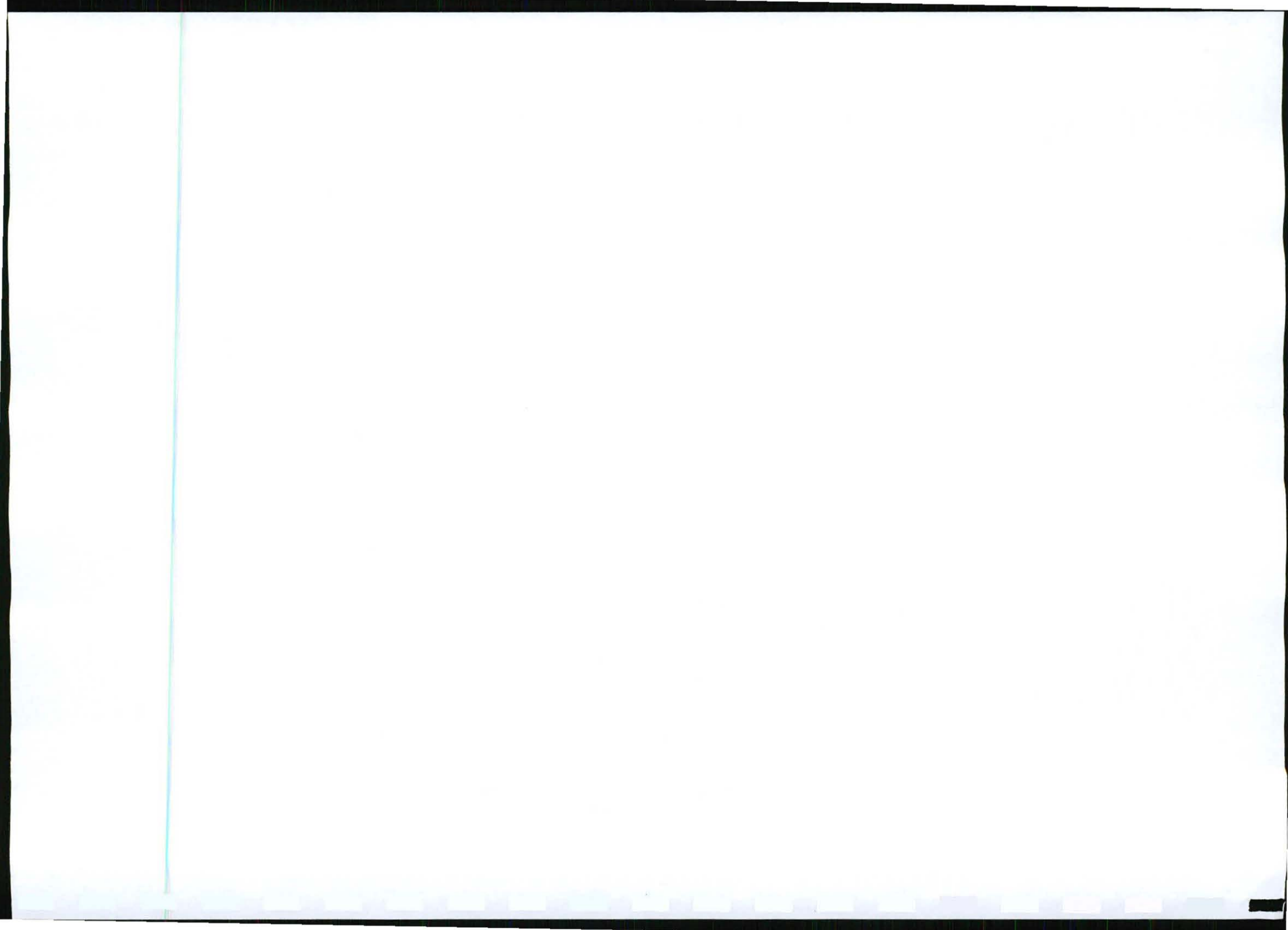
Mr Anton Barnard, mine manager at Denver Quarries, will perform the invasive prospecting activities. Mr Barnard has in excess of 10 years of experience in the hard rock mining sector and is therefore fully competent to oversee the prospecting activities both from an operational as well as environmental perspective.

### **MINE HEALTH AND SAFETY**



The applicant will endeavor to comply with the conditions of the Mine Health & Safety Act, Act 29 of 1996 and as a minimum will ensure the following:

- If prospecting work will be performed within 100m from a residence/road /infrastructure that must be protected, authorization will be requested from the Principle Inspector of Mines.
- Risk assessments as stipulated in the Mine Health & Safety Act will be submitted to the Principle Inspector of Mines on request.
- Relevant codes of practices will be submitted to the Principle Inspector of Mines on request.
- Where required, heavy vehicle signage will be posted on each side of the road, 150m from each access to a proclaimed road.
- All vehicles will come to a complete stop before accessing any road. Operators will be trained to observe carefully whether any traffic is nearing any access to a drilling site before turning onto any road. If required a flagman will be used to improve safety standards at any access to roads within the prospecting area. Operators will make use of indicator lights when turning into any road.
- Any prospecting related accidents will be reported immediately to the Principle Inspector of Mines in writing in the applicable format.
- It will be ensured that visibility at the intersection with any gravel road is good to both sides.
- Prospecting will not increase dust liberation into the air or noise levels above the requirements set for employees in the Mine Health & Safety Act.
- Prospecting activities and applicable safety regulations will be discussed with the relevant landowners.
- Prospecting will be done in such a manner as to eliminate safety risks. Operators will be well trained to perform prospecting tasks to ensure the activity poses no risk to workers on site or to property residents.
- Equipment will be well-maintained and where required, reverse sirens will be fitted to reduce the risks of accidents occurring.
- Workers will be provided with dust masks and ear muffs.
- Noise generation by vehicles will be controlled through regular servicing and fitting of standard exhaust systems.
- A competent prospecting manager will be appointed.
- A competent risk & safety officer will be appointed if deemed necessary by the Principle Inspector of Mines.
- The necessary health equipment shall be made available at drilling sites.
- Acceptable sanitation facilities will be provided at prospecting sites.
- Workers will be granted the right to refuse working in any unsafe areas.
- No prospecting will take place during periods of impaired visibility.
- The prospecting area will be a restricted area and visitors will not be allowed unsupervised access to the operations during the day. The necessary signage to this effect will be posted at the entrances to the drilling sites.
- The applicant will ensure that management and workers are conversant with the requirements of the Mine Health and Safety Act 29 of 1996.
- Machine operators will on a regular basis be informed on the potential health and safety issues involved and efforts will be focused on safe distances from operating vehicles, turning circles of vehicles, moving machinery parts and maintenance of guards, mechanical safety of vehicles and medical matters.
- Rehabilitated prospecting sites will be stable, vegetated and safe.





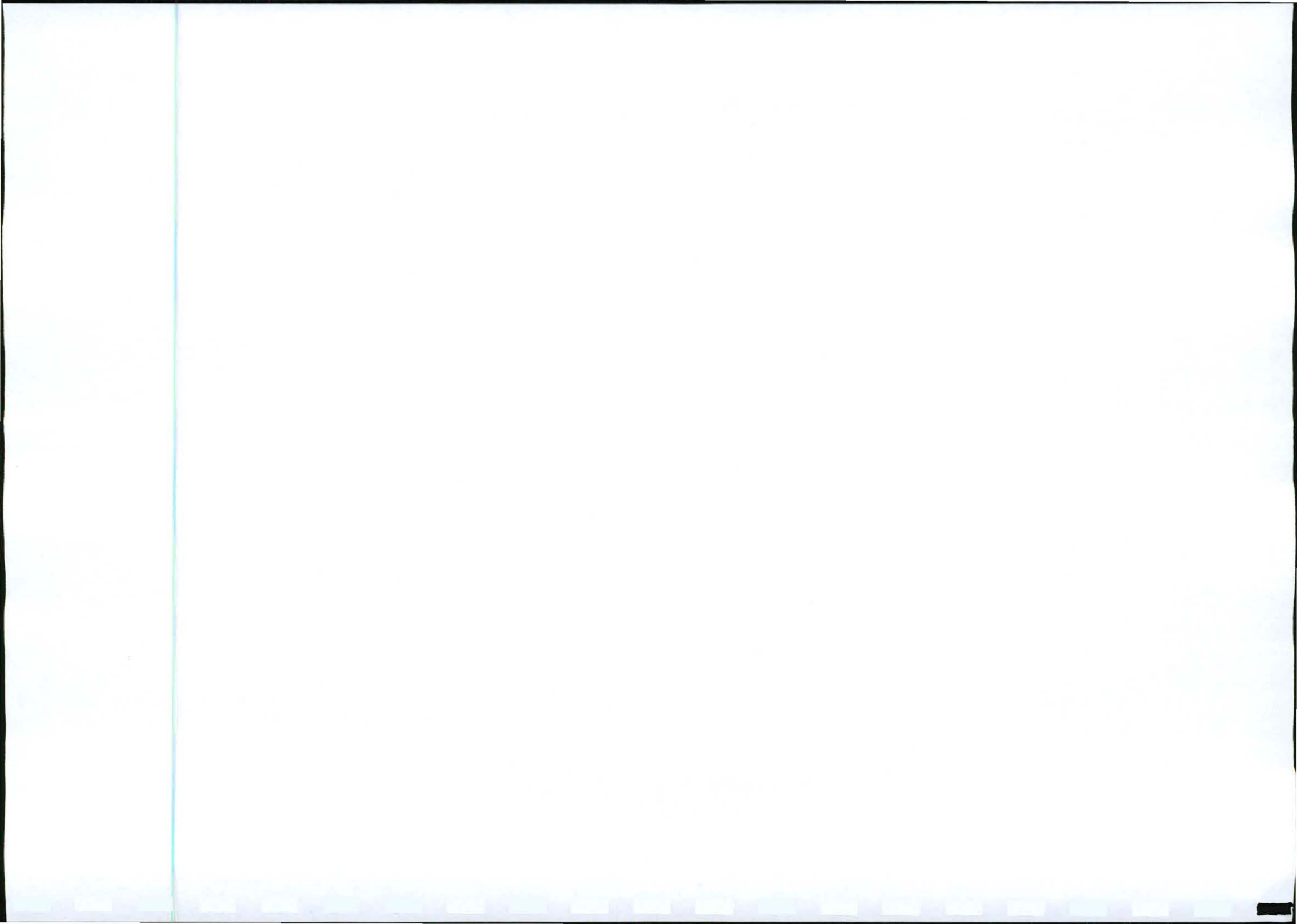
## ENVIRONMENTAL IMPACT ASSESSMENT CRITERIA

The impacts of a quarry on environmental parameters are assessed in this section in accordance with the criteria of the Minerals and Petroleum Resources Development Act 28 of 2002 and applicable sections of Sections 21, 22 and 26 of the Environmental Conservation Act. The process will highlight the impacts and emphasized the importance of remedial measures over the short term, as well as during the post mining phase. Impacts were assessed according to the criteria listed below:

### Schedule of Activities:

The proposed prospecting schedule will comprise the following (from the date of approval of the prospecting right) as shown in the chart below:

			1	2	3	4	5	6	7	8	9	10-24	
Phase 1 INVESTIGATIVE STAGE		Approval											
	1a	Desktop Analysis of Aerial Photos											
		Desktop Analysis of Satellite Imagery											
		Sourcing, purchasing & analysis of other geological information											
		Literature review											
		Site Establishment											
		Delineate survey control data (GPS)											
	1b	On site Assessment and field mapping											
	1c	Consideration of results											
Phase 2 : INVASIVE PROSPECTING													
	2	Mark the position of the core and percussion drill holes											
		Locate and mark access routes to the drill sites											
		Educate / train the staff conducting drilling re environmental issues											
		Conduct drilling of core holes											
		Logging of cores and Analysis of results											
		Final analysis of results to determine future options or drill additional holes											
Phase 3 : Decisions & Applications	3	<i>Depending on results, 3 options exist as follows:</i>											
		- If results non conclusive, then apply for renewal of prospecting permit											
		OR if results prove negative then rehabilitate & apply for closure											
		OR if results prove positive then submit mining right application											
	In all events, provide reporting to DME as required by the DME												



### Extent

Whether the impact will occur on a scale limited to the immediate site of the proposed activity, local area and immediate communities and settlements, sub-regional (municipal), regional (provincial) or national scale.

### Duration

Whether the time span of the impact will be short term (0-5 years), medium term (6-10 years), long term (11-25 years) or permanent where natural processes or mitigation processes cannot eliminate the impacts.

### Intensity (Magnitude)

Whether the size of the impact is negligible, very low, low, low-medium, medium, medium-high, high & very high.

### Probability

The probability of the impact actually occurring as either unlikely, probable, likely or definite.

### **These criteria are evaluated in terms of**

1. Significance (Insignificant-very low, low, low-moderate, moderate-high, high & very high).
2. Status (positive-negative-neutral).
3. Confidence (based on academic information, specialist knowledge, site evaluations, applicants approach).

The significance of the impact on the parameters of the affected environment is rated a:

#### Low Significance

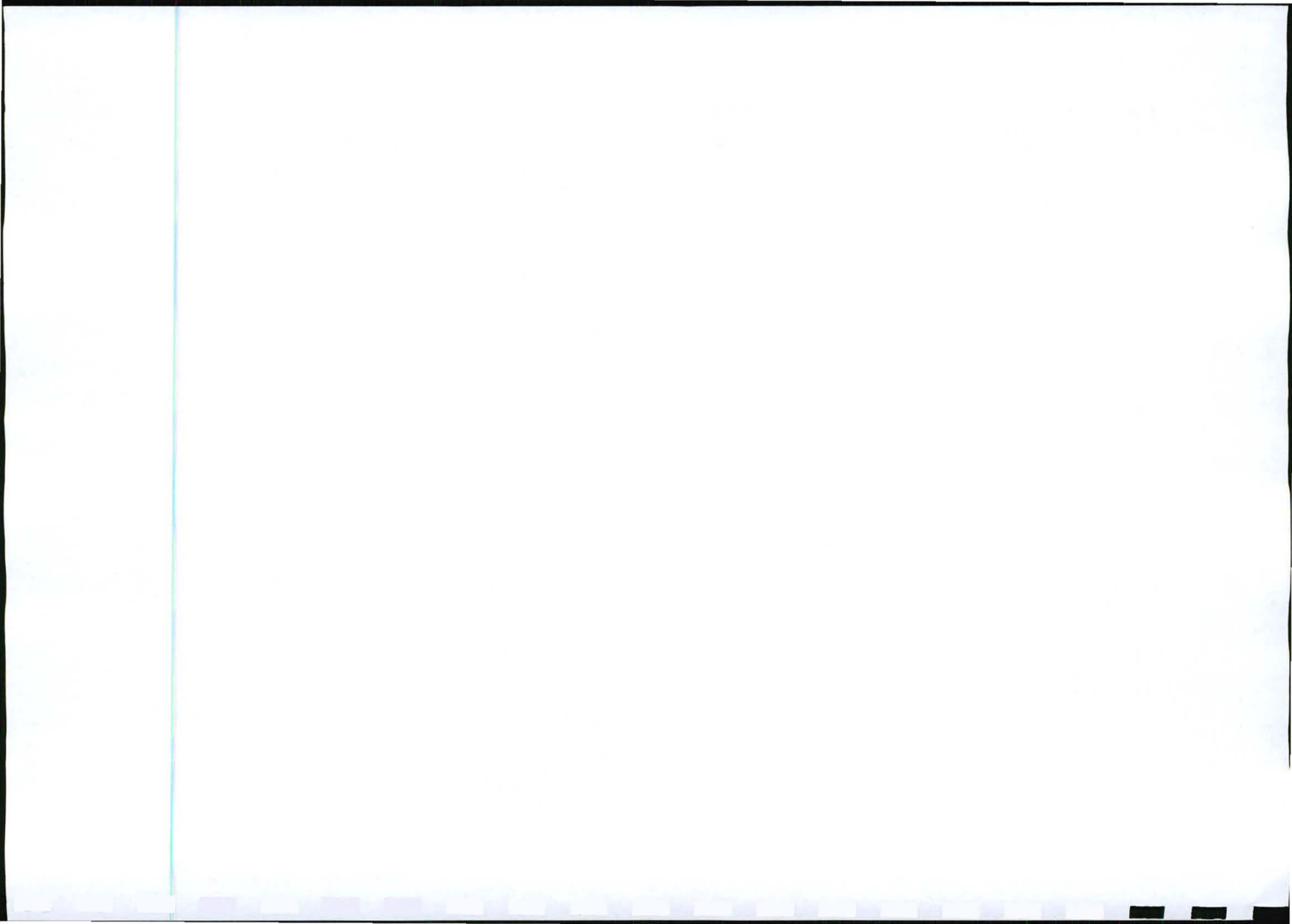
The project will not cause any major adverse or beneficial changes to the biophysical, social or economic environment. Impacts experienced will abate almost immediately after cessation of activities and the biophysical, social or economic system should recover and return more or less to the natural state. No expensive mitigation measures will be needed to address any of these impacts. Ecological functions will continue undisturbed and no complaints from Interested and Affected Parties (I&AP's) are anticipated. No rare and endangered species or sensitive areas exist in the area.

#### Moderate Significance

The project will induce moderate short to medium term changes to the biophysical, social or economic environment. The impact would be induced outside the development area and also possibly on a sub-regional level. Over the medium term the impacts could fade away, but the implementation of mitigation measures are normally required to eliminate these impacts. The impacts would be experienced for some time after cessation of activities, but would not affect the biophysical, social or economic environment severely. With mitigation the biophysical, social or economic system should recover, but the return to the natural state would be very slow and in some instances may not be achieved. I&AP's might express some concerns and complaints may be received on an ad hoc basis. Rare and endangered species or sensitive areas may exist in the area and could be marginally affected.

#### High Significance

The project will induce extensive long-term changes to the biophysical, social or economic environment. The impact would be induced outside the development area and also possibly on a regional to national level. The possibility of secondary impacts arising from the project



is high. Over the long term the impacts could fade away, but the implementation of expensive mitigation measures are normally required to eliminate or mitigate these impacts. These impacts would be experienced after cessation of activities and could affect the biophysical, social or economic environment severely. With mitigation the biophysical, social or economic system could possibly recover, but the return to the natural state would be or normally not be achieved. Ecological functions will be permanently disturbed and major complaints from Interested and Affected Parties (I& AP's) could be expected. Rare and endangered species or sensitive areas exist in the area might be critically affected.

Should the impact assessment as a minimum reflect 2-3 impacts of high significance and 2-3 impacts or moderate significance, the project shall be viewed as a potentially flawed and continuation of the project should be seriously reconsidered or special engineering or biophysical/social intervention must be implemented.

## BIOPHYSICAL ENVIRONMENT

Biodiversity of the region is under pressure from over-grazing by stock farmers, frequent burning of veld to increasing the carrying capacity of natural veld, establishment of pasture areas, legal and illegal hunting and the spread of alien vegetation.

The Roberts kraal prospecting area concern comprises a low sandstone ridge that protrudes above the flat lying surrounding areas. Most of the surrounding area has been 100% transformed by farming activities and pasture establishment.

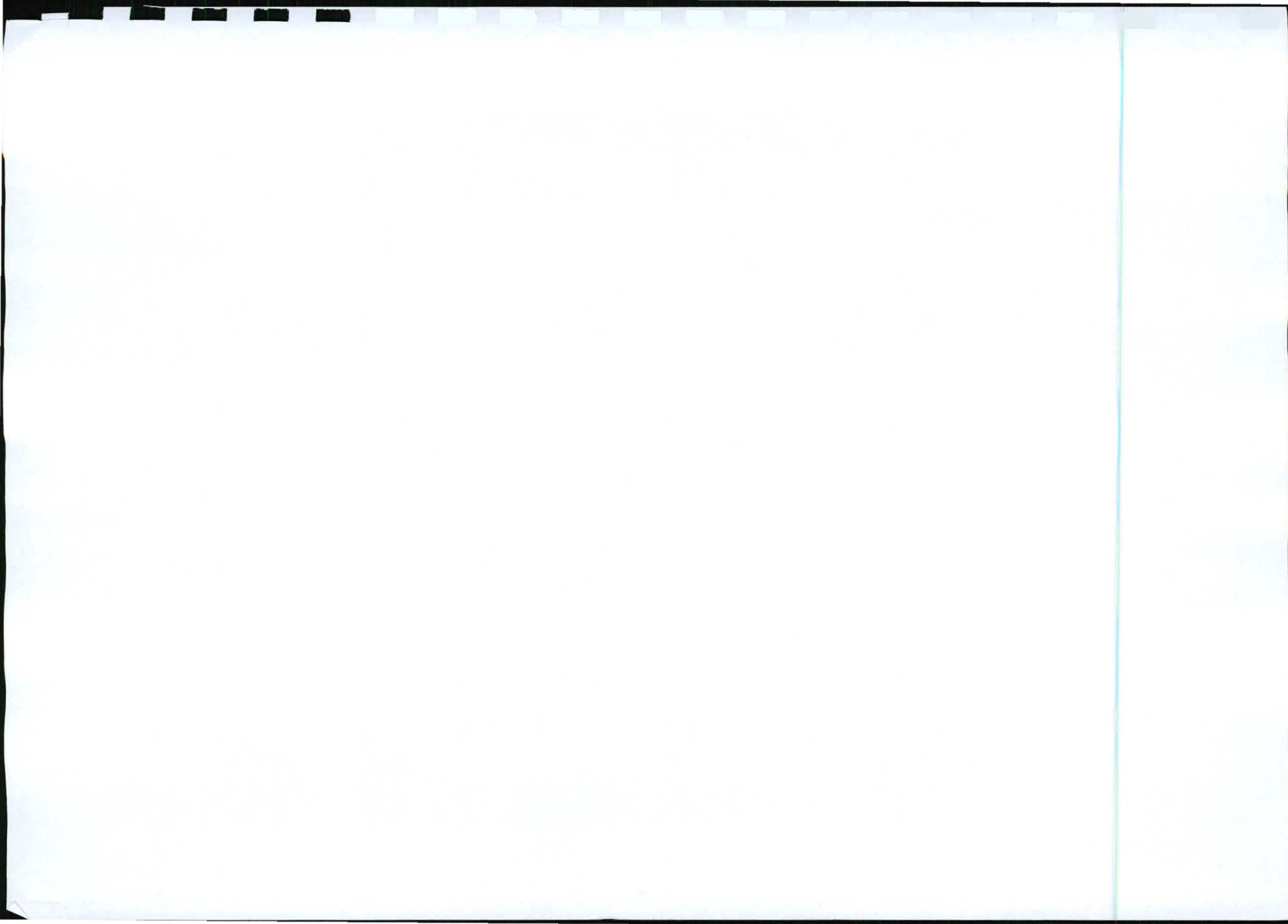
A broad overview of the biophysical components within the prospecting area is described in the sub-headers below. The status of the faunal assemblages within the greater area has been conducted as a desk top study for the purpose of this prospecting application.

## CLIMATE

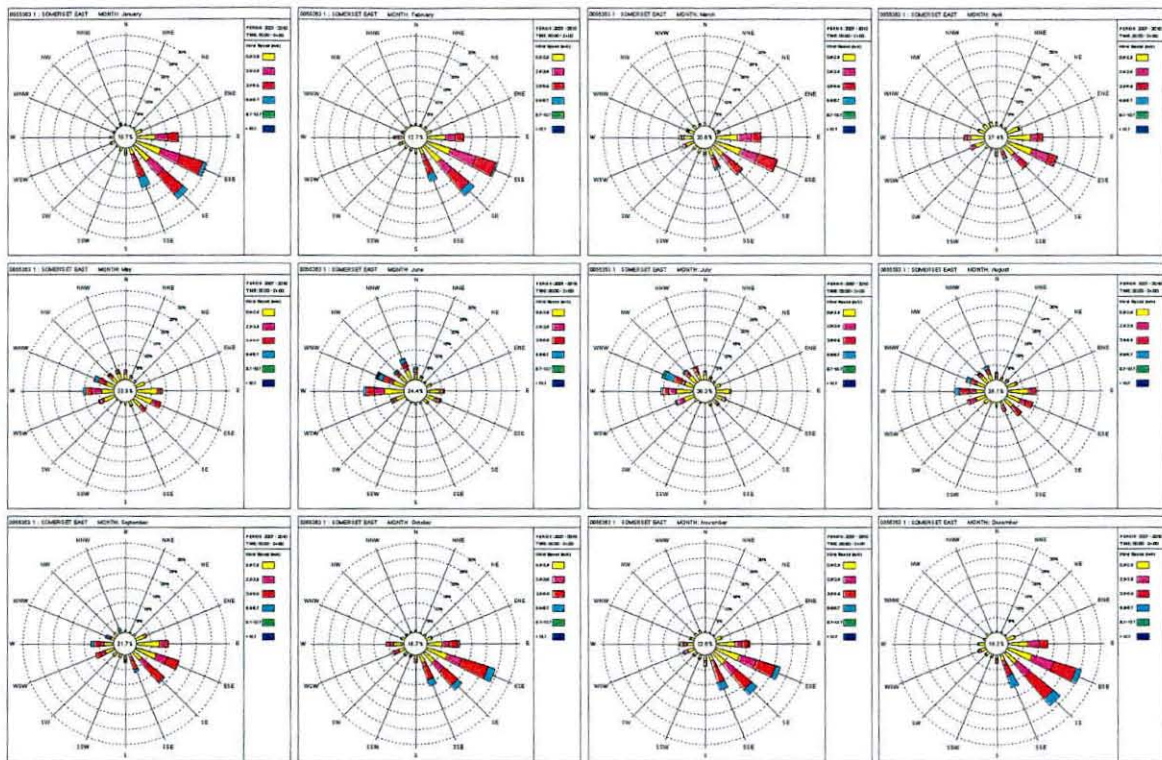
Bimodal rainfall occurring in spring and late summer. MAP is relatively uniform across this unit, but increases closer to the mountains and slightly from west to east.

### Monthly Rainfall

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
2000/01	30.5	210.8	23.5	74.5	25	75	113.5	13.5	13	23.5	26.7	77.5
2001/02	16	114	70	61.5	27.5	63	26.5	11.4	18.1	43.5	114.3	68
2002/03	14.8	13.8	31.4	16.8	30	52.8	42.4	53.2	1.2	0	5.4	0
2003/04	57.2	14.8	14.4	36.5	56.8	22.6	27.2	5.2	21.2	9.9	12.6	63.4
2004/05	6	10.6	43.4	54.2	56.6	50.6	72	19.4	8.4	2	8.6	12.2
2005/06	21.4	115.6	43.6	54.2	109.2	18.4	22.4	34	11.6	18.2	90	32
2006/07	51.8	22.8	31.6	29.8	19.2	65.6	35.8	10.6	8	1.2	6.6	0
2007/08	35.6	28	106.8	61.2	69.6	37.2	23.8	3.6	20.2	0	21.1	7.2
2008/09	20	34.8	35.3	0.4	55.7	21.2	11.8	0	15.5	20.4	5.8	12
2009/10	76	27.5	14.2	76.5	44.5							
Avg:	32.9	59.3	41.4	46.6	49.4	45.2	47	15.3	12.7	11.9	29.2	33.2



## Wind Roses



## TOPOGRAPHY

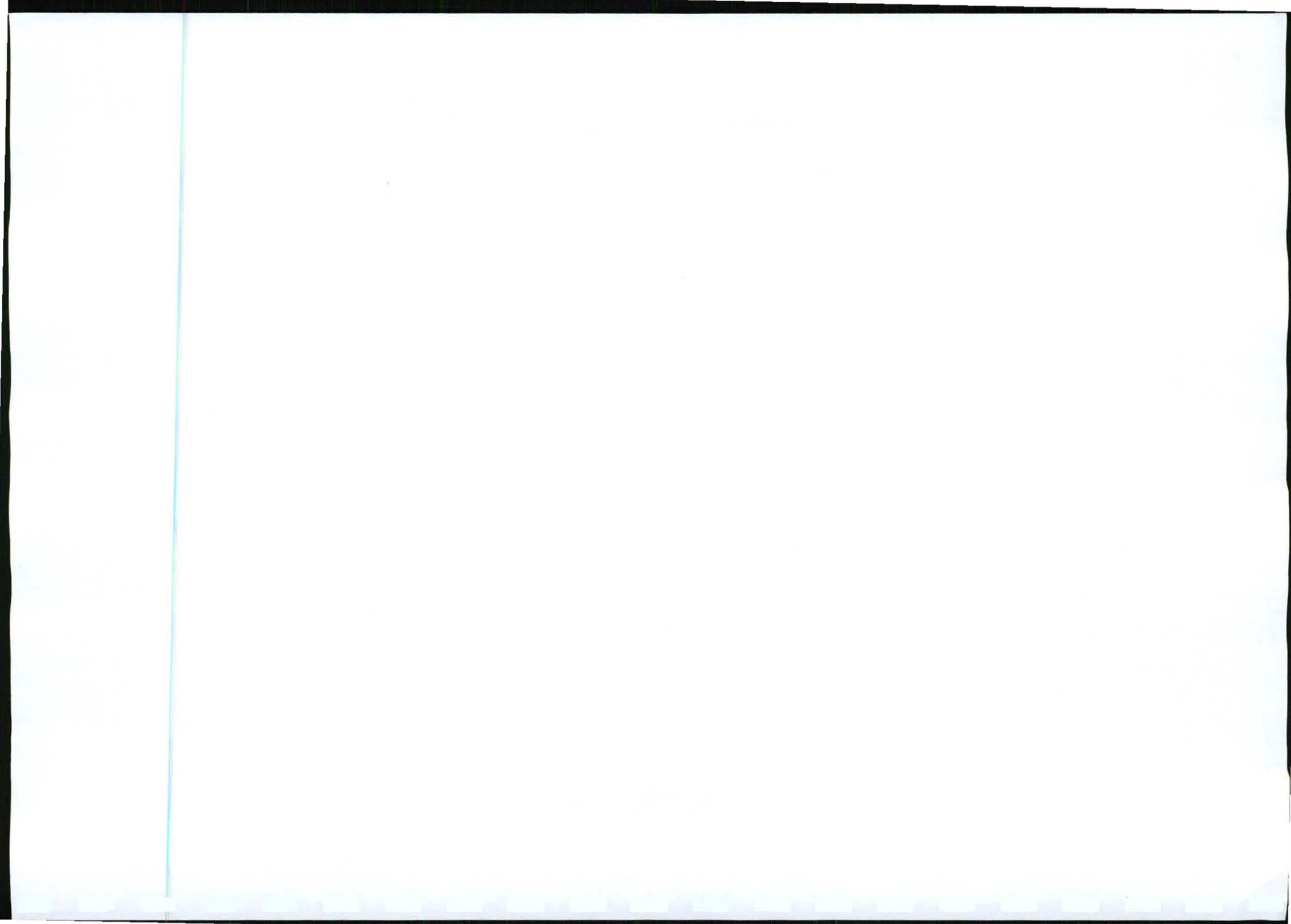
C.1	DESCRIPTION OF THE ENVIRONMENT LIKELY TO BE AFFECTED BY PROPOSED PROSPECTING/MINING OPERATIONS: (REGULATION 52(2)(2))
C1.1	What does the landscape surrounding the proposed operation look like? (Open veldt / valley / flowing landscape / steep slopes)
	Gently undulating plains supporting open, dry grassland interspersed with <i>Acacia karroo</i> woodland vegetation. The grassland is relatively short and is dominated by <i>Digitaria argyrograpta</i> , <i>Tragus koelerioides</i> , <i>Eragrostis curvula</i> and <i>Cymbopogon caesius</i> . It contains a dwarf shrubby component of karroid origin in the southern and southwestern parts of its range.

### Impact assessment

No construction of roads is anticipated since drilling site can be reached by means of existing roads and overland transport.

Drilling of boreholes will similarly not result in any changes to the topography since no drilling platforms will be established. The proposed activities will also not result in any major erosion that could affect the topography of the area detrimentally. The only negligible impact that might arise is the removal of large stones from access roads.

No infrastructure will be erected that could result in a temporary change in topography.





## Impact on topography

### General Remedial measures

- Prospecting area will, as far as possible, be restricted to flat areas.
- Prospecting will not take place in or above areas reflecting active erosion processes.
- No roads will be constructed.
- Vegetation around the active drill site will not be disturbed to curb erosion processes on site.
- No areas outside the designated drill areas and access routes will be disturbed.
- Any erosion that might develop in the prospecting areas would immediately be filled in, compacted and vegetated.
- The rehabilitation plan will be implemented in accordance with the time frames set.
- The storm water control measures described under the headings "soil & surface water" will be implemented.
- No excavated material stockpiles of any nature shall remain at closure.
- All temporary infrastructure, if any and waste will be removed at closure.
- Prospecting will be done in such a way that the slope of the prospecting area will be similar to that of the surrounding topography.
- The prospecting areas will be reclaimed back to their original status by establishing a grass cover in the disturbed areas.
- The post rehabilitation topography will result in gentle overland flow with no evident erosion processes that could scar the land and cause changes to the topography or vegetation cover.
- An appropriate photographic record will be kept of the prospecting areas and will accompany the final performance assessment and closure report.

## LITHOLOGY

### **Impact assessment**

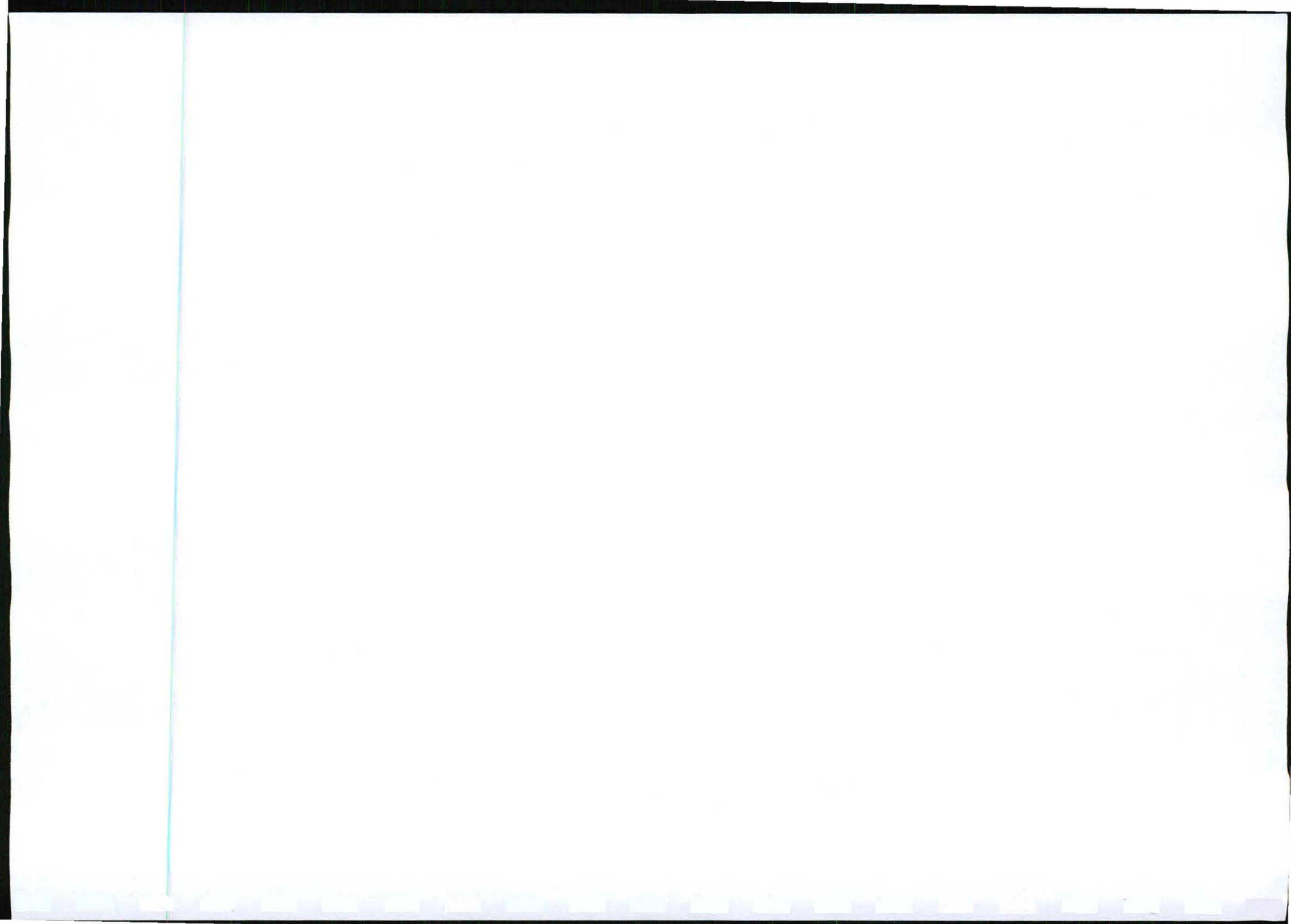
Drilling the prospecting boreholes will not result in any change to the geology of the area as rock core of a mere 6-8cm in diameter is removed at 4-9 sites over an area of approximately 200ha, which constitutes no impact at all. The geology will also not be affected by road construction since drilling sites will be accessed from existing roads and by driving overland.

### Remedial measures

- The minimum working area for an efficient and effective prospecting operation should be utilized and demarcated prior to the start of activities and personnel involved will be structured as such.
- No activities will be permitted outside the approved prospecting area.
- Soil horizons, if any will be replaced in the same sequence as they were initially removed.
- All rock core that will not be tested, will be returned to the drilled holes on completion of logging the relevant data.

## SOILS

C1.2	Describe the type of soil found on the surface of the site
	Topsoil is deep except in erosion channels which expose outcrops of limestone. The upper 25cm soil contains the humous content and will be treated as topsoil.



		VALUE	TICK	OFFICE USE
C1.3	How deep is the topsoil?	0 – 300mm		8
		300 – 600mm		4
		600mm +	√	2
C1.4	What <i>plants, trees and grasses</i> grow naturally in the area around the site?			
Gently undulating plains supporting open, dry grassland interspersed with <i>Acacia karroo</i> woodland vegetation (especially along the drainage lines). The grassland is relatively short (10-100 cm) and is dominated by <i>Digitaria argyrograpta</i> , <i>Tragus koelerioides</i> , <i>Eragrostis curvula</i> and <i>Cymbopogon caesius</i> . It contains a dwarf shrubby component of karroid origin in the southern and southwestern parts of its range.				

## Impact assessment

### Soil fertility

Soil fertility can be influenced through structural degradation, loss of humus content, impaired mineral cycles, soil pollution, soil loss and compaction. Since in most areas solid rock outcrop is present with only small pockets of soil hence virtually no impact is anticipated. Where slightly deeper soils are encountered, the affected area will generally not exceed 2 square meters.

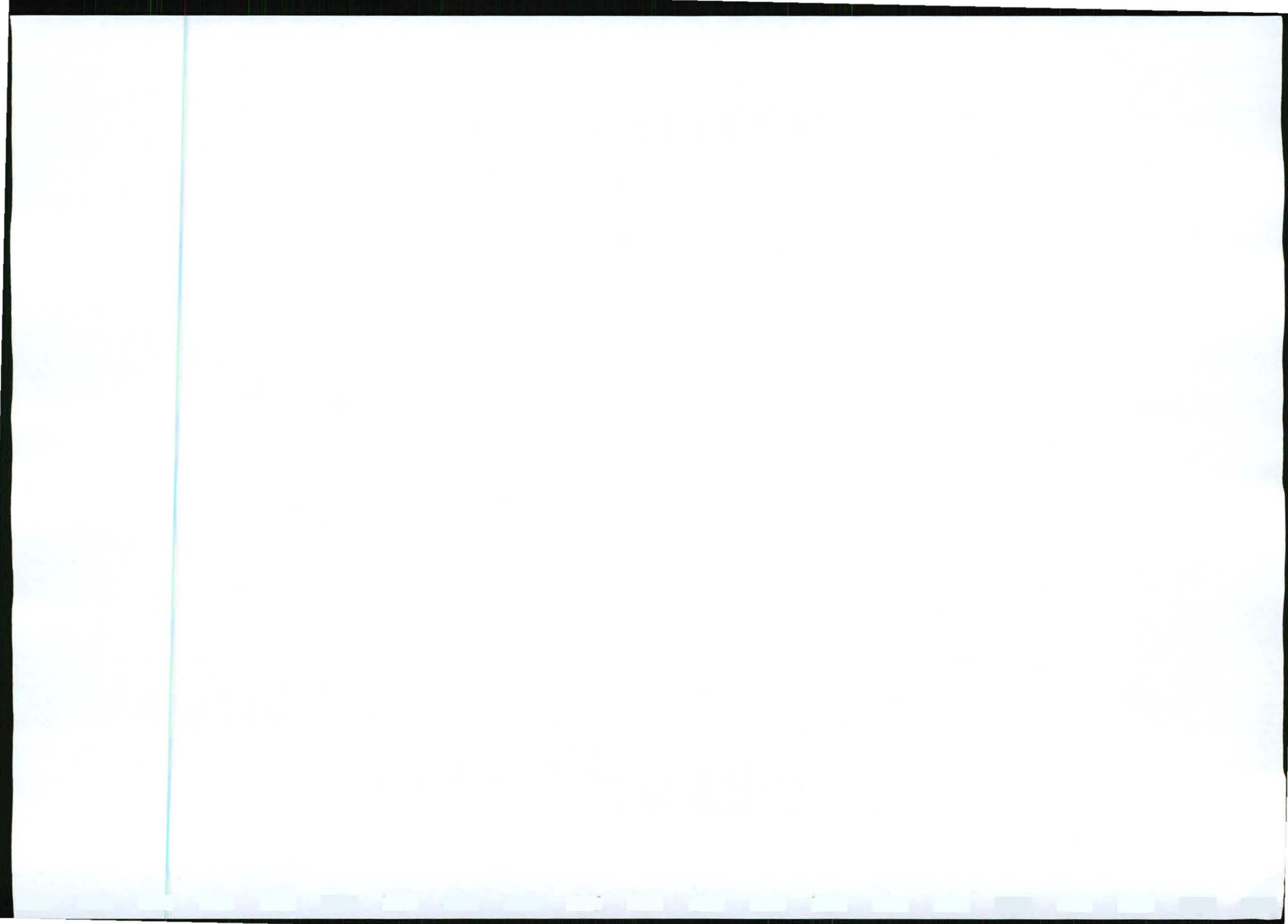
Soils at the drill site could be marginally compacted but the limited time period spent at each drill site renders it insignificant. All the soil removed for the establishment of the boreholes, will be retained hence no soil loss is anticipated. Soil pollution will be restricted to contamination with sandstone fines generated through the drilling process but it constitutes part of the mother material from which soils in the area derived hence no impact is anticipated. No fuels will be stored on site and transfer of fuels will be done by a fuel truck resulting in zero spillage therefore negligible to no soil pollution is anticipated. The chemical will be properly maintained hence no impact is anticipated.

Removal of topsoil will result in an impact on soil structure and impaired mineral cycles as well as humus content due to the low fertility status of the soil and since vegetation might not grow back over the short term but the limited area involved will cause the impact to be negligible. Soils are not well structured and will not recover over the short term and might remain bare for some time.

### Soil erosion

In the outcrop areas no soil erosion is anticipated due to the almost absence thereof. In the other areas these soils will be prone to erosion due to the sandy nature thereof and moderate slopes involved. Since individual areas to be denuded will be small and these areas dispose of a dense vegetation cover, the impact is rated very low.

The prospecting site can be accessed from existing Provincial and farm roads therefore no road construction is anticipated that could contribute to soil erosion. Due to the limited number of prospecting holes on the farm, frequent use of access road that could lead to increased runoff and eventually soil erosions is not anticipated. Overland transport to individual boreholes will be limited to approximately 2-4 days and any potential impact that might stem from it is rated very low.



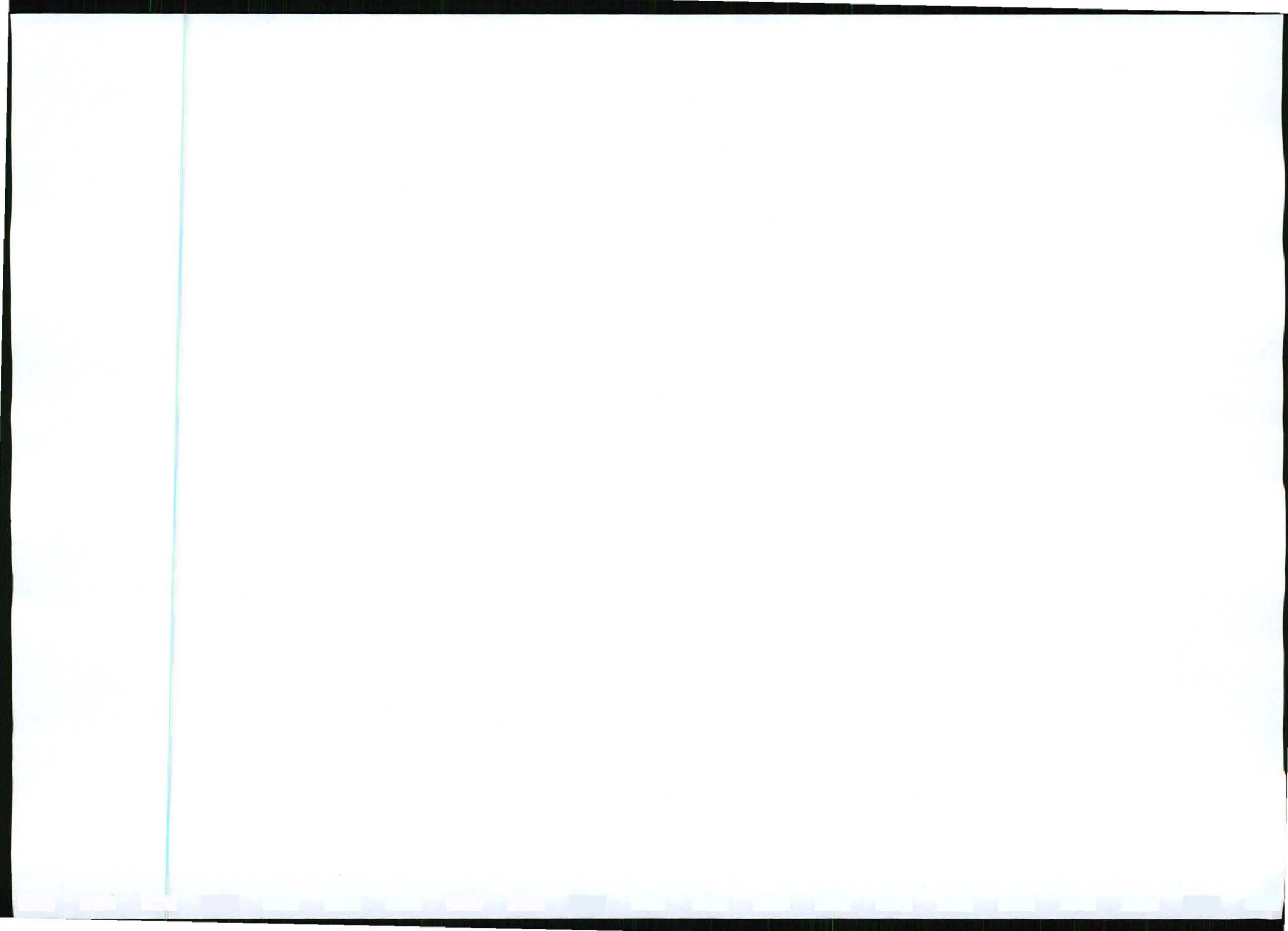
## Remedial measures

### Conservation of in situ and removed soils

- All *in situ* soils, where it is still intact, will be removed from the drill hole areas and conserved and will not be removed from site for any other purpose.
- Topsoil will not be mixed with subsoil and will be positioned away from it
- Soil horizons will be reinstated when the boreholes are filled in.
- Prospecting will be restricted to the approved prospecting area and the amount of soil removed will be reduced to the minimum required for optimal prospecting.
- Existing haul roads to the prospecting areas will be used and vehicles will not deviate from it and cross virgin land unnecessarily. All sites will be accessed along the contour, especially if the access road will be used continuously.
- Disturbance of the soil and vegetation zones around the prospecting site will be prohibited.
- Topsoil stockpiles will be protected from water erosion.
- Prior to prospecting commences the gridlines along which prospecting would take place, will be determined to limit the impact on in situ soils.
- The number of trips over virgin land by the drill rig will be restricted to the minimum to limit the impact on vegetation and topsoil and prevent rutting and erosion during the rainy season.
- Soils in the drainage lines in the prospecting area should not be disturbed.

### Protection of unstable soils

- Where required, access roads would be protected with cross every 30m (30cm wide and 20cm high) on flatter areas and every 15m on steeper slopes with spill areas within the vegetated areas alongside the road.
- If surface runoff could affect road stability, it will be protected by means of properly constructed mitre drains.
- Drill holes will be capped as per DME guidelines to prevent soils disappearing in boreholes over time.
- Prospecting areas will be rehabilitated immediately after completion of the drilling process to reduce the overall extent of the prospecting footprint and prevent erosion of non-vegetated areas.
- If required, a small berm (20cm wide at base and 15cm high) shall be constructed ahead of the disturbed areas to direct potential runoff water around the disturbed area.
- Soil in each drill site will be reinstated and profiled within 7 days after drilling ceased and fully re-vegetated within 6 months after prospecting ceased in a particular area.
- Reinstated soils will be covered with at least 3cm of organic material (compost or manure) to protect it from rain events and to foster good soil moisture regimes and germination rates.
- When needed, reinstated soils will be carefully irrigated in order to fast track re-vegetation and prevent soil erosion.
- Vehicles will not drive over rehabilitated areas to prevent compaction and dieback of established vegetation.
- Storm water control structures will be retained and maintained until each drill site is fully rehabilitated.
- Any erosion rills or gullies that develop will be filled in with subsoil, compacted top dressed with soil, fertilized and seeded.



### Upgrading of soils

- Since the site is hosting fynbos vegetation, which are specifically adapted to infertile soils, soils should not be upgraded with inorganic fertilizer since it will cause them to die off.
- If needed, all sites should receive an application of composts or manure obtainable from the cattle farms in the area, which will improve soil structure and humus content and will also protect soils from the battering impact of rain and excessive heat.

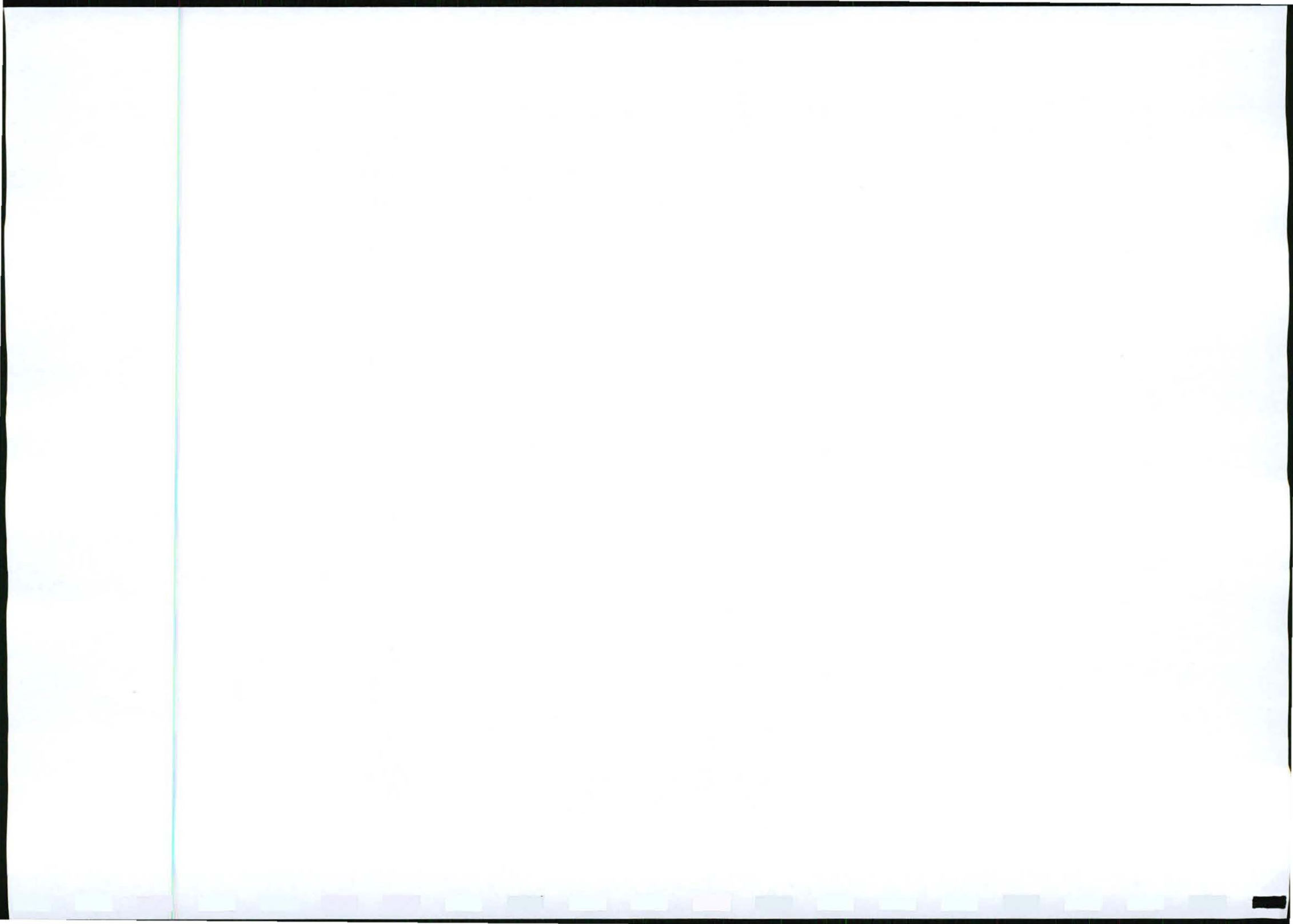
### Prevention of contamination of soils

- No oil and lubricants will be stored on site and will be brought to site when needed. Transfer of fuel/oils to the drilling rig will be made from the fuel truck designed for this purpose to ensure clean transfer of fuels and oils.
- All vehicle maintenance/repairs will be done at an offsite workshop and appropriate drip pans will be available for emergency situations. In order to cater for such situations, appropriate receptacles will be provided for used oil, filters and oil contaminated vehicle parts and will be respectively dispose of at an approved waste facility/scrap yard on a daily basis.
- Hydrocarbons shall not be drained into the soils nor shall used filters and hydrocarbon-contaminated parts be buried in the soil but will be removed to an approved hydrocarbon storage for disposal or recycling on a daily basis.
- Making use of bio-remediation facilitated by a specialist company will negate larger spills whilst smaller spills will be remedied by scooping of effected soils by spade and removed to an approved waste site.
- Peatsorb/Spillsorb or sawdust will be used to contain any spills and some of this material must be kept on site as a contingency measure.
- Spills will be prevented by properly maintaining vehicles and restrict servicing of vehicles to an offsite workshop.
- No other hazardous chemicals will be used on site without authorization granted by the DME and other regulating authorities.
- Waste will be removed from the prospecting area on a continuous basis to the closest waste facility with specific emphasis on household waste, plastics, scrap metal, broken drilling rods and tire casings.
- All prospecting debris must be removed before topsoil is re-introduced to disturbed areas.
- The chemical toilet, if needed will be maintained according to instructions contained in the instruction manual for these toilets.
- The handling of oils should be included in an environmental awareness programme.

## BIOLOGICAL ENVIRONMENT

### BACKGROUND

The prospecting area is located 9 km WSW of Bedford, 15km east of Cookhouse and 35km east of Somerset East. The R350 road runs north to south 8 km to the east and the R63 road runs west to east 6 km to the north as well as north to south 10 km to the west.





## LAND CAPABILITY & LAND USE

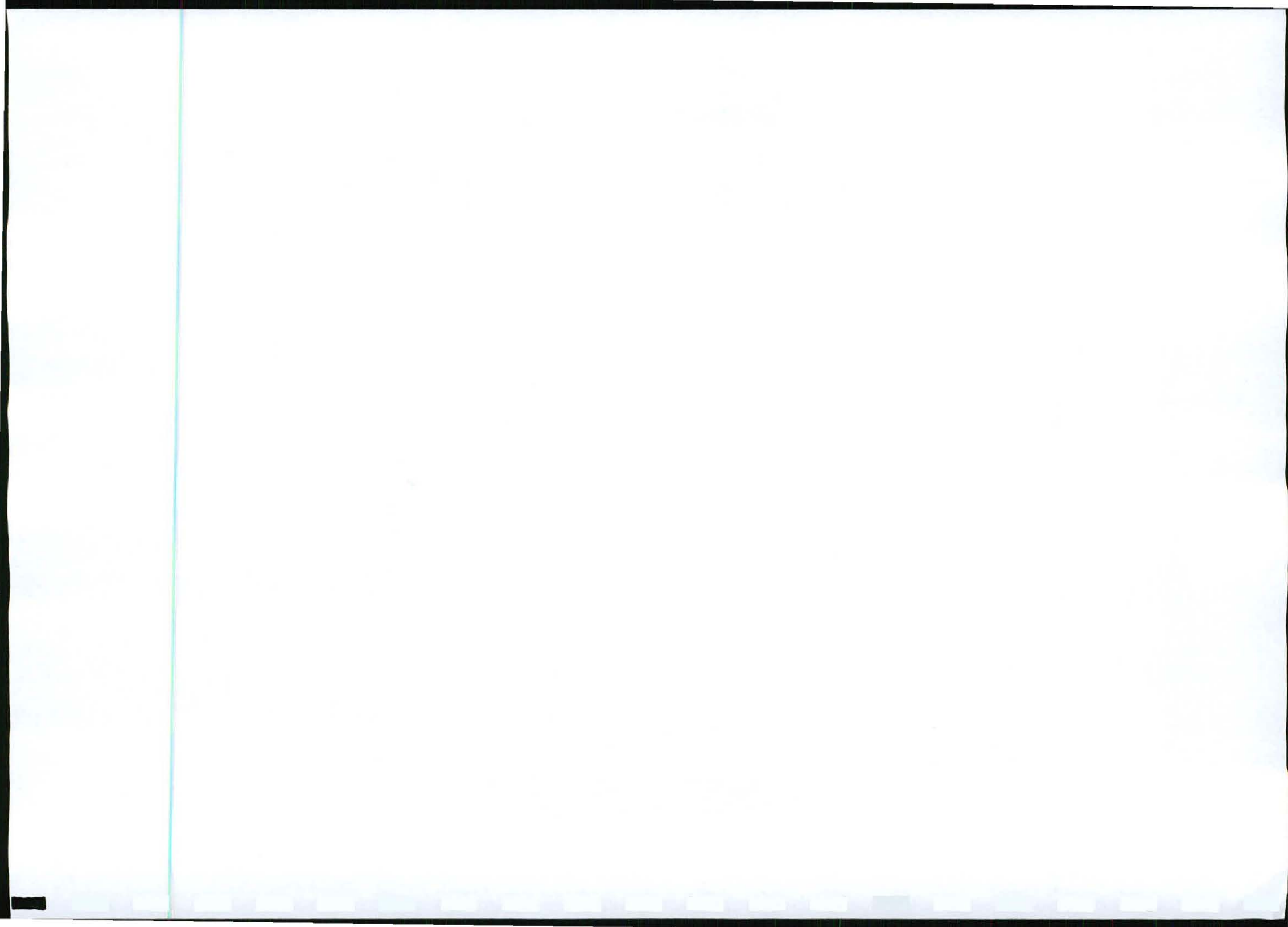
### Impact assessment

C1.6	Are there any <i>protected areas</i> (game parks/nature reserves, monuments, etc) close to the proposed operation?	Yes		4
		No	√	0
C1.7	What mineral are you going to <u>prospect</u> or mine for?	Aggregates and Natural Gravel and sand.		
C1.8	Describe the type of equipment that will be used:			
A core drill rig will be used during the invasive prospecting phase.				

#### Remedial measures (land use and land capability)

- Prospecting will be restricted to the approved prospecting areas.
- All *in situ* topsoil removed, shall be conserved.
- Topsoil would be re-introduced to disturbed areas, where it is still available and upgraded by the application of organic material as indicated under previous heading.
- The affected prospecting areas could be seeded with seeded gathered from natural vegetation in the surrounding veld.
- Alien plant infestation will be prevented through an alien eradication programme.
- Rehabilitation will be done concurrently with prospecting. Progress will be monitored and audited against the proposed rehabilitation schedule to improve land use options and land capability.
- The impact on the topsoil of prospecting areas will be remedied by means of profiling and stabilizing disturbed areas.
- Vehicles would only make use of existing roads to ensure that neither rehabilitated areas nor natural environments are unnecessarily affected.
- Where required, the necessary storm water structures would be put into place to reduce water erosion and be maintained to ensure soil stability.
- No cooking fires will only be allowed in designated prospecting areas but be restricted to inside the caravan that will be parked at a convenient position within the prospecting area.
- All waste will on a regular basis be removed from site.
- Should fires originated from the prospecting venture have a negative impact on land use or soil capability, Afrimat will compensate such affected parties in accordance with specialist reports compiled for this purpose or through arbitration.
- Afrimat will conduct prospecting in such a way that it accommodates as much as possible land uses of landowners.
- All stock theft/poaching that can be attributed and proved to the presence of the prospecting activities will be the responsibility of the applicant and the necessary remuneration will be paid to affected parties. In addition any person that engages in such activities shall be dismissed.

C2.1	Will employees prepare food on the site and collect firewood?	Yes		4
		No	√	0
C2.2	Will water be extracted from a river, stream, dam or pan for use by the proposed operation?	Yes		4
		No	√	2



C2.3	If so, what is the name of this water body?			
C2.4	If water will not be extracted from an open surface source, where will it be obtained?			
	Process water used to flush the core hole will be purchased from the land owner or surrounding land owner whilst potable water will be purchased from Lepahlale Town – only very minor quantities will be required.			
C2.5	How much water per day will the <i>mineral processing</i> operation require?  No mineral processing will take place on site but drill coolant water will be required.	1 000 – 10 000	√	2
		20 000 – 40 000		3
		40 000 – 60 000		5
		60 000 – 100000		8
		More		10
C2.6	How far is the proposed operation from open water ---- (dam, river, pan, lake)?	0 – 15m		8
		16 – 30m		6
		31 – 60m		4
		More than 60m	√	2
C2.7	What is the estimated depth of the water table/borehole?	Reported by Farmer as min 30m		
C2.8	How much water per day will the proposed operation utilize for <i>employees</i> ?	Say 20 litres / employee X 5 employees =		100 lt
C2.9	What toilet facilities will be made available to workers? One mobile trailer type chemical toilet will be provided at the working site	None		8
		Pit latrine		4
		Chemical toilet	√	2
C2.10	Would it be necessary to construct roads to access the proposed operations? Refer para C2.4	Yes		4
		No	√	0
C2.11	How long will these access road(s) be (from a public road to the proposed operations)	0 – 0,5km		4
		0,6 – 1,5 km	√	2
		1,6 – 3 km		4
C2.12	Will trees be uprooted to construct these access road(s)?	Yes		4
		No	√	0
C2.13	Will any foreign material, like crushed stone, limestone, or any material other than the naturally occurring topsoil be placed on the road surface?	Yes		4
		No	√	0

### C.3 TIME FACTOR

C3.1	For what time period will prospecting operations be conducted on this particular site? <b>Invasive prospecting time</b>	0 – 6 months	√	2
		6 – 12 months		4
		12 – 18 months		6
		18 – 24 months		8
		>24 months		10



**C.4 HOW WILL THE PROPOSED OPERATION IMPACT ON THE SOCIA-ECONOMIC ENVIRONMENT  
(REGULATION 52(2)(B))**

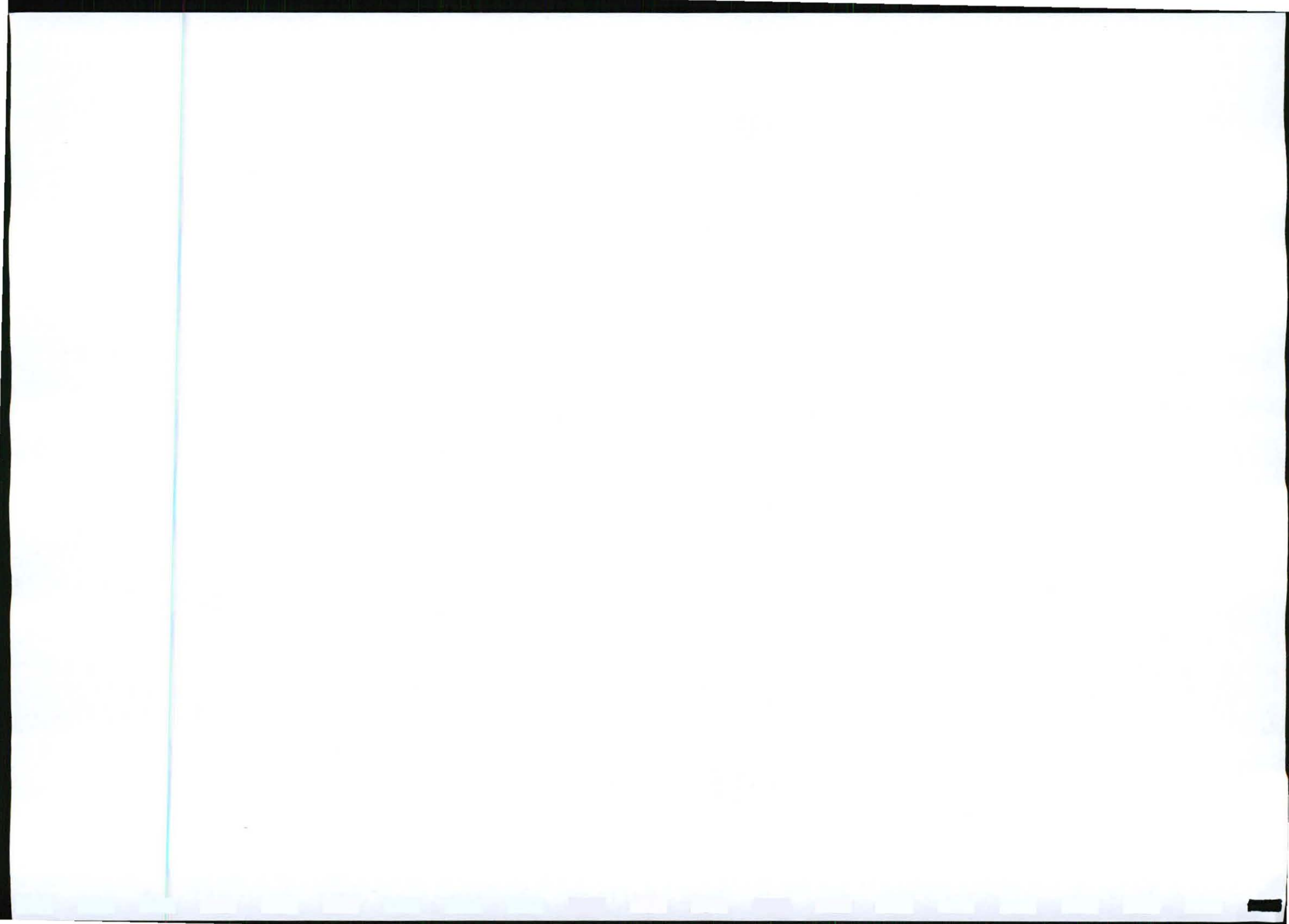
	ELEMENT/IMPACTOR	VALUE	TICK	OFFICE USE
C4.1	How many people will be employed?	+ 5 persons		
C4.2	How many men?	Unknown		
C4.3	How many women?	Unknown		
C4.4	Where will employees be obtained? (Own or employed from local communities?)	Own		2
		Local	√	4
C4.5	How many hours per day will employees work?	Sunrise to Sunset	√	4
		Less		2
		More		8
C4.6	Will operations be conducted within 1 kilometer from a residential area	Yes		6
		No	√	1
C4.7	How far will the proposed operation be from the nearest fence / windmill / house / dam / built structure?	0 – 50m		8
		51 – 100m		4
		150m or more	√	2

**ARCHAEOLOGY**

	ELEMENT/IMPACTOR	VALUE	TICK	OFFICE USE
C5.1	Are there any graveyards or old houses or sites of historic significance within 1 kilometer of the area? None known	Yes		8
		No	√	0

Heritage resources have lasting value in their own right and provide evidence of the origins of South African society and as they are valuable, finite, non-renewable and irreplaceable they must be carefully managed to ensure their survival. Heritage resources also form an important part of the history and beliefs of communities and must be managed in a way that acknowledges the right of affected communities to be consulted and to participate in their management. Heritage resources contribute significantly to research, education and tourism and they must be developed and presented for these purposes in a way that ensures dignity and respect for cultural values.

Areas underlain by quartzitic sandstone bedrock of the Cape Supergroup are not normally associated with major paleontological finds. Also, in most of the areas involved, a very thin veneer of topsoil is present on top of the solid rock, providing little possibility of any object of importance to be embedded in the topsoil or subsoil horizon. Since drilling will result in the disturbance of approximately 2 square meters of soil, in areas where soil is indeed available, any potential impact will be negligible. In terms of section 38(1)(i) of the NHRA 25 of 1999 areas less than 5000 square meters do not require a formal impact assessment therefore no specialist report will be submitted.



### Remedial measures

- Although not anticipated, if any grave areas are discovered, the area will be appropriately fenced off and excluded from the prospecting areas and appropriate setback lines will be determined in conjunction with SAHRA/SAPS & Albany Museum.
- Findings of any historic tools, fossils, bone fragments, skulls and complete remains will be immediately reported to SAHRA & Albany museum and no effort will be made retrieve any object.
- Any potential archaeological site will be immediately fenced off and protected until officials from SAHRA/Albany Museum have visited the site.
- The operators of drilling equipment will be informed of the applicant's obligation in the above regard and to inform management when anything of interest is noted on the site.
- If any object of importance is observed and all operations would be suspended immediately in such area.

## AIR QUALITY

### **Emissions/Chemical pollutants**

The general air quality of the properties surrounding the property concerned is good as it hosts no industries and the population density is very low with no informal housing developments in close proximity. Reduction in air quality is mostly related to wood fires of farm labourers and veld fires. Burning of household waste is also regularly taking place but due to the low population density has a limited impact on air quality. Emissions caused by farm equipment and vehicles on the Bedford road are rated of negligible impact on air quality.

### Impact assessment

Vehicular movement will result in exhaust emissions, but due to the low number of trips per day to drilling sites would result in a negligible impact compared to the impact caused by travelling schedules of local residents and by farming activities.

No burning of waste will be allowed. Since only one drilling rig will operate within the prospecting areas, the impact in terms of exhaust emissions is rated insignificant.

No cooking fires will be allowed in the prospecting areas hence no release of CO<sub>2</sub> into the atmosphere is anticipated. Should veld fires, however, originate from the drilling areas it could temporarily affect the air quality status of the area significantly and should be avoided at all cost. The mitigation measures outlined previously should prevent this impact from occurring. Through an environmental awareness programme, Afrimat managers will ensure that the potential of a veld fire outbreak is eliminated or reduced to the absolute minimum.

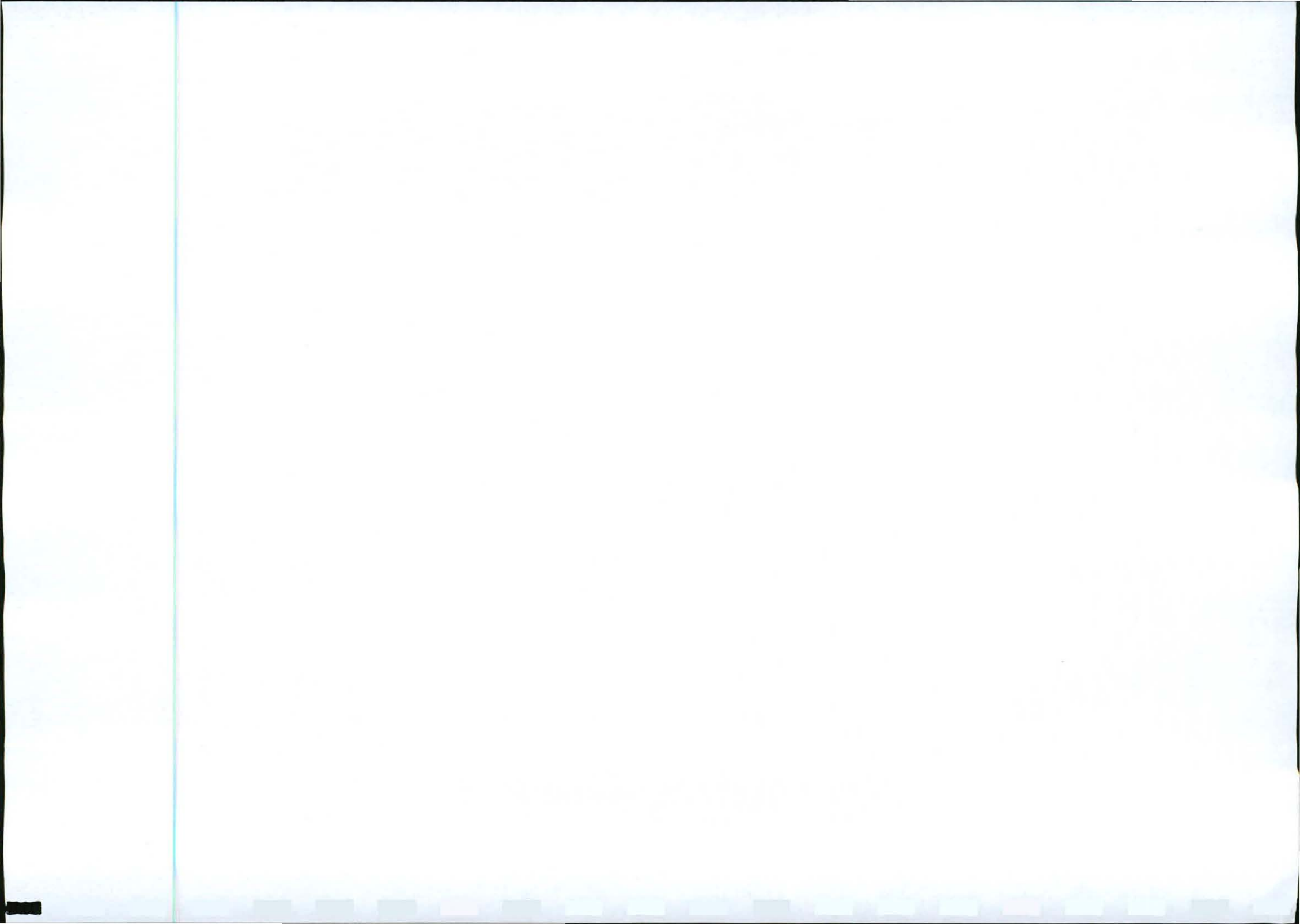
### **Dust emission**

Occasional ploughing of lands as well as wind action during dry periods will slightly increase particulate fallout in abutting area but air quality is still rated good. However, traffic on gravel roads generates substantial dust volumes but is short term and the significance of this impact is rated low to medium-low.

Occasional ploughing of lands as well as wind action during dry periods will moderately increase particulate fallout in the abutting area but air quality is still rated good.

### Impact assessment

Drilling one hole at a time will produce negligible amounts of dust per day and since limited





number of holes per site is anticipated the impact would be temporary and restricted to approximately two weeks. The drilling process will produce a fair amount of dust but once a dust bag is fitted to the drilling rig as standard procedure, limited amounts of dust will be liberated into the atmosphere and the impact is rated as insignificant, especially taking into consideration the distance to farm residences.

Increased vehicular traffic to the drilling site will result in minor sporadic increases in dust liberation into the air but will be restricted (less than 25mg/m<sup>2</sup>/day within 30m from the roads) to the divisional and trunk roads, which are mostly remote to residences and a very low impact is anticipated compared to the impact caused by the travelling schedules of local residents. As only two-three trips per day is anticipated, such impact would be negligible from a dust generation point of view. Traffic to drill site *per se* will not generate dust as the vehicle will move slowly over virgin ground and the surface will be mostly intact and dust free. The road will only be used a few times before moving to a new drilling site, which will prevent the surface to become pulverized. It is anticipated that ploughing activities in some areas will have a much more sporadic pronounced impact on dust generation and lowering of air quality than the impact that prospecting could impose.

### Remedial measures

- Vehicles to be maintained properly and fitted with standard exhaust systems and will not be left idling unnecessary.
- No open cooking fires will be allowed and food will be prepared in a caravan suitably equipped with kitchen facilities
- Veld fires will be prevented and the necessary fire fighting equipment such as fire swabs and fire extinguishers shall be available at each drilling site.
- No chemicals that can result in air pollution will be stored or disposed of onsite.
- Waste will not be burnt on site. Waste will be retained in proper receptacles placed at the drilling sites and removed regularly to the approved waste site.
- Topsoil will be replaced and disturbed areas vegetated as soon as possible.
- The amount of trips to drilling sites will be restricted to what is absolutely necessary.
- Travelling speed of vehicles on internal gravel roads and over virgin land will be restricted to 40 km/h and 10 km/h respectively.
- Disturbed areas will be covered with a thin organic matter layer.
- Where and when necessary, disturbed areas will be watered down.
- The drilling rig will be fitted with a dust bag to reduce dust generation during the drilling activities.
- Dust piles at the drill sites will be scooped up and removed to a waste site or covered with topsoil.
- Handling of topsoil and subsoil during periods of high winds will be avoided as much as possible.

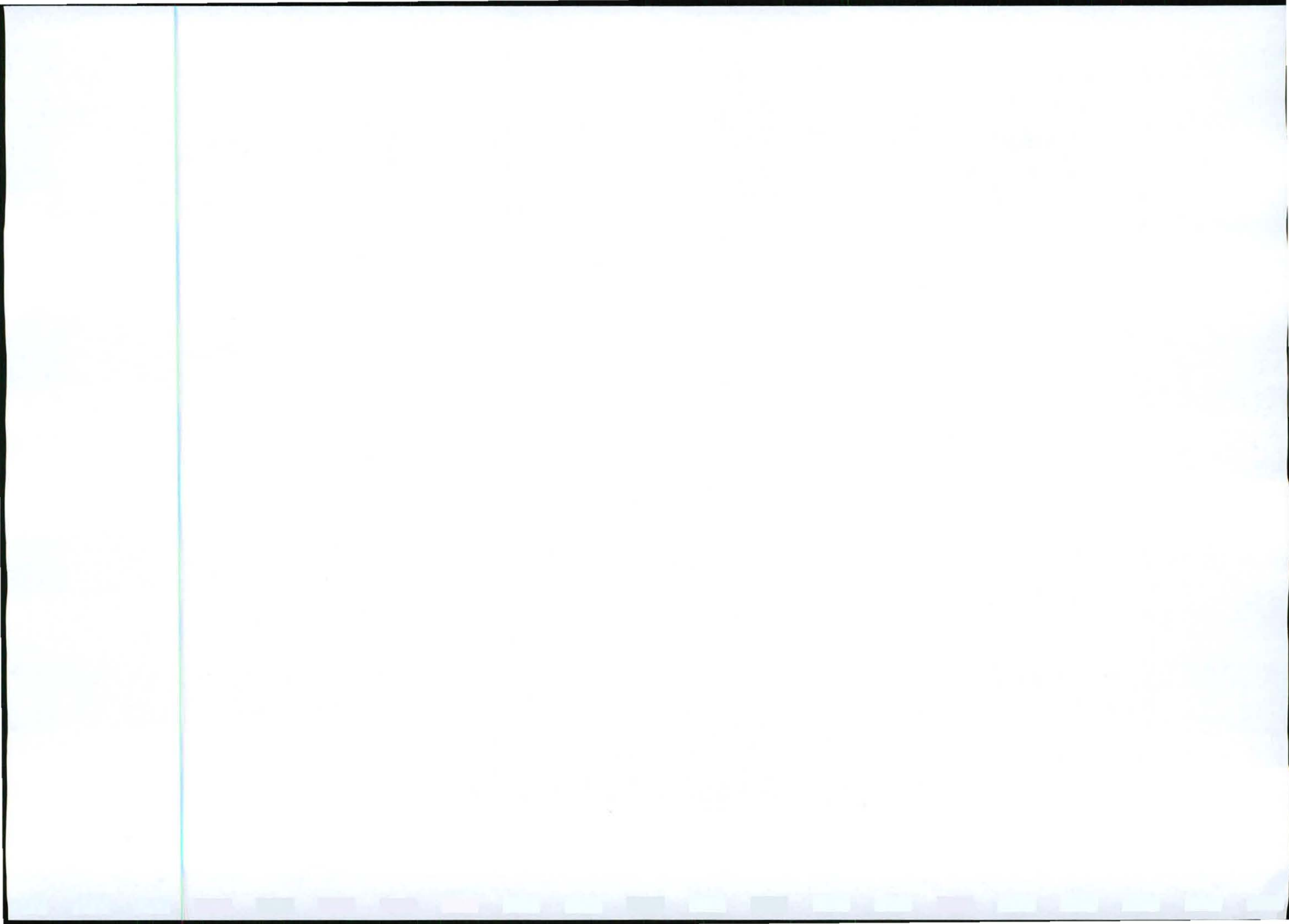
### Noise

According to legislation no manmade activity should increase ambient noise levels constantly with more than 7dB at residential receptor points failing which, complaints might be expected.

### Impact assessment

Vehicular traffic to the drill site and the drilling rig's engine will result in low pitched noises and increase noise levels to approximately 65dB within 50m from the road or drill site, but will be similar to the impact caused by vehicles of local residents. The cumulative impact will be negligible due to the limited amount of trips to be undertaken every day.

Drilling is not continuous as lunch breaks will be applicable and drilling rods have to be



added over the entire period. Since all drill holes will be distant from residences, the impact is rated of very low significance. Noise generated will not exceed levels prescribed by NEMA and SABS and should therefore be acceptable. It should also be acknowledged that farm activities generate similar noise levels and drilling should fit in comfortably with farming activities.

Noise produced may impact negatively on faunal behavior, but it was scientifically proved that larger mammals get accustomed to noise quite quickly with an excellent example the animals in game reserves. The low pitched drilling noises will also have a lesser affect on audio systems of animals than what high pitched noise would have. Smaller animals and avian species will vacate the site immediately, but will return when drilling is completed.

Since the drilling crew will consist of only two-three people, noise generation by human interaction will also be limited. If any excessive noise disturbance is caused by the drilling crew, they will be disciplined and should it occur a second time round, they would be removed from the drilling crew.

#### Remedial measures

- All vehicles will be fitted with standard exhaust systems and be regularly serviced.
- Unnecessary hooting, idling of vehicles and revving of engines will be discouraged and be penalized when necessary.
- Travelling speed on internal hauls road will be restricted as stipulated above.
- Moving parts of machinery will be regularly lubricated, replaced and serviced.
- Working hours will be restricted to 8am – 5pm. No work will be done on holidays or over weekends.
- Workforce at drill sites will be properly managed in terms of noise generation and be informed on acceptable social behavior.
- The drilling crew will not reside onsite.
- An effort will be made to interrupt drilling during the day to prevent continuous noise at high levels and pitch.
- During adverse wind conditions when noise levels may increase at receptor points, drilling will be temporarily stopped or regularly interrupted if complaints are received.
- Protective hearing devices will be provided to all operators of machinery generating noise above 50dB at source.

## WASTE

### **Industrial waste**

There is currently no industrial waste stored within the prospecting area.

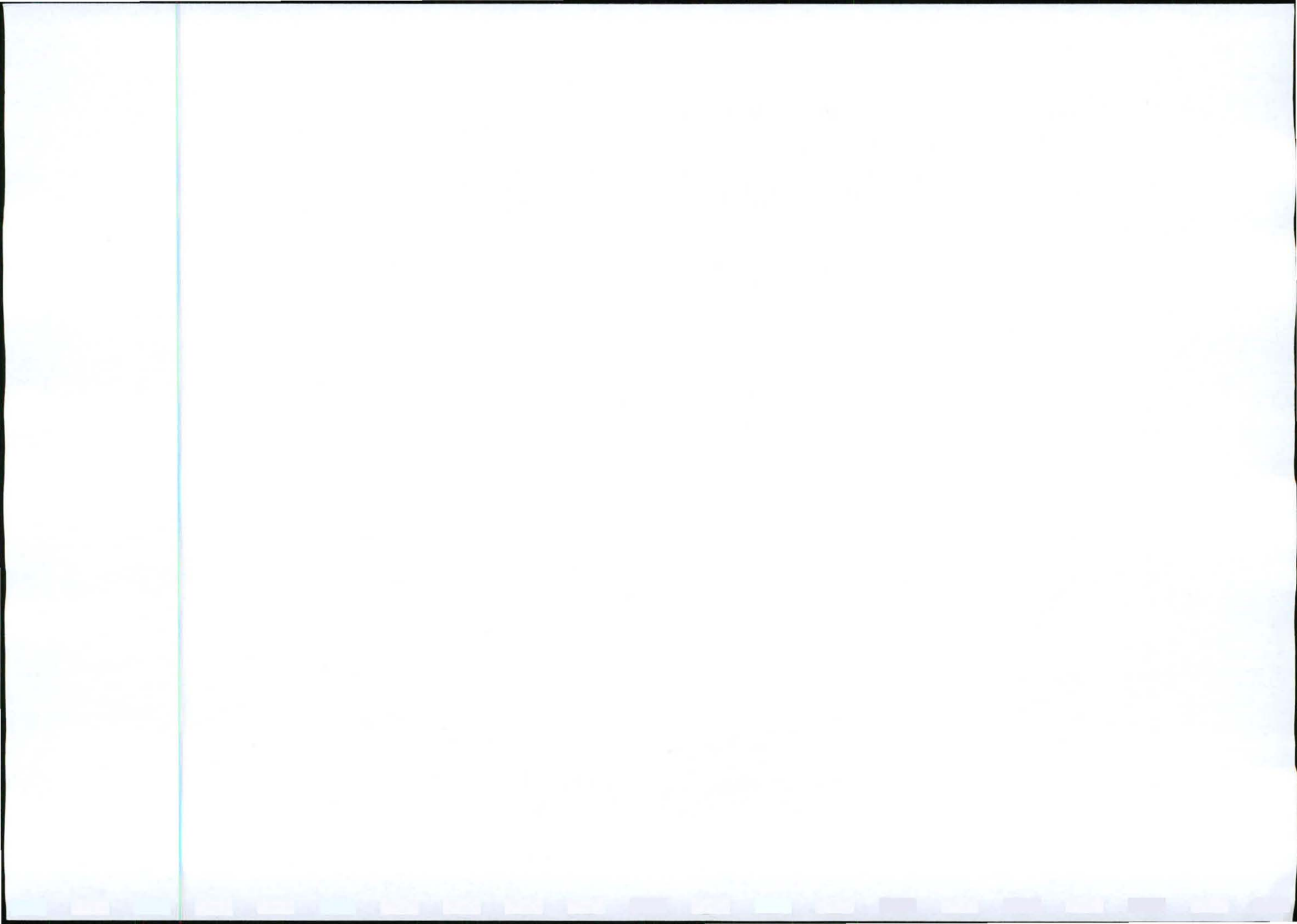
#### Impact assessment

Prospecting will be done with a mobile drilling rig, which will be serviced and maintained off site therefore no industrial waste, such as used hydrocarbons and contaminated filters/spare parts will be generated by the prospecting activities.

### **Prospecting/mining residue**

#### Impact assessment

All soil will be effectively reinstated therefore prospecting will not result in the generation of any waste. All rock cores generated during the drilling process will be removed offsite for analysis, or be evaluated on site. Unwanted core samples will be returned to the borehole



shaft before the hole is cased and sealed. During the drilling process water is used for lubrication and becomes contaminated with finely grinded rock. Excess water might spill on the surrounding soil leaving behind a whitish coat of rock powder. Since this sediment originates from the parent material of the area, it will blend in quickly with the natural soils and will not affect re-vegetation of these areas. Drill chips might accumulate in small amounts around the borehole and will be scooped up and removed to a local waste site or be deposited within the gravel excavations and covered with gravel/topsoil. A negligible impact on the natural environment is anticipated.

### **Domestic waste/Vegetative waste**

The current prospecting area reveal no domestic waste.

#### Impact assessment

A negligible amount of waste will be generated during prospecting activities since only a few people will be involved in the process and will not stay at a particular drilling site for no longer than three days. All domestic waste will be temporarily collected in a bin (weather and wildlife secured) positioned onsite and disposed of at the closest waste disposal site. No impact on animal life is anticipated and therefore the impact is rated insignificant.

### **Sewage**

There is currently no sewage system in the prospecting area.

#### Impact assessment

A chemical toilet will be provided. The chemical toilet will be regularly serviced to maintain a healthy environment and prevent soil and eventually water contamination. Considering the two-three people onsite, no impact on the environment is anticipated. Any spills that might occur, will have a negligible impact comparing to the French drain systems at farm residence.

### **Scrap metal**

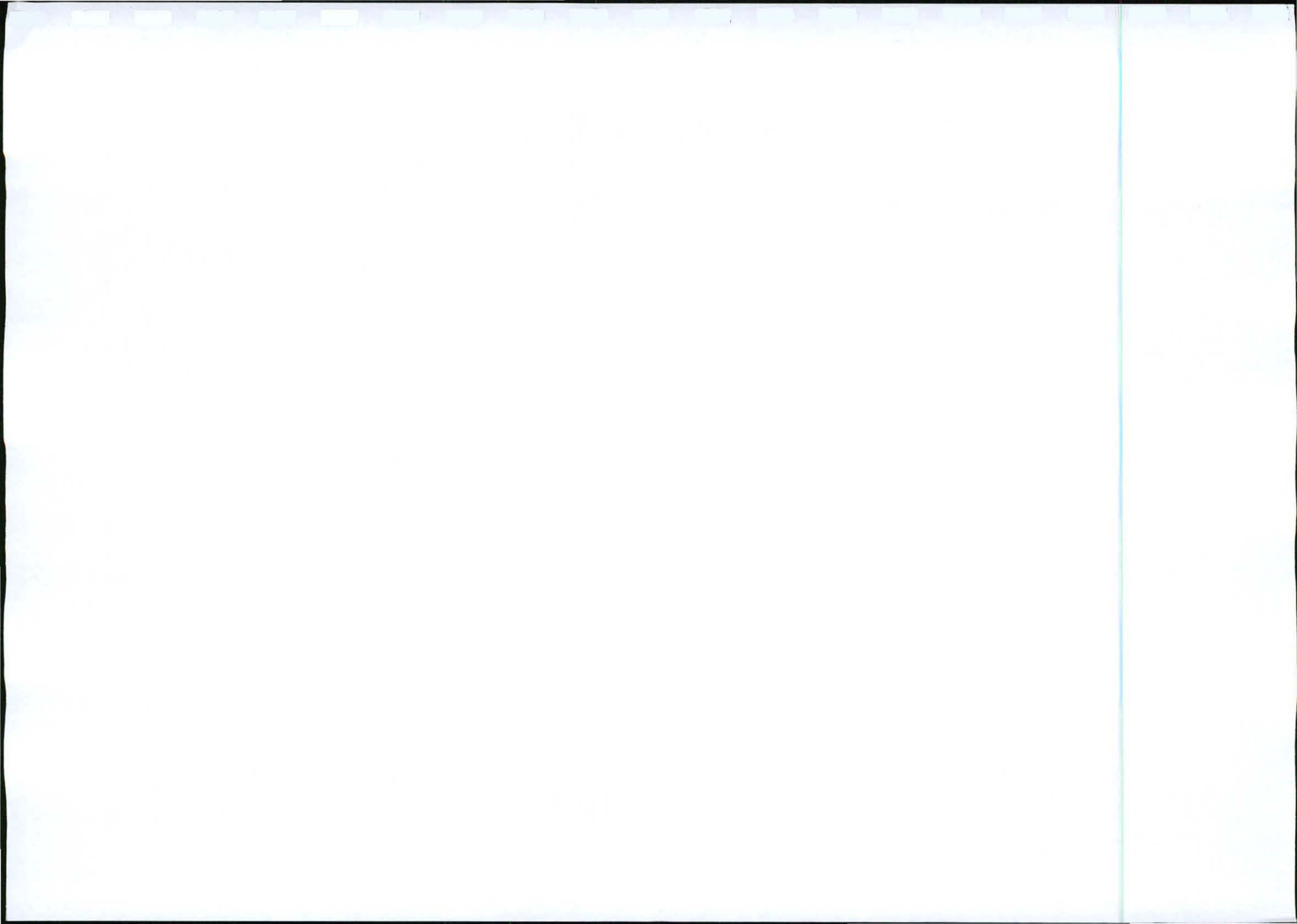
No scrap metal was observed within the three prospecting areas.

#### Impact assessment

Maintenance of the drilling rig will be done offsite. The only possible scrap metal that can be generated is broken drilling rods, pieces of wire and nuts and bolts that will be removed off site on completion of each hole. No impact on the environment is anticipated.

#### Remedial measures

- Staff will be trained to distinguish between domestic waste and industrial waste.
- Domestic waste generated ancillary to the prospecting process will be deposited in containers with scavenger proof lids positioned within a designated area within the drilling footprint. It will be regularly removed from site to the approved waste facility and not dumped in the veld. These containers will be clearly marked to ensure that they are used for the right purpose.
- All drilling core or drill chippings will be returned to the boreholes or deposited within the gravel borrow pits and covered with subsoil and topsoil, if available.
- Specific precautions shall be taken to prevent refuse, especially plastics from being blown around by strong winds since it might cause stock mortality.
- Waste will not be burnt or buried on site.
- All used oils, grease or hydraulic fluids, if any, shall be placed within separate receptacles and will be removed from the site on the same day that it was generated for



disposal at the closest approved disposal facility.

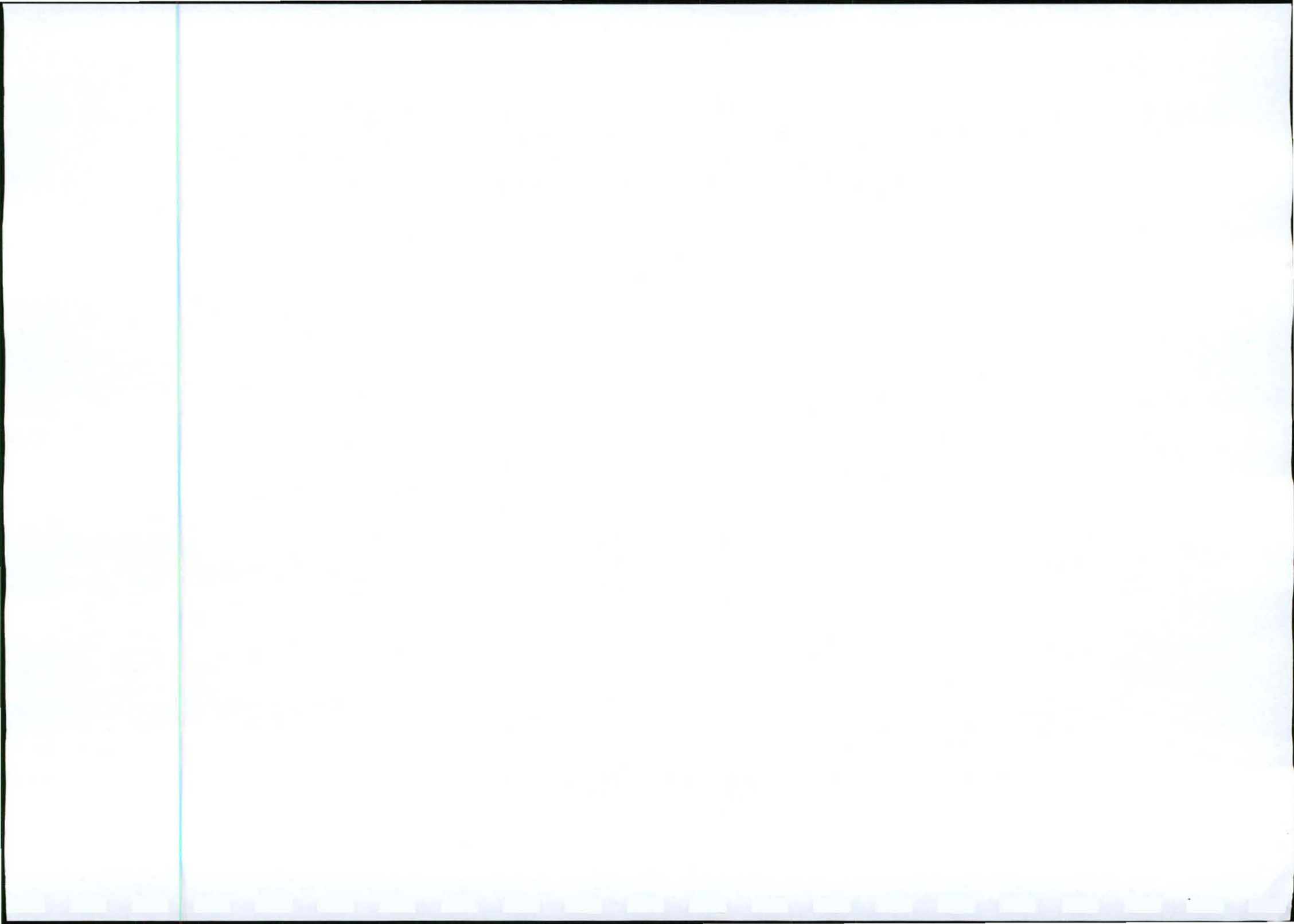
- All hydrocarbons spilled must be cleaned up immediately according to approved protocol by removing the spillage entirely together with the polluted soil and by disposing of it at a recognized facility. Should any major spill do occur it will be bio-remedied by a specialist.
- No hydrocarbons will be drained into the soil.
- The odd tyre casings that might be generated will be disposed of same day at the nearest registered waste facility.
- As a minimum requirement, the holder of the prospecting right shall provide a chemical toilet.
- The chemical toilet will be regularly serviced at an approved sewage plant.
- Strict controls will be enforced to ensure that the surrounds are not used as ablutions and this aspect will be included in an environmental awareness programme.
- No servicing of vehicles or equipment will take place on site and day to day repairs will be restricted to the minimum. All major maintenance and repair work will be done at an offsite workshop. If required, emergency repairs will be done over suitable drip trays and all lubricants and oils drained during servicing of vehicles will be funneled into appropriate receptacles and be removed offsite on the same day to the waste facility for later removal and/or recycling.
- The prospecting drilling areas will be kept neat and tidy on a continuous basis.
- Any scrap metal or dysfunctional machinery/parts generated at the drilling sites will be collected and removed to a designated salvage yard on completion of each borehole.
- All vegetation removed will be used as organic material in the rehabilitation process.
- All sub-soil and topsoil stockpiles will be flattened and reintroduced to disturbed prospecting areas.
- A general clean up of each drilling site will be done at completion of drilling and rehabilitation activities.

## VEGETATION

Gently undulating plains supporting open, dry grassland interspersed with *Acacia karroo* woodland vegetation (especially along the drainage lines). The grassland is relatively short (10-100 cm) and is dominated by *Digitaria argyrograpta*, *Tragus koelerioides*, *Eragrostis curvula* and *Cymbopogon caesius*. It contains a dwarf shrubby component of karroid origin in the southern and southwestern parts of its range.

### Remedial measures

- No indigenous vegetation outside the demarcated drill area will be removed, disturbed or damaged through prospecting activities or by members of the drilling crew.
- Prior to the commencement of prospecting activities in a next area, areas with the least important vegetation species will be demarcated for prospecting. Prospecting areas will, as far as possible, be restricted to grassland or outcrop areas.
- Any plant species will be removed and reintroduced to reinstated areas.
- If any plant species of special concern are identified within any drilling area, such drilling area will be relocated. If the latter is not possible, then plant specimens will be relocated after a competent botanist was consulted on the matter.
- No indigenous shrubs will be felled or damaged for the purpose of obtaining firewood. Alien trees will be removed where available as a source of wood.
- No dry wood or organic debris will be removed from the environment since it forms part of the already deficient carbon cycle in these soils.
- Boulder clumps and wetland systems will be excluded from the prospecting area.
- Travelling will be restricted to existing roads and where no roads exist, access will be





restricted to grassland areas as far as possible to reach drilling destinations. Where virgin land has to be traversed, care will be taken that the amount of trips is reduced to the minimum.

- Prospecting areas on slopes will be properly stabilized through compaction of sub-soils to prevent head cuts into natural vegetation.
- On completion of prospecting activities the surface of the drill areas (especially if compacted due to vehicle-related operations) shall be scarified to the depth of at least 100mm and graded to an even surface condition and the previously removed topsoil will be returned to its original depth over the area.
- Due to the small areas involved, affected areas need not to be grassed but reinstated topsoil must be provided with manure/compost and watered regularly. If it is noticed that the areas struggle to retain its vegetation cover, the following seed mixture can be considered:

*Themeda trianda, Digitaria eriantha and Eragrostic curvula.*

- Seeding must take place from September to early March at an application rate of 3-5kg/ha of each specie mentioned.
- Seed will be broadcasted by hand, where after seeded areas will be raked to cover seed and protect it from birds feeding in the area. Surface cover will be monitored on a continuous basis. This vegetation cover would require the minimum maintenance and will within a short time improve the visual appearance of prospecting sites. Maintenance will be carried out until closure was granted.
- All natural vegetative matter removed will be reintroduced to the soil to possibly re-sprout, act as source of seed or act as mulch that will improve soil properties.
- Once an area has been vegetated, an alien control programme will be implemented by pulling these plants on a fortnight basis.
- Once a drilling site has been re instate, no traffic will be permitted in such area.
- Veld fires will be prevented since it could affect the vegetation of the entire area as well as impacts on soil stability and fertility.
- Should re-vegetation of disturbed areas be exceptionally slow due to dry conditions the areas involved will be irrigated once per week with a water bowser until a sufficient ground cover has been established. Should seeding fails due to climatic conditions it will be repeated the following growing season.
- All disturbed footprints will be adequately rehabilitated upon completion of prospecting activities to the satisfaction of regulating authorities.
- An after care period of 12 months will be maintained upon rehabilitation completion or until rehabilitation has been successfully implemented to the satisfaction of regulating authorities.

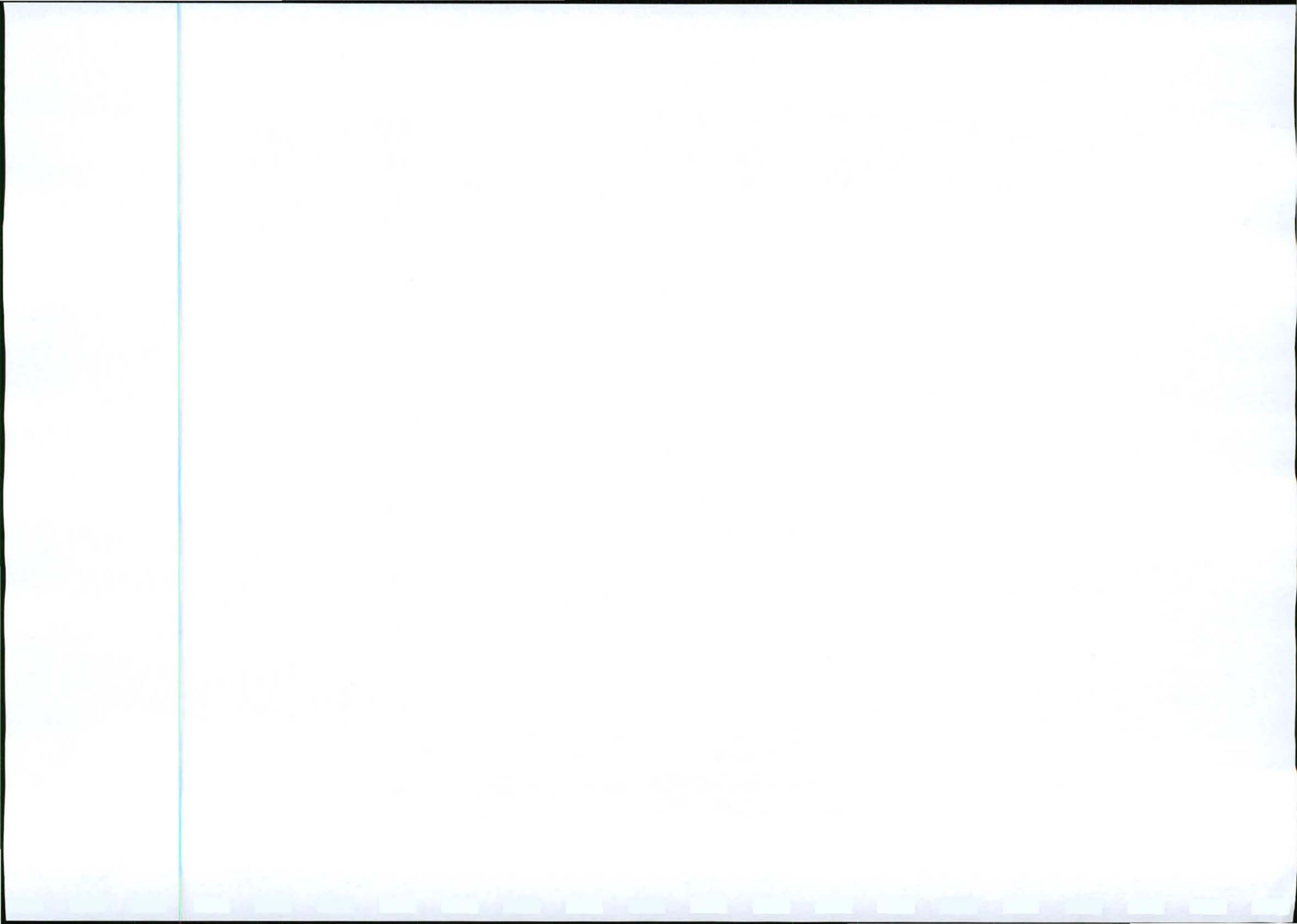
## VISUAL IMPACT

### Impact Assessment

#### Drill rig

The drilling rig and supporting vehicle will be visible from both north and south since the outcrop protrude above the immediate landscape.

People may find the drill rig intrusive against the skyline but considering the limited height of the drill rig and the short period that it will stay in one particular area, the impact is rated insignificant.



### Dust/smoke generation

As limited dust and smoke columns will be generated as previously motivated, a negligible impact will be applicable.

### Remedial measures

- No vegetation clearing will take place outside the proposed drilling areas.
- Clearing of vegetation will be restricted to the minimum that is required for optimal prospecting.
- The proposed prospecting areas will be kept clean and free of litter on a continuous basis.
- No dumping of waste will be allowed on the property.
- Any boreholes created will be filled in.
- Any alien vegetation germinating within rehabilitated areas will be removed on a continuous basis to ensure that established vegetation blends in with surrounding vegetation.
- Excessive dust plumes will be eliminated by reducing travelling speed on gravel roads and fitting a dust bag to the drilling rig.
- Drilling core and core trays will be removed from every prospecting site.
- Prospecting will be restricted as much as possible to the crest areas.
- Toilet facilities will as much as possible be established out of direct line of sight from any road or vantage point.
- At closure, all disturbed areas would have been rehabilitated as per the re-vegetation plan.

## POPULATION DENSITY / PUBLIC PARTICIPATION

### Population density

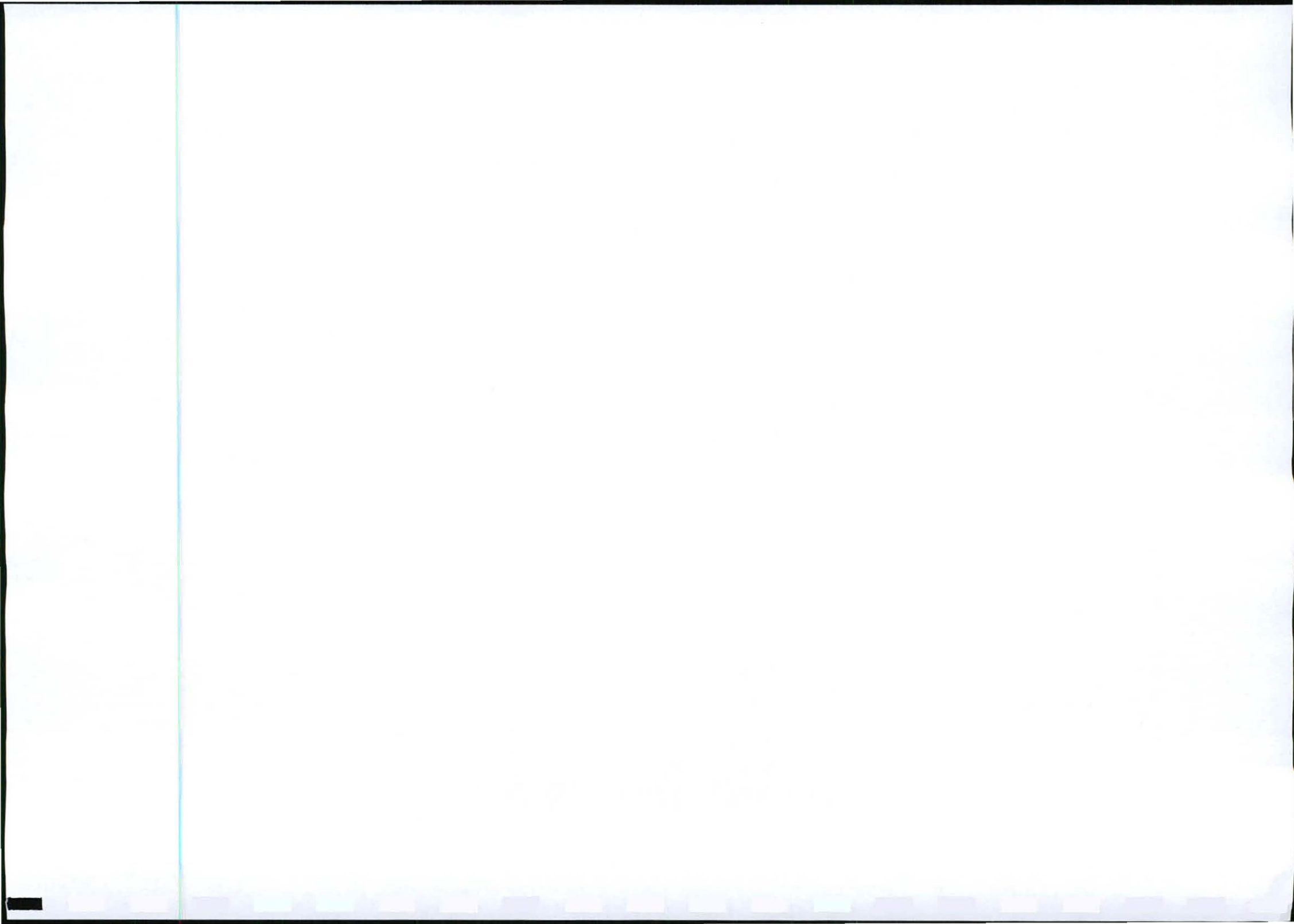
There are only a limited number of farm residences in the area with none closer than 300m from individual borehole sites. Therefore none of these residents will be significantly affected by prospecting activities.

### Public participation process

Prior to the submission of the prospecting application, the applicant engaged with the property owner involved regarding access to the site and surface use. The Roberts Kraal owner, Mr A F van Niekerk was consulted personally by applicant and has no objection to the project. The outcome of the public participation process was submitted to the DMR for assessment.

### Remedial measures

1. Working hours shall be restricted to 07.00 am to 17:00 pm, Mondays to Fridays.
2. Drilling personnel, except security staff will be accommodated off site.
3. No cooking fires will only be allowed in the prospecting areas.
4. Very strict precautions will be taken to ensure that prospecting does not lead to veld fires and at least two fire swabs, fire extinguisher and adequate water shall be available at each drilling site.
5. Smoking shall not be permitted within vegetated areas or will be restricted to the caravan, especially during the dry periods.
6. The following fire fighting procedure shall be established:
  - Workers at the prospecting sites will be properly trained on the dangers of fires and the negative social impacts that it poses.



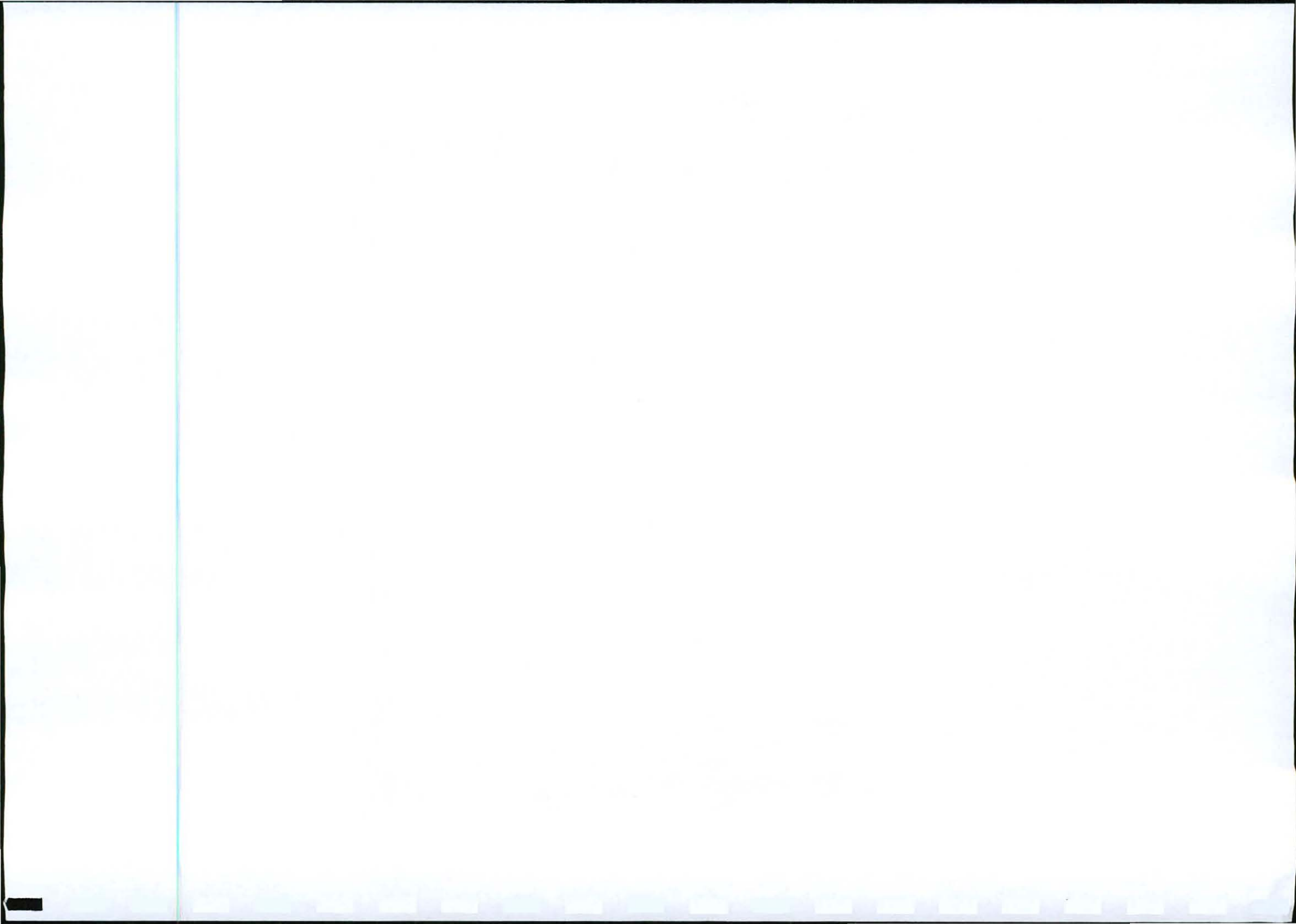
- Communications (radio or cellular phone) will be established between drilling crews and prospecting manager.
  - Workers will be informed at all times on the names and telephone numbers of abutting farm owners (and alternative) and the nearest fire brigade station, who shall be contacted immediately if a fire has started.
  - Any hydrocarbons will be removed from the potential fire path
  - A minimum of 1000L of water shall be available at every drilling site.
  - Immediately on receipt of a report of a fire outbreak, engage into a plan of action with the fire brigade and affected landowner.
  - The neighboring landowners will be notified of a fire and applicable numbers will be available to drilling crew.
7. Lighting and noise disturbance or any other form of disturbance that may have an effect on the landowner/occupier of land lawfully living in the vicinity shall be kept to a minimum.
  8. All fences and gates will be left in the same state as prior to the prospecting activities and where it was affected, the applicant will repair it immediately.
  9. The drilling crew will not reside on site but to protect equipment of the applicant a security guard may be onsite during the night and on weekends.
  10. No staff member or any contractor employed by the applicant will have access to non-prospecting areas and the privacy of landowners will be upheld. If this condition is violated the required disciplinary steps will be taken. If a specific employee engages again in similar behavior, he will be dismissed.
  11. Prior to entering the land concerned, the landowner will be informed 14 days in advance in writing on the intentions of the applicant.
  12. The applicant will endeavor to obtain a surface lease agreement from the landowner. A draft agreement must be sent via registered post to the applicant. If the landowner is unwilling to enter into such agreement, the matter will be directed to the DME for a ruling. Should an agreement be reached with the landowner it should stipulate all reasonable requirements of the landowners that he deemed necessary to protect his interests as well as to facilitate sound environmental practices on his land. It should, as a minimum reflect compensation payable based on the figures provided by the Department of Agriculture.
  13. Prospecting activities will not impact on the day to day activities of farmers.
  14. Landowners will be compensated for any proved stock losses.
  15. A community complaint register shall be kept in the Afrimat office to record all feedback received from the public during the lifespan of prospecting activities. Any complaints should be assessed and if applicable, addressed as quickly and efficiently as possible to ensure that environmental impacts associated with the prospecting operations are kept within acceptable limits. Where appropriate corrective measures must be incorporated within an amendment to the EMP to prevent reoccurrence of same impacts.

## SUMMARY OF RISK ASSESSMENT

### SCORING OF EIA – FOR OFFICIAL USE ONLY

#### Instructions for officials:

In the table below, complete the totals of each section indicated below and do the calculation. **Remember to first add all the values of sections C1,2,4 and 5 and then to multiply it by the time factor in Section C3.** Note that the value for the time factor element of the impact rating appears in Section C3. This is the total amount of time that the operation is expected to impact on the environment and all other factors are MULTIPLIED by this value. Compare the score (impact rating) with the table below to help you make a decision on the total impact of the operation and also on the sufficiency of this programme to address all expected impacts from the operation on the environment.



## CALCULATION TABLE

Section C 1 Total	+	Section C 2 Total	+	Section C 4 Total	+	Section C 5 Total	=	<u>Subtotal</u>	X	Time factor Section C 3	=	Score (Impact Rating)
2	+	10	+	11	+		=	23	X	3	=	69

## IMPACT RATING SCALE

SCORE ATTAINED	IMPACT RATING	REMARKS
46 – 300	Low	No additional objectives needed – this programme is sufficient.
301 – 800	Medium	Some specific additional objectives to address focal areas of concern may be set.
801 – 1160	High	Major revision of Environmental Management Plan for adequacy and full revision of objectives.

## RESPONSIBILITY

- The environment affected by the drilling operations shall be rehabilitated by the holder as far as is practicable to its natural state and according to the conditions of this EMP.
- It is the responsibility of the holder of the Prospecting Right to ensure that the manager on the site and the employees are capable of complying with all the statutory requirements, which must be met in order to perform prospecting activities, which include the implementation of the conditions of this EMP.

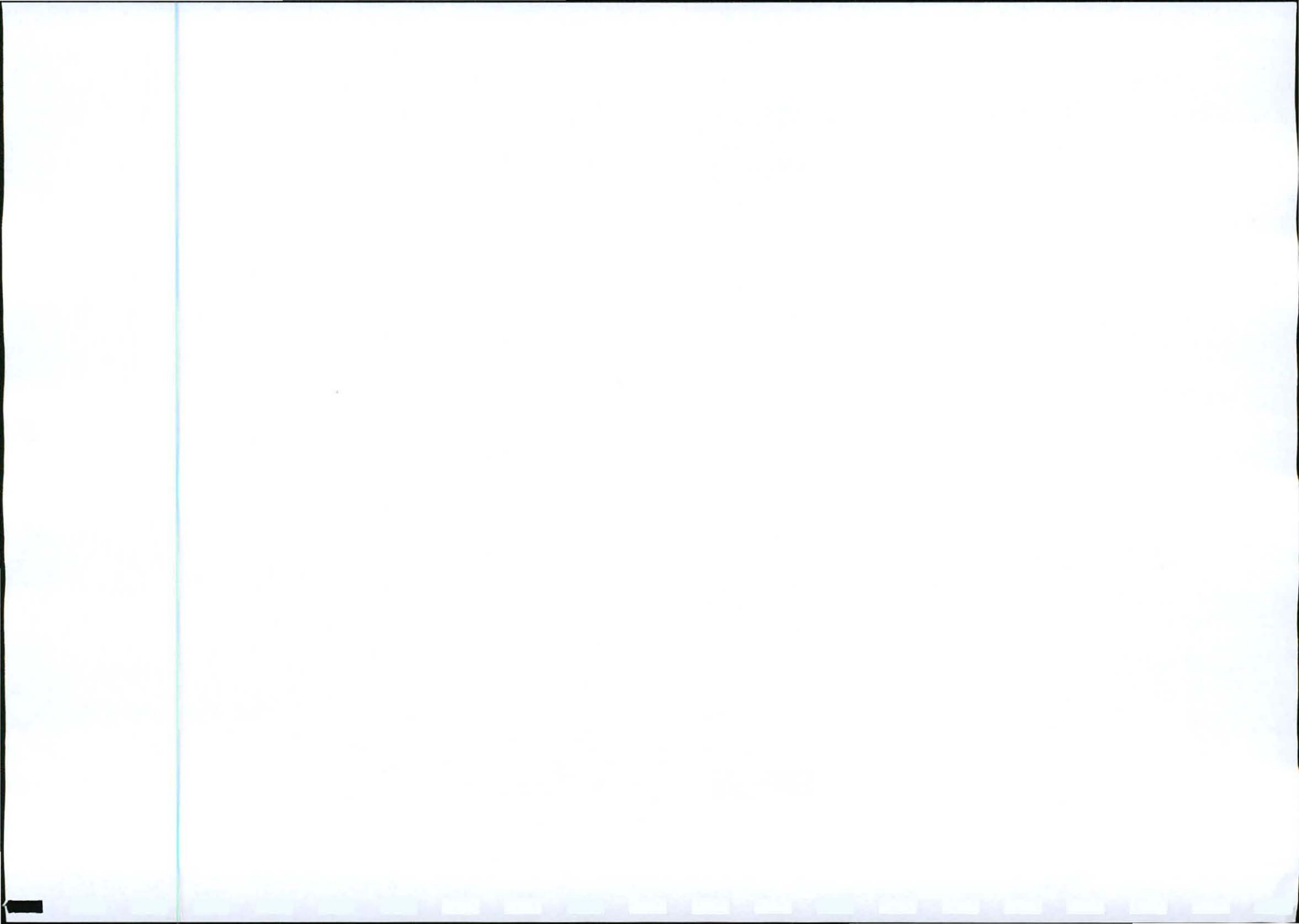
## CLOSURE OBJECTIVES

### General

- Rehabilitating the drilled areas within prescribed framework established in the EMP and in line with general environmental legislation.
- The overall objective of the rehabilitation plan is to minimize adverse environmental impacts associated with the drilling activities whilst maximizing the future utilization of the property.
- The prospecting footprint and roads used will be left in a condition that mitigates all negative impacts associated with the completed prospecting programme.

### Specific

- Rehabilitated drill sites will pose no visual, dust, soil, vegetation, faunal, social or financial impact.
- The prospecting areas will free of alien vegetation.
- All infrastructures, equipment, plant and other items used during the drilling programme will be removed from the site.
- Waste material of any description will be removed entirely from the drill area and the site will be neat and clean.
- Final rehabilitation shall be completed within a period of six months provided that adequate precipitation was received.
- Land use/land capability will be similar to that of the pre-prospecting scenario.





- The landowner shall be consulted on the end result of rehabilitation and shall be satisfied with the status of the post prospecting environment.

## MONITORING AND REPORTING

Adequate management, maintenance and monitoring of environmental parameters will be carried by Afrimat Aggregates (Trading) (Pty) Ltd to ensure successful rehabilitation of the affected areas. To minimize adverse environmental impacts associated with drilling operations it is intended to adopt a progressive rehabilitation programme, which will entail carrying out the proposed rehabilitation procedures concurrently with drilling activities.

### Inspections/Monitoring/Submission of information

- Weekly monitoring of all the environmental management measures and components shall be carried out by the holder of the prospecting right to ensure that the provisions of this EMP submitted to the DME are adhered to.
- Any changes to the prospecting programme need to be documented and approved prior to implementation thereof.
- An assessment of environmental impacts that were not properly addressed or that were unknown when the EMP was compiled shall be carried out and added as a corrective action.

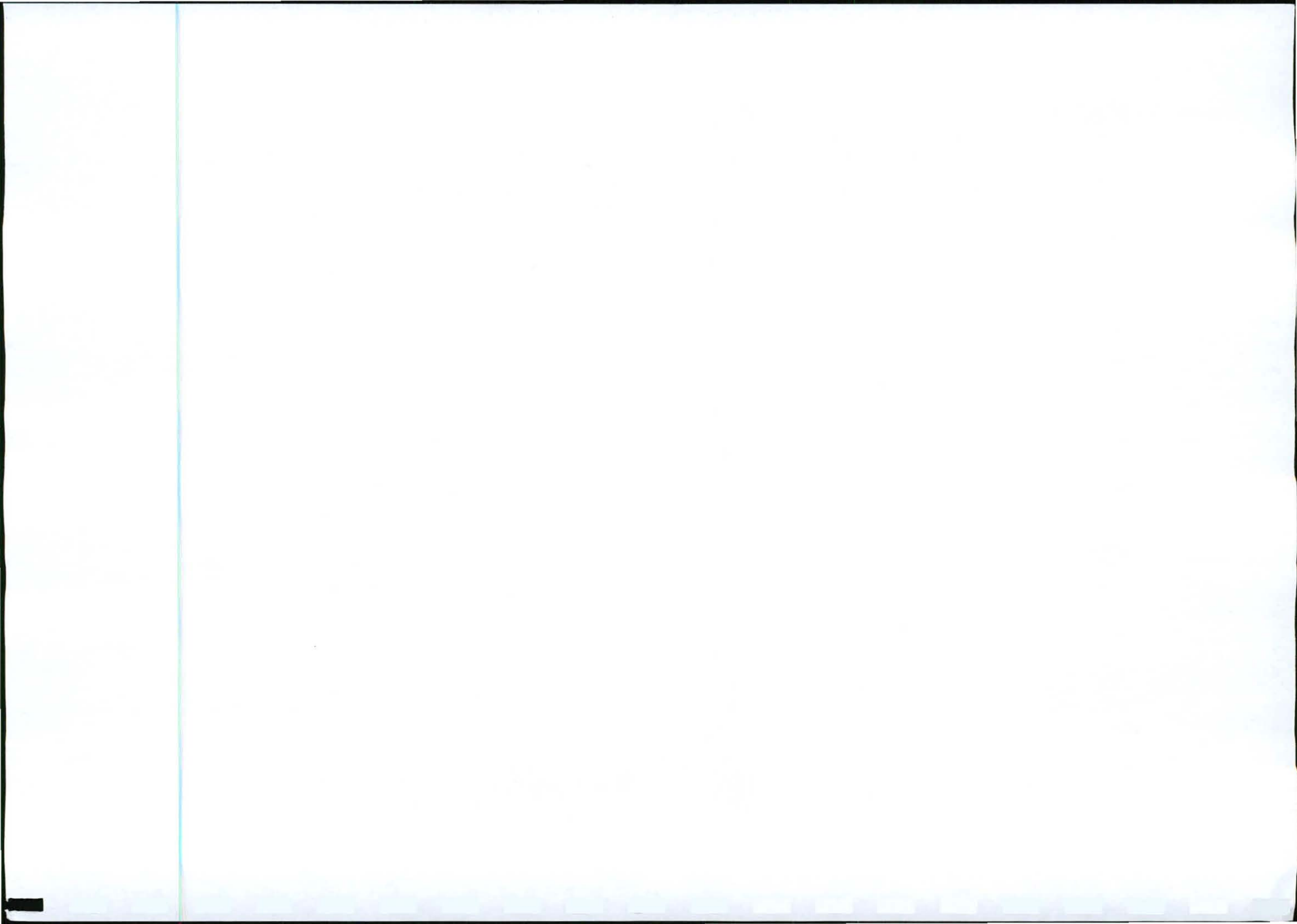
## CONCLUSION

If the end objectives stipulated in this report and the environmental conditions are met, the overall net impact on the environment will be temporary and very low key with the only permanent impact being that of removed rock core from borehole shafts. The long term impacts on the biophysical environment should be negligible. If positive prospecting results are obtained, this prospecting venture could be phase 1 of a medium term socio-economic injection to this rural area.

## FINANCIAL GUARANTEE

Rehabilitation of the Prospecting study area upon completion of the prospection operation will include the clearing up of all access roads (where necessary) and drill positions. The rehabilitation process will probably comprise of the following aspects:

• Rehabilitation of campsite	R 3 000
• Rehabilitation of possible 2km of internal roads @ R5000 per km	R10 000
• Rehabilitation of capping of 6 boreholes @ R1000 per borehole	R 6 000
• Possible repair of gates and fences	R 2 000
• Removal of infrastructure	R 2 000
• Removal of potential waste piles/rock core	R 3 000
• Cleaning up of potential hydrocarbon spills	R 3 000
• Tender process	R 3 000
• Appointment of consultant to oversee rehabilitation	R10 000
• Compilation of closure reports	R 7 000
• Contingency for unforeseen expenses	<u>R 5 000</u>
<b>Total</b>	<b>R54 000</b>



**UNDERTAKING**

I C P MALAN ..... the applicant for a prospecting right hereby declare that the above information is true, complete and correct. I undertake to implement the measures as described in Sections F and G hereof. I understand that this undertaking is legally binding and that failure to give effect hereto will render me liable for prosecution in terms of Section 98(b) and 99(1)(g) of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). I am also aware that the Regional Manager may, at any time but after consultation with me, make such changes to this plan as he/she may deem necessary.

Signed on this 22<sup>nd</sup> day of APRIL ..... 2010 at BELLVILLE (Place)



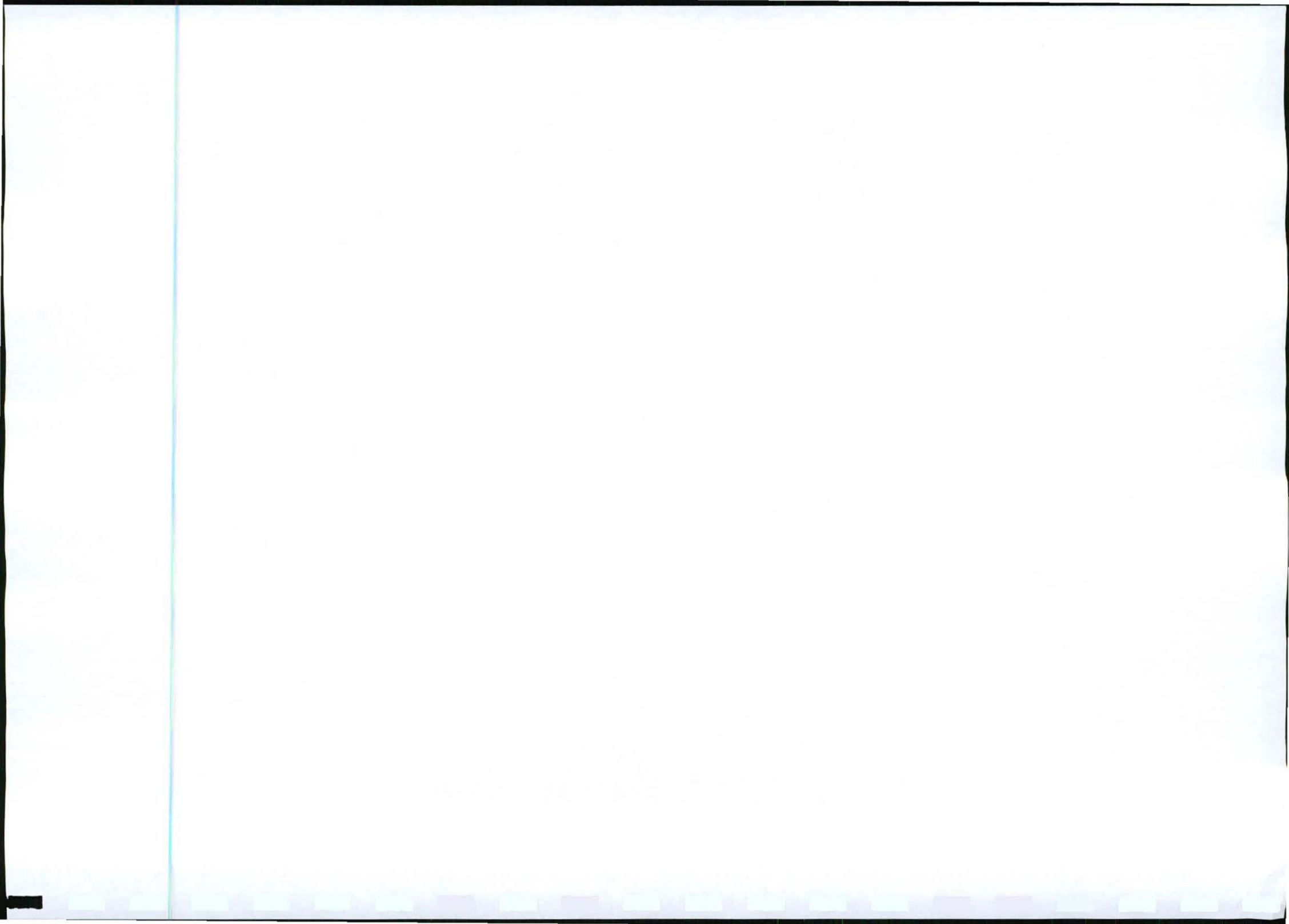
.....  
**Signature of Applicant**

**APPROVAL**

Approved in terms of Section 39(4) of the Mineral and Petroleum Resources Development Act, 2002 (Act 29 of 2002).

Signed at Port Elizabeth on this ..... day of ..... 2010.

.....  
**REGIONAL MANAGER  
EASTERN CAPE**



**RESOLUTION**

At a meeting of the directors of **Brickrush (Pty) Ltd** ("the COMPANY"), registration number **1994/005271/07**, held at Worcester on the **3<sup>rd</sup> of March 2009**:

**1. IT WAS RESOLVED THAT**

- A. Carl Malan** is hereby authorized and empowered to act on behalf of the COMPANY and to approve and sign all such documents that are required by the Department of Minerals and Energy pertaining to the application for prospecting rights, mining rights or mining permits.

Specimen signature: .....  
(This specimen signature is the signature of the person authorized to and signing the agreement)

CERTIFIED A TRUE COPY

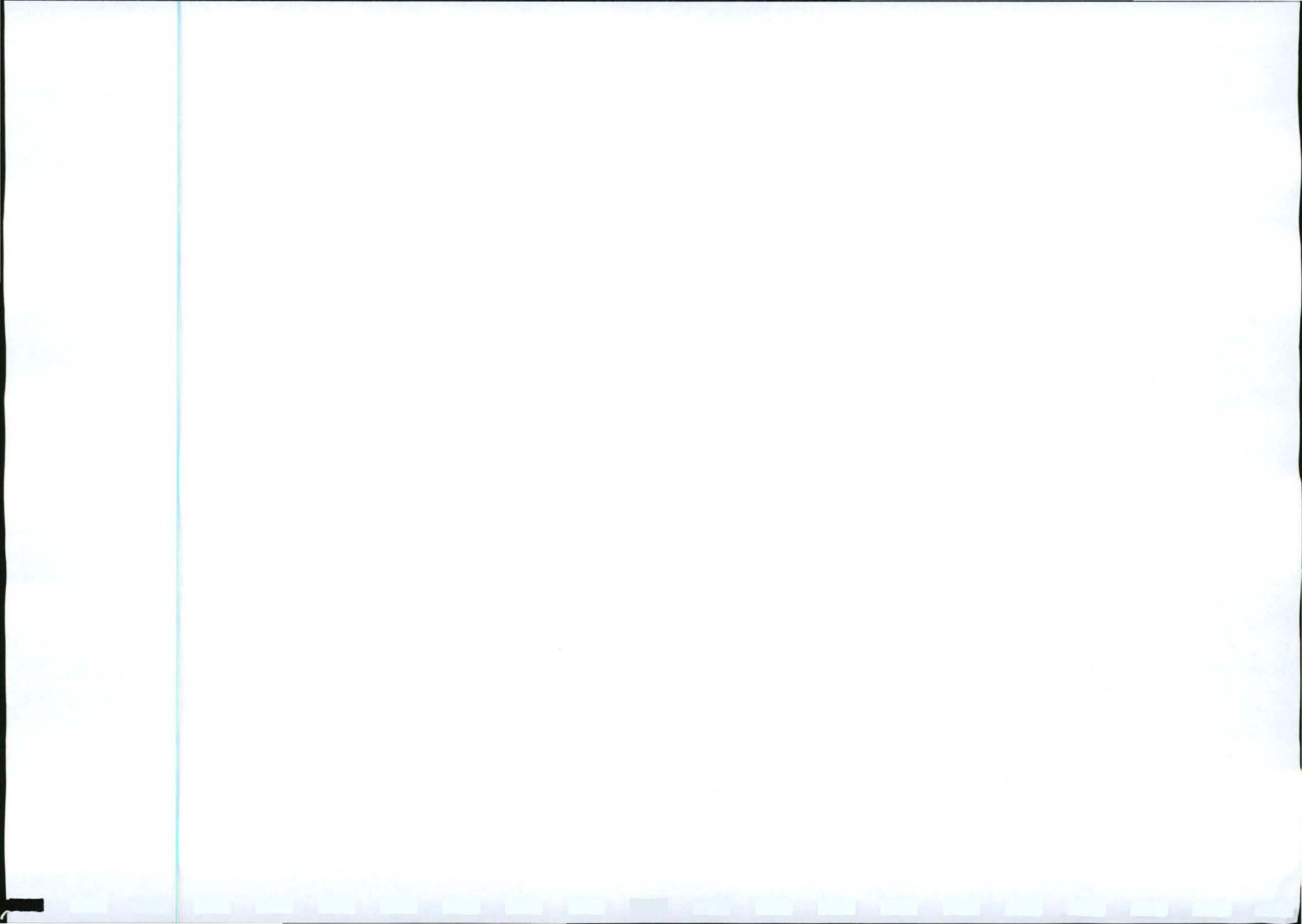
SOUTH AFRICAN POLICE SERVICE  
23 MAR 2009  
KHAYELITSHA  
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*P G Corbin*  
.....  
**P G Corbin**  
**DIRECTOR**

*J M Kato*  
.....  
**J M Kato**  
**DIRECTOR**

*H P Verreyne*  
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**H P Verreyne**  
**DIRECTOR**

*7111739-3 S/CST*  
*N KATOHI*





CONSTRUCTION MATERIALS FOR  
SOUTHERN AFRICA

Afrimat Aggregates (Trading) (Pty) Ltd  
Western Cape Region (Peninsula)  
Registration no: 1994/005271/07  
Physical address: Tyger Valley Office Park No. 2,  
Cnr. Willie van Schoor Avenue &  
Old Oak Road, Bellville, 7536  
Postal address: P.O. Box 768, Bellville, 7535  
Telephone: 021 - 917 8840  
Fax: 021 - 917 8822  
Email: info@afrimat.co.za  
Website: www.afrimataggregates.co.za

25 February 2010

Department of Mineral and Energy

Dear Sir/Madam,

**AFRIMAT AGGREGATES (TRADING) (PTY) LTD : BEE SHAREHOLDING**

Shares in Afrimat Aggregates (Trading) (Pty) Ltd are held by Afrimat Limited 92.7%, a listed black empowerment company, and by Joe Kalo Investments (Pty) Ltd 7.3% a black investment company.

In order to determine the effective BEE shareholding of Afrimat Aggregates (Trading) (Pty) Ltd the following analysis is of relevance :

**A. In respect of Afrimat Limited the BEE shareholding is as follows :**

The new BEE shareholding of Afrimat Limited with effect from 31 August 2009 is made up as follows:

**1. BEE shares**

Mega Oils (Pty) Ltd 8.82% ((6 239 529 + 6 392 575)/143 262 412) >

- Held as dematerialised shares 6 239 529
- Mega Oils SPV (Pty) Ltd materialised shares 6 392 575

\*(BEE shareholders = C.Nzo 33.3%, T. Mbikwana 33.3% and L. Dotwana 33.3%)

Joe Kalo Investments (Pty) Ltd 1.46% ((738 234 + 1 350 000)/143 262 412) >

- Held as materialised shares 738 234
- Held by nominee 1 350 000

\*(BEE shareholders = J.M.Kalo 50% and N.R. Kalo 50%)

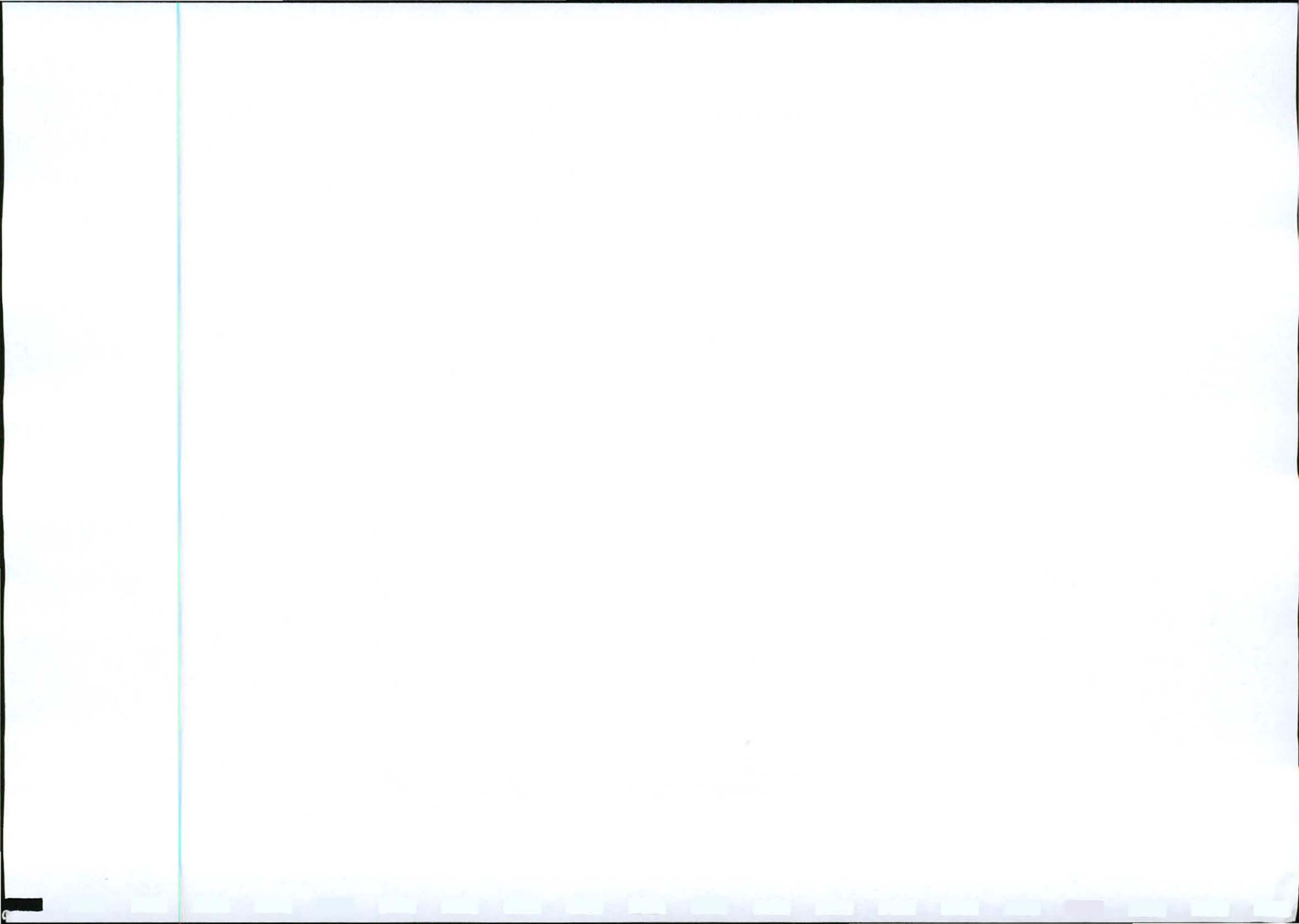
Afrimat BEE Trust 15.84% (22 700 000/143 262 412) >

- Afrimat Empowerment Investments (Pty) Ltd  
Dematerialised shares 22 700 000

\*(BEE shareholders = +- 1100 Black employees of Afrimat Limited group 100%)

**Total BEE shares 37 420 338**

Directors: PG Corbin; T Hendricks; JM Kalo; HP Verreyne





2. Non-BEE shares	105 842 074
<b>Total shares in issue</b>	<b>143 262 412</b>

BEE shares therefore constitutes 26.12% (37 420 338/143 262 412) of the total issued shares of Afrimat Limited being 143 262 412 shares.

B. In respect of Joe Kalo Investments (Pty) Ltd the BEE shareholding is as follows :

1. BEE shares

JM Kalo	60
NR Kalo	60
<b>Total BEE shares</b>	<b>120</b>
<b>Total shares in issue</b>	<b>120</b>

BEE shares constitutes 100.00% (120/120) of the total issued shares of Joe Kalo Investments (Pty) Ltd being 100 shares.

Summary = In respect of Afrimat Aggregates (Trading) (Pty) Ltd the weighted BEE shareholding is therefore as follows :

1. BEE shares

BEE partners in Afrimat Limited 92.7% (4 635/5 000)	1 211 (26.12% x 4 635)
Joe Kalo Investments (Pty) Ltd 7.3% (365/5 000)	365 (100.00% x 365)
<b>Total weighted BEE shares</b>	<b>1 576</b>

2. Non – BEE shares weighted

<b>Total shares in issue</b>	<b>5 000</b>
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Weighted BEE shareholding constitutes 31.513% (1576 /5000) of the total issued shares of Afrimat Aggregates (Trading) (Pty) Ltd being 5 000 shares.

Please contact the undersigned if you require any further information. (Telephone 021 917 8842; Cellphone 082 457 7873).

Yours sincerely



H.P. Verreynne

Financial Director

