CaseID: 1329

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

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From: Directorate: Mineral Regulation: Northern Cape
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Ref: NC30/5/1/2/3/2/1/301EM

The Director
South African Heritage Resources Agency
PO Box 4637
CAPE TOWN
8000

full AIA done in 2003: too old - update it according to Min Standards

Attention: Nonofho Ndobochani

CONSULTATION IN TERMS OF SECTION 40 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT 2002, (ACT 28 OF 2002) FOR THE SCOPING REPORT FOR MINING RIGHT ON THE FARM MOZIB NO.279 AND THAN NO.280 SITUATED IN THE MAGISTERIAL DISTRICT OF BARKLY WEST, NORTHERN CAPE REGION BY GUILFORD LIMITED (PTY) LTD.

Attached herewith, please find a copy of an Scoping report received from the above-mentioned applicant, for your comments.

It would be appreciated if you could forward any comments or requirements your Department may have in the case in hand to this office and to the applicant on or before the **30th June 2010** failure of which will lead to the assumption that your Department has no objection(s) or comments with regard to this application and this Department will in that instance proceed with the finalization thereof.

Consultation in this regard has also been initiated with other relevant State Departments. In an attempt to expedite the consultation process please contact **Mr. Humbulani Mashau** of this office to make arrangements for a site inspection or for any other enquiries with regard to this application.

Your co-operation will be appreciated.

p.p. .....
REGIONAL MANAGER: MINERAL DEVELOPMENT
NORTHERN CAPE REGION

Ref. no. NC 30/5/1/2/2/301 MR

SCOPING REPORT

COPY

APPLICATION FOR A MINING RIGHT IN TERMS OF SECTION 22(4) OF THE MPRDA, (ACT 28 OF 2002)

Applicant: Guilford Limited

Farm: Mozib No. 279 & Than No. 280

District: Barkly West

Date: May 2009

DERA Environmental Consultants
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Cell: 082 895 3516
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1 INTRODUCTION

DERA Environmental Consultants was appointed by Guilford Limited to compile an Environmental Scoping Report for the proposed application for a Mining Right in the Northern Cape Province. The aim is to gain authorisation from the relevant environmental authority to proceed with the activity.

The purpose of this Scoping is to ensure that this application complies with Regulation 49 in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). The contents of the study will include aspects such as:

- Described methodology applied;
- Described existing status of environment prior to mining;
- Described public participation process followed;
- Identify and describe anticipated environmental impacts.

2 NAME AND ADDRESSES

2.1 THE APPLICANT

Guilford Limited
PO Box 6499, Flamwood, 2572, Klerksdorp
Fax: 018-468 4015
Mobile: 082 895 3516
Contact Person: Mr. Daan Erasmus

2.2 THE CONTRACTOR

Sonop Diamond Mining (Pty) Ltd.
P.O. Box 6499, Flamwood, 2572
Fax: 018-468 4015
Mobile: 082 552 0352
General Manager: Sarel Potgieter

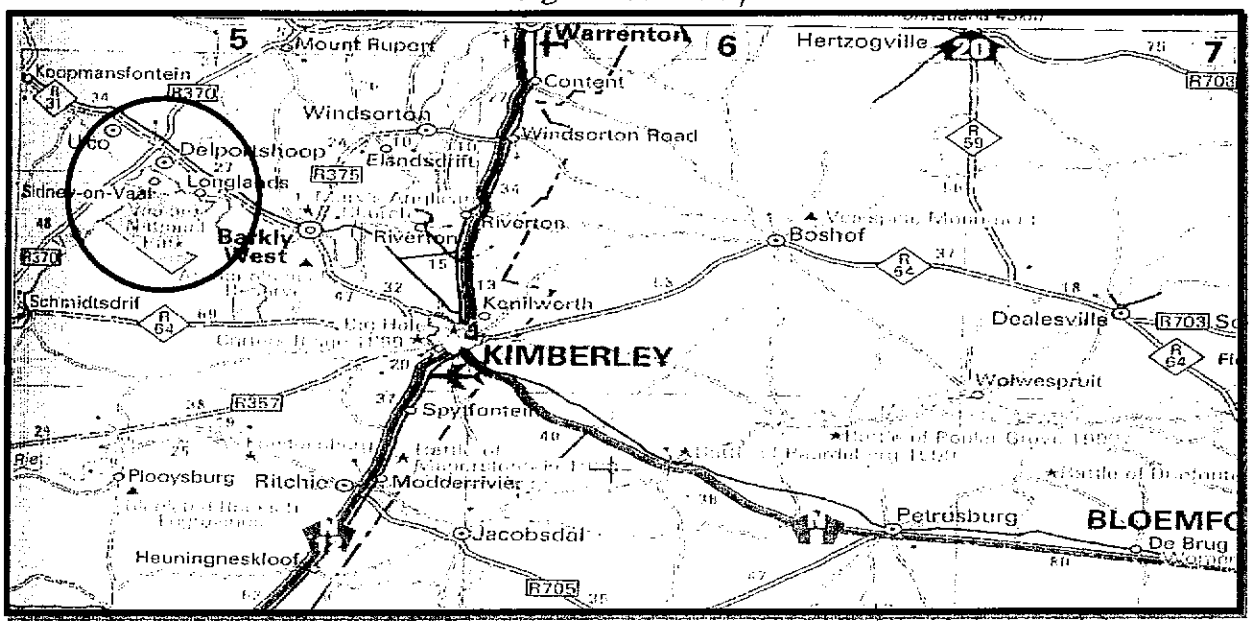
2.3 ENVIRONMENTAL CONSULTANT

DERA Environmental Consultants
PO Box 6499
Flamwood, 2572
Mobile: 082 895 3516
Fax: 018-468 4015
E-mail: dera@xsinet.co.za

3 LOCALITY

The site is situated north west of Barkly West. From Warrenton travelling on the N12 national road in the direction of Kimberley, drive via Windsorton to Barkly West. Drive in a north-westerly direction out of Barkly West toward Delportshoop. Out of Barkly West travel for ±20km and then turn left on to the road to Vaalbosch National Park. Follow this road for ±5km; crossing the Vaal River, just on the other side of the Vaal River the entrance road turn out to your right. The nearest towns are Delportshoop, 1 km north of the mine and Barkly West 26 km southeast by road. The capital of the Northern Cape, Kimberley is 56 kilometres southeast of the mine. See *Figure* 1 for Road Map.

Figure 1: Road Map

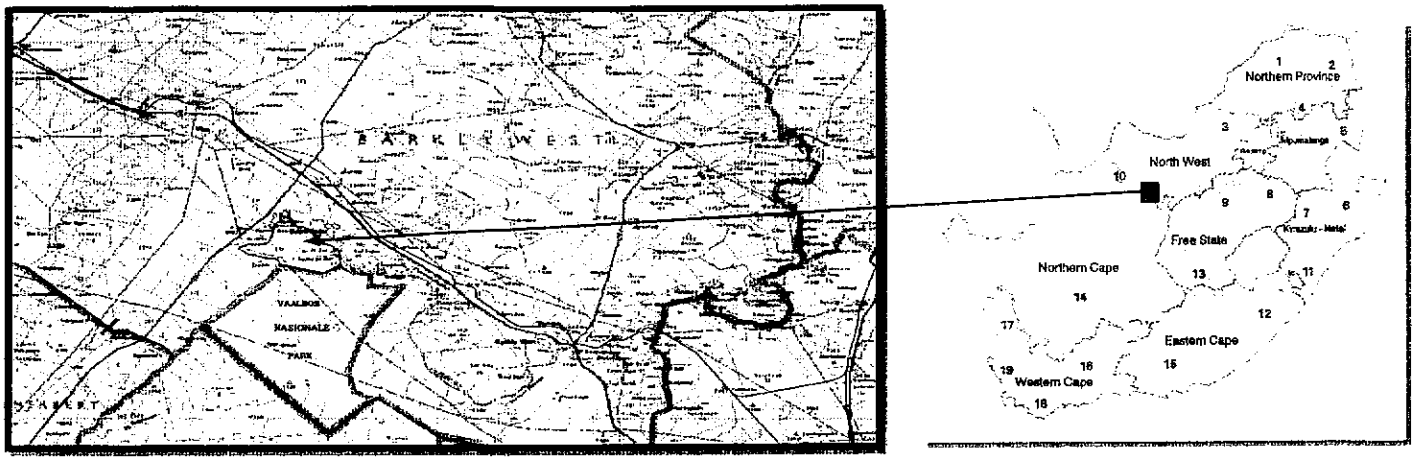


Entrance to the farm is via an all weather gravel road that turns off from gravel road to Vaalbosch National Park. The area (Delportshoop) falls under the Digatlong Local Municipality area of the Barkly West District, which in turn falls under the Francis Baard District Council of the Northern Cape Province, with their offices situated in Kimberley. See *Figure 2* for an indication of the location of the farm within the greater Barkly West district. The property is located on the farms Mozib No. 279 and Than No. 280, with the proposed development that will take place over a certain portions of the farms:

Mozib No. 279 (the Remainder) & Than No. 280 (the Remainder)

Figure 2: Location of the farms Mozib No. 279 & Than No. 280 within the Northern Cape Province,

1: 250 000 locality map



4 DESCRIPTION OF THE EIA PROCESS AND TASKS TO BE PERFORMED

4.1 SUBMIT APPLICATION FOR AUTHORISATION

The application for Mining Right was submitted separately (Ref num: B/2009/03/24/001 and File num: (NC) 30/5/1/2/2/301 MR).

4.2 GATHERING OF PROJECT INFORMATION AND SITE INVESTIGATION

Reconnaissance: The site under consideration was investigated by means of site visits and reconnaissance by vehicle and on foot.

Personal communication: Discussions was held with relevant consultants/authorities/key role players in order to identify specific information/issues/concerns relating to the proposed activity.

4.3 IDENTIFICATION OF ISSUES

The following issues were identified during site visits:

- The existing disturbance caused by the activates during their old Mining License and old disturbance cause prior to the grating of Guilford's Limited Mining License;
- The impact on surface water quantity (Vaal River) for mineral processing;
- The impact on riverbank (Vaal River) environment, since Guilford Limited has a Water License to work within the 1:100 & 1:50 year floodline.
- Positive impact will be the socio-economic advantage of labour position that in turn provides an income to 214 households.

4.4 IDENTIFICATION OF ALTERNATIVES

An alternative to the development is a no go option, this will however result in the not yet rehabilitated areas staying as they are and reducing some areas to wilderness area. But if

mined, it can be used for optimum agricultural farming again, if properly rehabilitated. The no go option will however prevent the positive social-economic advantage that mining can have in this area and it will not prevent any other mining company from also applying to mine the area, since this is a high potential area for diamond mining.

4.5 EVALUATION OF ISSUES

The issues, identified during the site visit will be evaluated and their significance determined based on a set criteria. The current identified issues are discussed in detail later in the report.

4.6 ADDRESSING/RESOLVING KEY ISSUES

Issues will be addressed during each of the following two phases:

- Operational phase
- Closure phase

The construction phase is not applicable since mining have been taken place to date and there is existing mine infrastructure such as slimes dams and a ramp that will also be used for the continues mining processes.

The means of addressing issues will be covered by the following processes:

- Identifying of issues through regular monitoring;
- Discuss different mitigation measures;
- Decide on best mitigation measure for impact;
- Implementation of chosen mitigation measure.

Specialist opinion was obtained where issues were identified as being of major significance, to ensure that these issues are thoroughly dealt with to reduce any negative impacts.

5 PHYSICAL PROPERTIES OF THE SITE AND SURROUNDING AREA

5.1 BACKGROUND

The area under application can to a limited extent still be classified as pristine area; because the area not already mined have been disturbed by agricultural practices. The previous mining efforts that have taken place over the proposed mining area have however already caused physical disturbances to ±40% of the application area. The existing infrastructure that have been constructed and used under the old Mining License are:

- Site 3: Two slimes dams; washing pans; temporary container used as offices; pit latrines; various mine roads.
- Site 4: Two slimes dams; washing pans; temporary container used as offices; pit latrines; various mine roads.
- Sorthuis area: Sorthuis brick building, with associated offices and old farm buildings used as central workshop area.
- Old Lodge area: area used as residential housing area for mine managers and supervisors, with associated ablutions facilities.

The existing excavations that will be left open under the old Mining License cover about 10 hectares. Guilford Limited has worked under an Old Order Mining License (ML2/99) till the 1st March 2009, when it lapsed. They have subsequently decided to apply for a Mining Right under the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002). Guilford Limited has further appointed Sonop Diamond Mining as contractors to conduct all mining related activities.

5.2 CLIMATIC CONDITIONS

The mine is located in a semi-arid region, receiving on average about 250mm of rain in the west to 500mm in its eastern boundary. It is situated within the Sn climate region. The rainfall is largely due to showers and thunderstorms falling in the summer months October to March. The peak of the rainy season is normally March or February. The summers are very hot with cool winters. The nearest weather station to the mine is at Barkly West #0290032 with a record going back to 1884. Due to the limited range of information available from this station and the number of periods with broken records, the data from the weather station at Kimberley will be used. The relative humidity is generally low 48% and the evaporation is on average 2896mm per year. The mean monthly temperatures range between 2.8°C (July) and 32.8°C (January). The prevailing wind direction for the area is north to north-north-west for the months January to September and changing from north to sometimes westerly winds during October to December averaging 3.5m/s. High winds are unusual but when they do occur can uproot trees and take off roofs. The incidences of extreme weather conditions ranges from, hail is sometimes associated with thunderstorms and mainly occurs in early to late summer (November to February). It occurs on average three times a year although these storms may sometimes be severe and

has caused much damage, they usually impact on a relatively small area. The period during which storms can be expected lasts about 120 days (May to August). With extreme minimum temperatures to below -8°C at night in the winter, frost development can be severe. Droughts are common and may vary from mild to server. During these periods dust storms sometimes occur, depending mainly on denudation of the surface.

5.3 NOISE

The movement of heavy vehicles during the operational and closure phase and the processing plant where material will be processed will have a significant impact on the noise levels on the farm. The processing of the alluvial gravel through the washing pans will be noticeable, because it will be a 24-hour operation, these noise levels will be continuous and the operators will be issued with earplugs. There is however various other activities occurring in the vicinity of this mine, and the mining and processing on this site will not drastically increase the impact on the regional noise lever. The mine itself is located in a rural landscape with the nearest residential area located 1km away from the mining area, in a north-easterly direction and on the opposite side of the Vaal River. See Figure 3 – Layout Plan. The impact would be of more importance regarding the direct worker environment that should adhere to the requirements in terms of the Mine Health and Safety Act and the influence on wild life.

5.4 AIR

With reference to the Scheduled processes under the Atmospheric Pollution Act, 1965 (Act No. 45 of 1965): No scheduled process relates to any proposed mining activity on the farm. The current source of air pollution in the area stems from vehicles travelling on the farm roads of the area and other agricultural practices. The source of air pollution on the farm will be nuisance dust generated by the processing of the diamond gravel, the transport trucks, the loading and unloading of tailings at the primary screen at the washing pans, as well as from the movement of trucks and vehicles on the mining roads. Gas emissions from vehicles will be within legal limits. As the prevailing wind direction for the area is north to north-north-west from January to September and changing from north to sometimes westerly winds during October to December averaging 3.5m/s, thus the only area where the potential for fall-out dust may have a negative impact is toward the "Old Vaalbosch National Park". But because of dense plant life along the southern boundary fence it is not foreseen that the landowners to the southern side of Sydney-on-Vaal will be affected (as indicated on the Layout plan– *Figure 3*). Dust will from time to time be visible from Delportshoop, but will further not be visible from any main roads or tourist roads. It is however assumed that the impact of dust caused by the mining activities will have a minimal impact on the regional air quality.

Figure 3: Infrastructure Map – at back of report

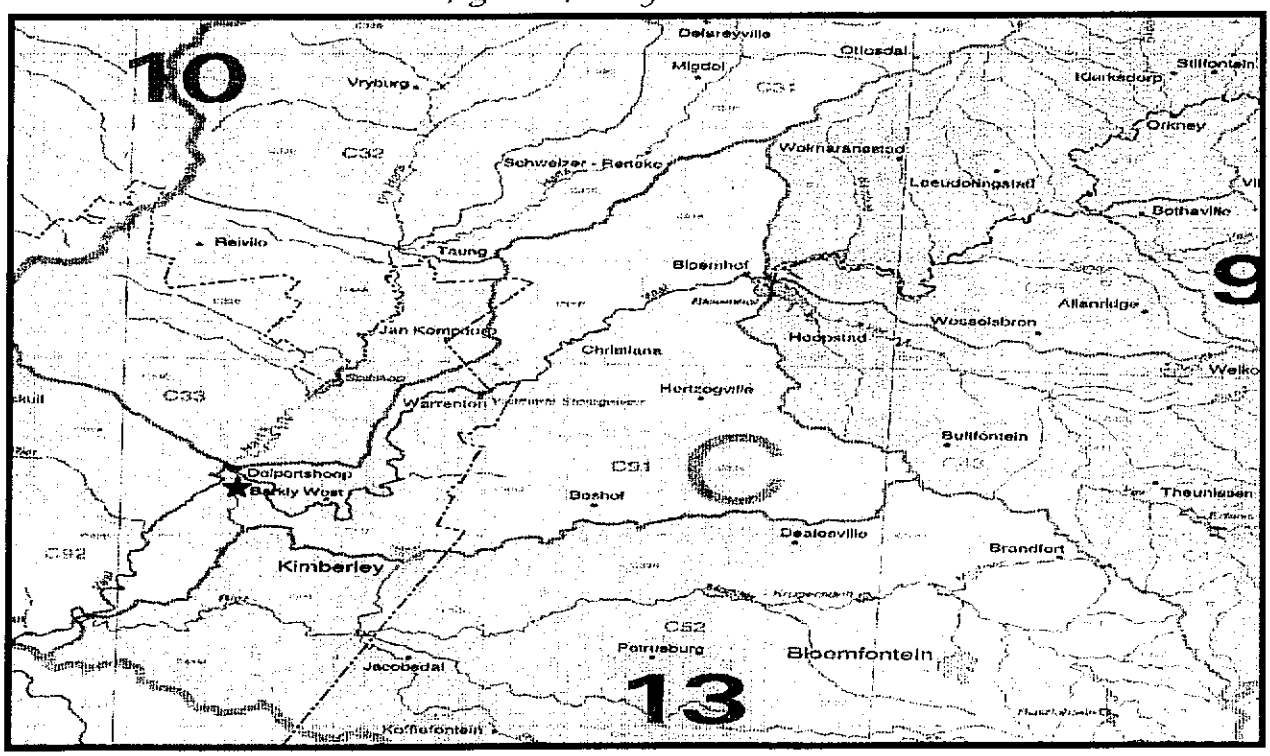
5.5 TOPOGRAPHY

The proposed river stretch envisaged to be mined lies within the Northern Cape Vaal River floodplain; where river and floodplain width, as well as river depth vary substantially align the river course. The immediate surrounding riverine landscape ranges between a moderately steep gradient to fairly flat. The average elevation is between 1 020 – 1 040masl. The slope of the topography over the application area is 0.5%. As a result of the mining activities that have already taken place over the farm the topography has to some extent been altered by the mining activities. In addition, between half and two thirds of the Vaal River bordering the Sydney-on Vaal Estate is situated upstream, and the rest downstream of the Vaal-Harts confluence. See *Figure 3* for the indication of the topography of the immediate area of the site.

5.6 SURFACE WATER

The mine falls in the tertiary drainage area C92E & C92A – part of the Lower Vaal Water Management Area. See *Figure 4* for an indication of where the farms Mozib and Than is situated within the catchment.

Figure 4: Tertiary catchment area



The Vaal River forms three quarters of the applications areas boundary. The Vaal River can be classified as one on the country's main perennial stream. None of the historical and previous mining activities had any physical influence on this surface water body. Guilford Limited intends to do all mineral processing using Vaal River water. Guilford Limited currently have a Water License (License no. 25013351) in term of Section 40 and according to Section 21 (a)- taking water from a water resource; (c)- impending or diverting the flow of water in a watercourse; (f)- discharging waste or water containing

waste into a water resource through a pipe, canal, etc.; (g)- disposing of waste in a manner which may detrimentally impact on a water resource and (i)- altering the bed, banks, course or characteristics of a watercourse, of the National Water Act, 1998 (Act 36 of 1998) all the above subject to the conditions set out in the Water Licence appendices. See a copy of the Water License attached as *Annexure 1* indication the License No. 25013351. All surface runoff will be diverted around the mining area into the Vaal River. Any water raining on the mining area will be diverted into the return water dams at each site and will be used as top-up water. No other natural wetlands or dry pans occur on the application area. Water samples have been taken out of the Vaal River and the result of the analyses will be included in the EMP/EIA, since the results were not available yet.

Annexure 1: Water Licence – Licence No. 25013351

5.7 GROUNDWATER

As far as known there are only three existing boreholes on the proposed mining area, one situated situated as the Sydney lodge, one at the workshop and one at the area that was previously used for a compound area. Water samples have been taken out of this borehole and the result of the analyses will be included in the EMP/EIA, since the results were not available yet. There seems to be three different groundwater types found in and around Sydney-on Vaal, according to the Water Use License Application Report compiled July 2003 by Watersol. The dominant water type is represented by the production hole from Sydney lodge and the compound. It is stagnant type water with a high sodium absorption ration. This is the same water that is found seeping into the open pits. It is not salime but slightly hard in character. The second water type is found in the borehole at the workshop. This borehole extracts water from a much deeper aquifer as is evident from the water table. It is classified as older water that does not receive recharge on a regular basis. It is highly saline and can be classified as hard. It can never be used for crop watering, as it will lead to degrading of the soil fertility. These three boreholes are the only source of potable water on the mining area. See ***Figure 3*** for an indication of the position of the boreholes. Due to the proximity of the Vaal River, groundwater used on Sydney is limited to supplying potable water and other domestic uses for the lodge, workshop and compounds.

Figure 3: Infrastructure Map – at back of report

5.8 VEGETATION

AC Koekemoer was contracted to do a full biophysical report of the areas outside the riverbank and floodplain area. This report will however only be ready to be included in the EMP/EIA.

Eco-Impac CC have compiled a Botanical Survey of the Riverbank and Floodplain, of the farm Sydney-on-Vaal as an Appendix to EIA for the Water License dated April

2003. Extracts of this report are included in this Scoping Report and the full report will be put in the EMP/EIA. Sydney-on-Vaal lies within the Savanna Biom (Low & Rebelo) 1996). A biome is a broad ecological unit that represents a major life zone extending over a large natural area, and reflects the major features of climate (Rutherford & Westfall 1994). The general vegetation type present on Sydney-on-Vaal is classified as Kimberley Thorn Bushveld (van Rooyen & Brekenkamp 1996). According to the literature, the vegetation of the Kimberley Thorn Bushveld is found on deep predominantly sandy to loamy sands, underlain by calcrete (VT32, van Rooyen & Bredenkamp 1996). The mean annual rainfall is ±400 mm, failing predominantly during late summer.

The typical vegetation of this vegetation type is described as an open savanne, with Umbrella Thorn, *Acacia tortilis*, and Camel Thorn, *Acacia erioloba*, the dominant tree species. With scattered individuals of Shepherd's Tree, *Boscia albitrunca*, and Sweet Thorn, *Acacia karroo*. The shrub layer is moderately developed, with Camphor Bush, *Tarchonanthus camphoratus*, Black Thorn, *Acacia mellifera*, Raisin Bush, *Grewia flava*, and River Honey Thorn, *Lycium hirsutum, abundant*. The fairly well-developed grass layer includes Red Grass, *Themeda triandra*, Lehmann's Love Grass, *Eragrostis lehmanniana*, and Turpentine Grass, *Cymbopogon plurinodis* (van Rooyen & Bredenkamp 1996). Only 3.1% of this vegetation type is conserved, mostly in Vaalbosh National Park (which have been deproclaimed) and Rooipoort Game Reserve (van Rooyen & Bredenkamp 1996).

5.9 FAUNA

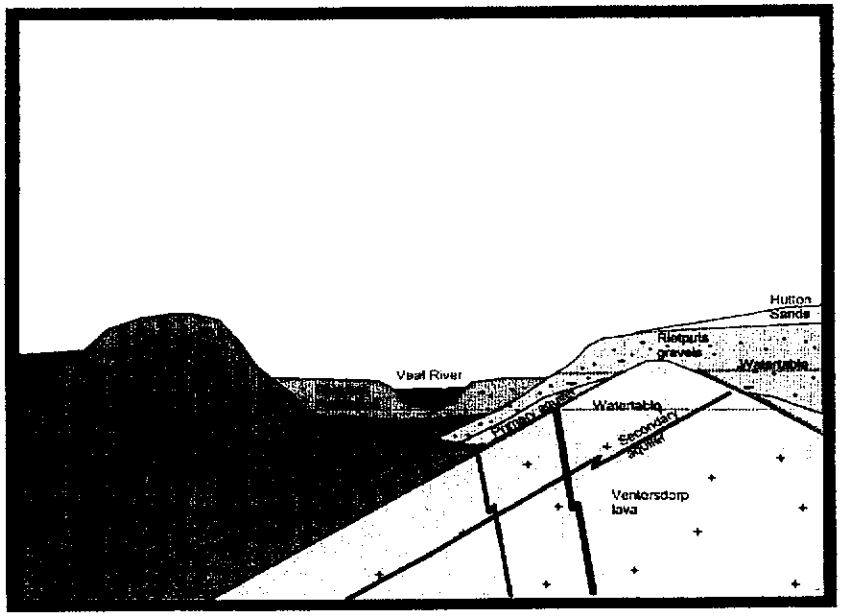
AC Koekemoer was contracted to do a full biophysical report. This report will however only be ready to be included in the EMP/EIA.

5.10 GEOLOGY

Stratigraphy:

The Pniel Property is within the Kaapvaal Craton, although near to its inferred western margin. The surrounding rocks belong to the Karoo Supergroup with intrusions of dolerite. The basement rock is andesitic lavas of the Ventersdorp Group which could be up to 3800 meters thick. On top of the Ventersdorp we find Karoo formation from the Karoo Supergroup – Dwyka tillites and/or Ecca shales, see *Figure 5*. Intrusive dolerite in the form of concordant sills and dykes can be found in the area. The resent alluvial deposit from the Pleistocene age belongs to the Riverton formation and the gravels itself to the Rietputs formation.

Figure 5: Geological and hydrogeological model at Sydney-on-Vaal



Structural geology:

There are no dykes or fissures found or known to occur on or around the proposed mining area although numerous other structural features in the form of joints, faults and some major fracture zones line the Dikbosch fracture can be found in the area. The Ventersdorp lava's and its basement erosion surface dominates the structural geology of the area. The joint pattern is associated with the Dikbosch Fault system. The scale and impact of the joint and fracture system can be seen in the numerous sharp turns of the Vaal River as it runs over and along the different fracture and fault zones.

5.11 ARCHAEOLOGICAL AND CULTURAL SITES

Eco-Impac CC has compiled an Archaeological Impact Assessment along the Vaal River Frontage at Sydney-on-Vaal as an Appendix to EIA for the Water License dated April 2003. Extracts of this report are included in this Scoping Report and the full report will be put in the EMP/EIA. Stone Age material found along and adjacent to the Vaal River spans the Earlier, Middle and Later Stone Ages through Pleistocene and Holocene times. Of particular interest are Pleistocene sites along the Vaal River (e.g. Humphreys 1969; papers by Beaumont in Beaumont & Morris 1990; Meaumont & McNabb 2000). Late Holocene material with pottery is known to occur on the riverbanks, while rock engravings are richly distributed in the region (summary in Morris 1988). At present the existence of rock engraving on sites on Sydney-on-Vaal cannot be ruled out. In addition, terraces along the Vaal River have long been known for their association with archaeological and Plio-Pleistocene fossil material (e.g. Helgren 1979).

5.12 SENSITIVE LANDSCAPE

The only sensitive landscape on the application area is the bank and floodplains of the Vaal River and the river itself, which form two-thirds of the boundary of the application area. Guilford Limited have a Water Licence to word within the 1:100 and 1:50 year

floodline of the Vaal River and have done so for the past four years without causing detrimental damages to this river system. Guilford Limited has further undertaken that a riparian habitat of 30m wide along the river will not be mined. All mineral processing plants, slimes dams and return water dams will be operated outside the 1:100 meter floodline. Guilford Limited will put specific management measures in place to make sure that no poaching by employees of wildlife occurs in and around these sites.

5.13 SOCIO-ECONOMICS

The increase in socio-economic activities through mining will add to the current growth and development in the Barkly West area, already created by industry and mining, with the employment of about 214 permanent workers.

5.14 SOIL

GEO LAB was contracted to compile a soil study of the application area. This report will however only be ready to be included in the EMP/EIA. A broad soil description will whoever be giver for the purpose of this report. The soil on the application area are very homogenise with more or less three major soil forms or soil classes that can be divided:

- Red deep sandy soil (Huttons) 60%. These soils are very deep well drained soils with texture class sand loam and clay percentage of 10 – 15%. They are situated starting ±300-500m from the river banks all the way to the southern boundary only the areas next to the river and ridges to the eastern part excluded. The irrigation land is found within the middle of the above described soil area.
- Grey to black clay/turf soils are found between the sandy soils and the river. These soils are much higher in clay 35 -55 %(Arcadia soil form). The soils are not well drained and more runoff to the river is evident. These soils will fall into the texture class of clay/loam – clay. Natural and riverine vegetation will be found on these soils.
- Shallow rocky soils are found in the north eastern part of the farm on and on the sides of a little ridge. These soils are very shallow with a clay percentage between 15 -25% and classified as Mispah soil form. These soils can be regarded as low agricultural soils only suitable for natural vegetation.

5.15 CURRENT LAND UTILISATION

Figure 3: Infrastructure Map – at back of report

5.15.1 Entrance

Entrance to the farm is via an all weather gravel road that turns off from the gravel road to Vaalbosch National Park and is situated about 1 km south of Delportshoop, 26km northwest of Barkly West and 56 km northwest of Kimberley. The entrance road continues to from a network of gravel roads on the property itself. Existing entrance roads and gravel roads will be used and will only be upgraded if necessary and no additional roads will be constructed.

5.15.2 Infrastructure

The existing infrastructure consists of an entrance road and a network of gravel roads, which turn off from the gravel road to Vaalbosch National Park. There are currently only two sites that will be worked on Sydney-on Vaal and each have: two slimes dams; washing pans; temporary container used as offices; pit latrines. At the Sorthuis area, there are the Sorthuis brick building, with associated offices and old farm buildings used as central workshop area. There is also an old lodge area used as residential housing area for mine managers and supervisors, with associated ablution facilities and there is also a workshop. At the old decommissioned site 8 there is still an old ramp and some unused mining equipment that still need to be cleared. There is a high voltage power line that enters the application from Vaalbosch National Park and runs along the western boundary and over the Vaal River to towards the Farm 232. There is also a normal power line that gives power to the lodge and run west toward site 3 and turns north towards site 4. There are no telephone lines within the application area. The whole farm is fenced off.

5.16 AVAILABILITY OF LAND

The Guilford Limited currently holds ownership of the land. See *Table 1* for more information of affected land.

Table 1: Summary of the farm where the proposed development will take place.

FARM	OWNERSHIP	TITLEDEED
Mozib No. 279		
Remainder	Guilford Limited	T 1360/1997
Than No. 280		
Remainder	Guilford Limited	T 1360/1997
TOTAL SIZE		2 180.4403 ha

6 DESCRIPTION OF THE PROPOSED PROJECT

6.1 MINING METHOD

Guilford Limited intents to mine the alluvial diamond bearing gravel found in the 1:50 and 1:100 year floodline area and between the shoreline and middle of the Vaal River. This will include mining with:

- Heavy alluvial mining machinery to within the 1:50 year floodline;
- Riverbed mining by means of a barge equipped with gravel suction pumps and/or diving equipment similar to that used in marine diamond mining ventures.

The riparian habitat 30m wide along the river will not be mined. Total deposit is estimated at 29.4 million tonnes. Production rate 29 040 tonnes/day; 464 640 tonnes/month, or

5.111 million tonnes a year. It is envisaged that if the price and demand for diamonds stay favourable that Sonop Diamond Mining as contractor will work at the same production rate. The reserve can then be worked out in 6 years and rehabilitation completed in 7 years. Mining development will start at the furthest point upstream where gravel are found and will continue only in a downstream direction. This is so that the recovery process in the mined areas can start immediately after an area has benn mined. Access roads to the river will be constructed taking into account the sensitivity of the riparian habitat. Mine residue storage will be in the form of slimes dams and overflow dams constructed out of the old mine pits. These residue deposits will be located outside the 1:50 year floodline.

6.2 MINERAL PROCESSING

The mining method was determined from previous workings and geological surveys of the application area. The mining method and mineral processing will consist out of the following:

- All available topsoil (if any) will be stripped separately with an excavator, loaded onto the dumper trucks and stockpiled next to the excavations. The topsoil will be stored in such a way that the minimum runoff and erosion will emanate from it. The topsoil will be stored in a pile; around the pile surface runoff trenches will be constructed to divert any runoff around the pile. The topsoil will be used for final rehabilitation when mining has reached its end of life span. Concurrent rehabilitation will also be done.
- Once the topsoil has been removed the overburden of about 0.5 - 1 metres is then stripped and placed on the side on the excavation.
- Once the overburden has been removed the exposed diamondiferous gravel on averaged 2 or 2.5 metres thick is stripped with an excavator and loaded onto the dumper trucks from where it is transported to the central mineral processing plant at the farmstead, to the screen stockpile.
- At the plant the gravel is fed into the screen by a front-end loader, where gravel is sorted by a grizzly screen grid. The oversize stones lager than 100 mm are screened off and loaded onto the dumper trucks with a front-end loader to be taken back to the excavation as part of backfilling.
- The coarse gravel material smaller than 100 mm goes directly into the scrubber plant there the clay particles are broken down and further screened down to particles smaller than 25 mm.
- From the scrubber plant this material is fed directly into the washing pans at a rate of 50 tonnes per pan per hour. Water is pumped into the rotating pans at a rate of 14 000 litres an hour. The concentrate out of the pans goes directly into a concentrate bins at set intervals. The puddle from the pans goes through a de-watering screen that separates the < 0, 5 mm material that goes onto the slimes dam. From the slimes dam 50 % water is recovered and re-cycled to the washing pans which brings the total water use at 7 000 litres a hour per pan. The slimes dam will be constructed outside the 1:100 year flood line.

- The >0, 5 mm material (dry tailings) is taken directly back to the excavations as part of concurrent backfilling. The concentrate bins are emptied on a regular basis, transported to the Sorthuis on site where the concentrate goes through an x-ray sorting plant where the diamonds are recovered.
- For backfilling and rehabilitation the following procedures will be as follows:

  The coarse gravel (rough) sifted at the grizzly screen and the dry tailings from the de-watering screen will be transported back into open pits for backfilling. During backfilling variation in the dumping sequence of materials will be followed to obtain better compaction and stability of the reclaimed gravel. After the rough and dry tailings are backfilled it will be followed by the overburden. This will ensure that the voids surrounding the coarse gravel will be filled up with finer sediments. The heavy vehicles will obtain compaction during backfilling stage.

  The above sequence will continue until the last excavation is reached. The topsoil stored at the beginning of mining will now be utilised for final rehabilitation.

  The maximum areas that will be left open during the mining operation are very difficult to determine because of the depth of the excavations and because the whole areas were previously work and not rehabilitated.

6.3 SEWERAGE

The employees of Guilford Limited (the contractor) will make use of Pit Latrine toilets erected on the mining sites for use by the workers. Guilford Limited will ensure that these toilets will be erected outside the 1:100 year flood line of the Vaal River. There are further ablution facilities at the Sorthuis and workshop area and at the lodge for mine managers and supervisors.

6.4 WASTE DISPOSAL

All industrial waste, this includes all non-biodegradable refuse such as glass bottles and plastic bags, will be sorted, classified and stored within a fenced and dedicated waste area (20m x 10m). All new industrial waste that is generated will also be stored on this dedicated area. Part of the industrial waste area will contain a salvage yard (10m x 5m) where material that can potentially be re-used will be stored. A waste removal company like WasteTech will remove the industrial waste on a 6 monthly basis. All hazardous waste line used oil, oil rages, grease, hydraulic fluids, batteries; neon globe lights etc. will be stored in suitable covered receptacles on the industrial waste areas. The contents of these receptacles will be removed on a regular basis, not exceeding three months, by Oilcol to their recycling deport in Johannesburg. Alternatively this material can be sent to the incinerator at Lime Acres.

The only mine residue that will be generated in waste rock and slimes. No permanent waste rock dumps will be created, as continuous backfilling will be practiced. Of the 30% balance of volume screened at least 30% is expected to become slimes material. These

slimes will be deposited on to slimes dams created for this purpose. The slimes dams will eventually be the only long term impact that will remain after mining stopped.

6.5 POSSIBLE ECONOMIC SPIN-OFFS

The impact of Guilford Limited operation on surrounding communities is likely to be moderate, of medium significance, and medium-term in nature considering the scale, reserve, and life of mine. The only direct benefit that will be gained by this operation will be salaries paid to the employees. The reserve at Sydney-on-Vaal operations is of such a nature that the contribution towards the local economy can also be seen as moderate, positive.

7 PUBLIC INVOLVEMENT

As the acceptance letter from DME was only received on the 28th March 2009, there was not enough time in order to do the required public participation and to trace all relevant parties concerned. Guilford Limited however commits to do the following public participation activities before the submission of the EMP/EIA. EIA notices will be placed in two local newspapers, namely the Diamond Field Advertiser and the Volksblad. EIA notices will also be placed for a period of 3 months at the Delportshoop Municipality notice board and at the access gate to Sydney-on Vaal. The surrounding landowners as listed in Table 2 below will be contacted by phone and notices will be fax or posted via registered mail to them for comments.

Table 2: List of directly affected parties.

Name	Address	Interest & Activity
Guilford Limited	Tel. 018-4685355 Fax. 018-4684015 P.O. Box 6499 Flamwood 2572	Landowner on the Remainder of the farm Mozib 279 & on the Remainder of the farm Than 280.
RSA. But land used by Sydney-on-Vaal Community Property Association	Tel. 053-832 8129 76 Quinn Street Kimberley 8300	Neighbour on Portion 1 of the farm Mozib 279 & on Portion 1 of the farm the Than 280 on the southern side of the proposed operations.
Mr. G. V. Faber	Cell. 082 580 5566 Cell. 082 805 5666 P.O.Box 105 Ulco 8390	Neighbour on Portion 1 of the Farm 232 on the western side of the proposed operation.
Digatlong Local Municipality (Delportshoop)	Tel. 053-561 0107 Fax. 053-561 0428 P.O. Box 7 Delportshoop 3877	Neighbours on the Remaining extent of the Farm 355 & On the Farm 350, on the northern and eastern side of the proposed operation.

DWAF - Vaal-Gamagara	Tel. 053-562 9300 Private Bag X1 Vaal Gamagara 8371	Neighbours on Portion 6 & 7 of the Farm 218, on the north-western side of the proposed operation.

8 IMPACT IDENTIFICATION AND ASSESSMENT

8.1 APPROACH FOLLOWED

The nature of impacts can vary widely depending on the type of physical environment, the size of the activity and the perceptions and values of each of the affected parties. It must be accepted that any activities will have both physical and social impacts. It is the objective of this study to identify both positive and negative impacts.

8.2 METHODS USED TO IDENTIFY IMPACTS

The existing information was reviewed to assess the present status of the environment and the extent to which they have already been modified. The infrastructure map is used as a reference to indicate where impacts have been identified. The impact identification and mitigation tables will quantify the identified impacts, *Table 4*.

8.3 DEFINITIONS USED IN THE ASSESSMENT AND EVALUATION OF IMPACTS

The assessment and evaluation of environmental impacts is often complicated by the subjective nature of these impacts. Ideally, the degree of severity or significance of a particular impact should be expressed in quantitative terms, against a quantitative assessment of the conditions that pertained before a particular activity started. There must also be some expression as to whether a particular impact is desirable or not.

In order to address these issues and to provide a basis for comparison of the different impacts associated with the development, a number of standard definitions and approaches were used. The different terms are described in the *Table 3*. The impact prediction step will determine whether the expected impact is beneficial (positive) or adverse (negative). While impact evaluation will comprise a rating of the impacts in terms of their magnitude, duration and significance.

Table 3: Definitions used in the assessment and evaluation of impacts

CATEGORY	DESCRIPTION OR DEFINITION
Impact	A brief written statement, stating which environmental aspect is impacted by a particular project activity or sequence of project activities.
Impact prediction	Denotes the perceived effect of the impact on the affected area.

	☺ Positive impact 😐 No impact ☹ Negative impact
Duration	Where duration shall indicate whether the lifespan of the impact will be: Temporary: During construction. Permanent: Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.
Magnitude:	A prediction of the extent of the impact that may result from the development. Magnitude refers to the size, in both spatial and qualitative terms, of an impact. Site: Impact is site specific Local: Impact is applicable to the local area, including neighbouring farms in the Barkly West district. Regional: Impact is significant for the region, including the rest of the Northern Cape Province National: Impact has national implications.
Impact Rate: Pre-mitigation	This is an integration (i.e. an opinion) of the prediction, duration, and magnitude, of the impact. High: The impact is high with permanent duration and substantial disruption. Moderate: The impact is a real but measurable impact and should have an influence on the decision unless it is mitigated. Low: The impact is low and not significant, minor mitigation needed but should not have an influence on the decision.
Discussion & mitigation	The relevance of the impact will be discussed and the appropriate mitigation measures provided that will either soften or enhance impacts.
Impact Rate: Post mitigation	Based on the same methodology at Pre-mitigation level, but shows the revised rate if mitigatory measures are taken.

8.4 IMPACT AND MITIGATION TABLES

The impacts identified are reflected in *Table 4*. Impact rating will only be for the construction, operational and closure phase of the operation.

The construction phase is not applicable since prospecting has been taken place to date and there is existing mine infrastructure such as slimes dams and a ramp that will also be used for the mining processes.

Table 4: Impact Mitigation table

No	Impact Description	Impact Prediction	Duration	Magnitude	Impact Rate: Pre-mitigation	Discussion/ Mitigation	Impact Rate: Post-mitigation
1	OPERATIONAL PHASE						
A	NATURAL PHENOMENA						
1.	Climate: No impact	😐	N/A	N/A	N/A	No mitigation is needed	N/A
2.	Geology: No impact	😐	Temporary	Site	Very Low -	Mining will not have any real impact on geology since the depth of the excavations will be very shallow (3.5 m) and will actually on the bead rock.	N/A
3.	Topography: Already existing impact because of previous mining activities disturbance. Excavation of gravel.	😐	Temporary	Site	Moderate -	Concurrent backfilling and rehabilitation of disturbed areas.	Moderate +
4.	Soils: Already existing impact because of previous mining activities. Removal of gravel and compaction of surfaces where vehicles move.	😐	Temporary	Site	Moderate -	Removing all available topsoil from surface storing it separately. Vehicle movement will be limited to exciting roads and disturbed area.	Moderate +
5.	Land Capability: Temporary lost of current land use while mining area.	🙂	Temporary	Site	High	Rehabilitation and re-vegetation of areas to return to original capability	Moderate +
6.	Land use: Change in land use during mining activities	🙂	Temporary	Site	High	Rehabilitation and re-vegetation of area to return to original land use	Moderate +
7.	Flora: Destruction of plant habitat, which may lead to the invasion of exotic species and bare ground.	☹	Temporary	Site	High	Vehicle movement will be limited to exciting roads and disturbed area. Topsoil with seed bank will be backfilled into excavations after	Moderate +

No	Impact Description	Impact Prediction	Duration	Magnitude	Impact Rate: Pre-mitigation	Discussion/ Mitigation	Impact Rate: Post-mitigation
						processing. No collection of firewood will be allowed.	
8.	Fauna: Mining related activities will be limited to 5 ha during any phase, but will lead to the temporary emigration of local species from the mining area onto the adjacent area. No mining will take place nearer that 30 m from the Vaal Riverbank.	☹	Temporary	Site	Moderate	Vehicle movement will be limited to exciting roads and disturbed area. No poaching will be allowed.	Moderate +
9.	Surface Water Quality: No influence	😐	Temporary	Site	Moderate	Will stay 30m outside the riverbed and impact will be managed according to requirements of Water Licence. Proper handling of fuel, oil and other waste products to prevent any pollution.	Moderate +
9.1	Surface Water Quantity: Abstraction of water.	☹	Temporary	Local	Moderate	Water will be re-circulated as far is possible, will strive towards 50% circulation. Pipelines will be properly maintained.	Moderate -
10.1	Ground water quality: No impact because no chemicals is used in the mineral process.	☹	Temporary	Local	Low -	Proper handling of fuel, oil and other waste products to prevent any pollution.	Low +
10.2	Ground water quantity: Low impact	☹	Temporary	Local	Low	No ground water will be used for mineral processing. All water for potable purposes will be obtained from the three boreholes on site.	Low +
11.	Air Quality: Loading and transporting of gravel	☹	Temporary	Site	Moderate	Dust suppression will be used in dry seasons if necessary.	Low

No	Impact Description	Impact Prediction	Duration	Magnitude	Impact Rate: Pre-mitigation	Discussion/ Mitigation	Impact Rate: Post-mitigation
12.	Noise: Loading and transporting of gravel	☹	Temporary	Site	Moderate	Impact will be very low and localized. Vehicles will be properly maintained.	Low
13.	Visual Aspects: Operations may be visible from the Delportshoop and for neighbours on the other side of the Vaal River.	☹	Temporary	Site	Moderate -	Re-vegetation of rehabilitated area and decommissioning of all infrastructures after closure.	Low
B	CULTURAL IMPACTS						
14.	Cultural Resources and Heritage Sites: No impact	😐	N/A	N/A	N/A	No mitigation is needed	N/A
15.	Sensitive Landscape: Mining will not come within 30 m of the Vaal River	😐	N/A	N/A	N/A	No mitigation is needed	N/a
C	SOCIO-ECONOMIC IMPACTS						
16.	Socio-economic Structure: Profit generated from the operation of the mining activity.	☺	Temporary	Site & local	High	Implementation of the Social and Labour Plan.	Low +
17.	Interested and Affected Parties: If issues arise it will be handled immediately.	😐	Temporary	Site	Low	Will be addresses as the need arise.	Low +
2	CLOSURE PHASE						
A	NATURAL PHENOMENA						

No	Impact Description	Impact Prediction	Duration	Magnitude	Impact Rate: Pre-mitigation	Discussion/ Mitigation	Impact Rate: Post-mitigation
1.	Climate: No impact	😐	N/A	N/A	N/A	No mitigation is needed	N/A
2.	Geology: No impact	😐	N/A	N/A	N/A	Excavations would have been backfilled and re-vegetation would have started.	N/A
3.	Topography: Positive	☺	Permanent	Site	Moderate	Disturbed area will be rehabilitated toward grazing and will support agricultural use again.	Moderate +
4.	Soils	☺	Permanent	Site	Moderate	Mined soil and gravel would have been replaced in to excavations and re-vegetated of natural grasses would have started.	Moderate +
5.	Land Capability: Rehabilitated towards either grazing or agricultural cultivated lands.	☺	Permanent	Site	Moderate +	Disturbed area would have been rehabilitated and re-vegetated, thus land capability have improved because of mining.	Moderate +
6.	Land use: Rehabilitated towards grazing.	☺	Permanent	Site	Moderate +	Old disturbed area would have also been rehabilitated and re-vegetated, thus land use have improved because of mining	Moderate +
7.	Flora	☺	Permanent	Site	Moderate	Re-vegetation of site, towards either grazing or agricultural cultivated lands.	Moderate +
8.	Fauna	☺	Temporary	Site	Moderate	Re-establishment of habitat for fauna return.	Moderate +
9.	Surface water	☹	Temporary	Local	Low	Low amount of water used for dust suppression.	N/A
10.1	Ground water quantity	☹	Temporary	Local	Low	Low amount of water used for few employees responsible for rehabilitation.	N/A

No	Impact Description	Impact Prediction	Duration	Magnitude	Impact Rate: Pre-mitigation	Discussion/ Mitigation	Impact Rate: Post-mitigation
10.2	Ground water quality	😐	N/A	N/A	N/A	Six monthly monitoring will be done to make sure water quality does not deteriorate.	
11.	Air Quality	😐	N/A	N/A	N/A	The only problem where dust can still be a problem is on roads, but dust suppression will be done where necessary.	N/A
12.	Noise	😐	N/A	N/A	N/A	No mitigation is needed	N/A
13.	Visual Aspects	☺	Permanent	Local	Moderate	Because of rehabilitation of old disturbed area the visual aspect will have been improved.	Moderate +
B	CULTURAL IMPACTS						
14.	Cultural Resources and Heritage Sites: No impact	😐	N/A	N/A	N/A	No mitigation is needed	N/A
15.	Sensitive Landscapes	😐	N/A	N/A	N/A	No mitigation is needed	N/A
C	SOCIO-ECONOMIC IMPACTS						
16.	Socio-economic Structure: The closure of the mine will have a big effect on the employees, but will be manage by their Social and Labour Plan	😐	Temporary	Local	Low +	Social and Labour Plan	Low +

9 CONCLUSIONS AND RECOMMENDATIONS

The applicant, Guilford Limited is committed to enhancing the positive impacts of the project and to mitigate the negative impacts. It is the objective of the Guilford Limited to rehabilitate the area after mining to a status as near as possible to grazing that will be environmentally be sustainable. The ecological management of the area will be aimed at maintaining and / or improving the biological integrity and functioning of the adjacent grasslands. The proposed project will on a limited extent facilitate job creation and contribute to improvement of the socio-economical environment.

The environmental consultants recommend that Department of Mineral and Energy approve this project.

10 REFERENCES

1. Low, A.B & Rebelo, A.G. (eds) 1996. *Vegetation of South Africa, Lesotho and Swaziland.* Department of Environmental Affairs and Rourism, Pretoria.
2. Rutherford, M.C. & Westfall, R.H. 1994. Biomes of southern Africa: an objective categorization. *Memoirs of the Botanical Survey of South Afica* 63: 1-94.
3. Soil Classification Work Group, 1991, Soil Classification a Taxonomic System for South Africa, Department of Agriculture-Development Pretoria.
4. Van Rooyen, N. & Bredenkamp, G. 1996. Kimberley Thorn Bushveld. In: Low, A.B. & Rebelo, A.G. (eds) *Vegetation of South Africa, Lesotho and Swaziland.* Dept Environmental Affairs and Tourism, Pretoria.

ANNEXURE 1: WATER LICENCE - LICENCE NO. 25013351

DEPARTMENT: WATER AFFAIRS AND FORESTRY
Private Bag X313, Pretoria, 0001
Sedibeng Building, 185 Schoeman Street, Pretoria
Tel: (012) 336-7500 Fax: (012) 323-4472 / (012) 326-2715

Mrs C. Broere
336-8430
16/2/7/C920/A7/1

CB/10092741/BL/p1s2

REGISTERED MAIL

Mr D. Erasmus
P.O. Box 6499
Flarm Wood
KLERKSDORP
2572

Sir

LICENCE IN TERMS OF CHAPTER 40 OF THE NATIONAL WATER ACT, 1998 (ACT 36 OF 1998): GUILFORD LIMITED

Your application for a combined Water Use Licence refers.

Attached is Licence No. 25013351 dated 26 May 2005 as applied for.

Yours faithfully

DIRECTOR-GENERAL

File number: 16/2/7/C920/A7/1

REGISTERED MAIL

DW 1

DEPARTMENT: WATER AFFAIRS AND FORESTRY
Private Bag X313, Pretoria, 0001
Sedibeng Building, 185 Schoeman Street, Pretoria
Tel: (012) 336-7500 Fax: (012) 323-4472 / (012) 326-2715

kb/10092421.rb/p1s1

LICENCE IN TERMS OF CHAPTER 4 OF THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998)

I, ***Pieter Francois Pretorius***, in my capacity as Acting Manager: Water Use in the Department of Water Affairs and Forestry and acting under authority of the powers delegated to me by the Minister of Water Affairs and Forestry, hereby authorise the following water uses in respect of the licence issued herewith.

SIGNED: .....

DATE: 2005/05/26

LICENCE NO: 25013351

1. Water User (Licensee)

Guilford Limited
P.O Longlands
LONGLANDS
8376

2. Water Uses

(a) Section 21(a) of the Act: Taking water from a resource, subject to the conditions set out in Appendices I and II.

(b) Section 21(c) of the Act: Impeding or diverting the flow of water in a watercourse, subject to the conditions set out in Appendices I and III.

(c) Section 21(f) of the Act: Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit, subject to the conditions set out in Appendices I and IV.

(d) Section 21(g) of the Act: Disposing of waste in a manner which may detrimentally impact on a water resource, subject to the conditions set out in Appendices I and IV.

(e) Section 21(i) of the Act: Altering the bed, banks, course or characteristics of a watercourse, subject to the conditions set out in Appendices I and V.

3. **Water Resource**

- Vaal River Quaternary Catchment C91E.
- The Vaal River is a water resource as defined by section 1(1)(xxvii) of the Act.

4. (a) **Properties on which the uses will be exercised**

(i) Remaining Extent of the farm Mozib 279, in extent 1235.5788 ha, District of Barkly West, Northern Cape Province.

(ii) Remaining Extent of the farm Than 280, in extent 944.8615 ha, District of Barkly West, Northern Cape Province.

(b) **Registered owner of the properties**

Guilford Limited

4. (a) **Licence Period**

This licence is issued for a period of five years (5 years) from the date of issuance.

(b) **Review Period**

As provided by section 49 of the Act, this licence shall be reviewed at intervals of 12 months as from the date of issuance.

5. **DEFINITIONS**

The "Act" means the National Water Act, 1998 (Act 36 of 1998).
The "Minister" means the Minister of Water Affairs and Forestry.
The "Department" means the Department of Water Affairs and Forestry.
The "Director-General" means the Director-General: Water Affairs and Forestry.
The "Reserve" means the quantity and quality of water required to satisfy basic human needs and to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource.
The "River" means the Vaal River.
The "Report" refers to the report entitled: "Sydney-on-Vaal Alluvial Diamond Mine: Section 21(c), (f), (g) and (i) Water Use Licence Application Report for Guilford Ltd" dated July 2003 as prepared by African Water, Environmental and Mining Solutions.
The "Regional Director" means the Regional Director: Northern Cape, Department of Water Affairs and Forestry who may be contacted at the following address:

Regional Director: Northern Cape
Department of Water Affairs & Forestry
Private Bag X6101
KIMBERLEY
8300

Acting Manager: Water Use

GENERAL CONDITIONS

APPENDIX I

1. The responsibility to comply with the provisions of the licence is vested in the licensee and may not be ceded to any other person or body.

2. The licence is subject to sections 43, 45 and 54 of the Act.

3. In terms of section 151 of the Act, any contravention of or failure to comply with any condition of the licence constitutes an offence.

4. In terms of section 124(1) of the Act, the Minister and any person authorised by him or her, in writing, may at any time enter upon the premises of the licensee to perform the functions contemplated in sections 125(1), (2) and (3) of the Act.

5. The licence shall not be construed as exempting the licensee from compliance with the provisions of the Health Act, 1977 (Act 63 of 1977), the Environment Conservation Act, 1989 (Act 73 of 1989), the National Environmental Management Act, 1998 (Act 107 of 1998) or any other applicable Act, Ordinance, Regulation or By-law.

6. In terms of section 148(1)(f) of the Act, any person who has timeously lodged a written objection against the application for a licence may appeal to the Water Tribunal and the Tribunal may confirm, amend or withdraw the licence, or make any other order as it deems fit.

7. The licensee shall immediately report any incident that causes or may cause water pollution to the Regional Director or his representative. The licensee shall keep an incident report and complaints register, which shall be available to the Regional Director on request.

8. The licensee shall immediately inform the Regional Director of any change of name, address, premises and/or legal status.

9. The licence and any amendment to this licence is subject to all applicable procedural requirements and other applicable provisions of the Act, as amended from time to time.

Acting Manager: Water Use

CONDITIONS OF LICENCE

APPENDIX II

SECTION 21(a) OF THE ACT

1. TAKING WATER FROM A WATER RESOURCE.

1.1 This section of the licence authorises the taking of a maximum of 607 079 (six hundred and seven thousand and seventy nine) cubic metres (m^3) per annum of water from the River on the Remaining Extent of the farm Mozib 279 and the Remaining Extent of the farm Than 280, based on an average abstraction of 1 342 (one thousand three hundred and forty two) cubic metres (m^3) per day, for diamond mining purposes.

1.2 The availability of the allocated quantity of water and the quality thereof is not guaranteed. The right is reserved, if general water shortage is experienced in the area, to implement such curtailments or restrictions on the impoundment, storage, abstraction, supply or use of public water as may be deemed necessary under the circumstances.

1.3 If the property mentioned in paragraph 1.1 above is subdivided or consolidated, the licensee must notify this Department within 60 days after the said transactions took place.

1.4 The installation of a water pump or other abstraction equipment for abstraction of water from the River shall be made at the expense of the licensee and shall be equipped with a self-registering water meter.

1.5 Before the installation of a pump or pump structure or other abstraction equipment the Regional Director shall be consulted to ensure that suitable qualified officials of the Department is present during the installation of such pump structure or other abstraction equipment.

1.6 The installation of the water meter shall comply with the specifications of the manufacturer with regard to distance from obstructions in the pipeline upstream and downstream of the meter.

1.7 The meter shall be approved by this Department before installation. The meter shall reach 999 999m^3 before resetting to 0 m^3.

1.8 The meter shall be fitted with a flexible coupling in order to facilitate the removing and replacing of it.

1.9 The meter shall be maintained at the expense of the licensee and shall at least be serviced and tested for accuracy every six months starting from the date of the issuance of the licence. The meter shall be checked and recalibrated if readings deviate by more than 10% from that of a standard calibrated gauging apparatus. Calibration certificates shall be made available to the Department on request by the Regional Director.

1.10 Officers of this Department shall at any time have free access to the property and water pump or other abstraction equipment for supervision and control purposes and to calibrate meter readings.

1.11 The licensee shall be responsible for any water use charges or levies imposed from time to time by the Department or responsible authority in terms of the Department's raw water pricing strategy.

1.12 The licensee shall keep records of the meter readings on a daily basis and these readings shall be provided to the Regional Director or responsible authority before the 25th of each month, to enable the Department to issue regular accounts for the taking of water from the Vaal River in terms of the Department's raw water pricing strategy.

Acting Manager: Water Use

1.13 Due to the possible over-allocation of water in this water resource, when compulsory licensing is required in future in terms of Chapter 4 of the Act, this licence shall be subject to a reduction of the allocated volume in order to comply with the requirements of the Act.

1.14 The Department accepts no liability for any damage, loss or any inconvenience of whatever nature, suffered as a result of:

1.13.1 a shortage of water;
1.13.2 inundation or flood;
1.13.3 siltation of the river; and
1.13.4 the shifting of the pump or other abstraction equipment in the event of the rise or drop in the water level of the river.

1.15 All installations, pipes and taps shall be leak proof to prevent any spillage of water.

Acting Manager: Water Use

CONDITIONS OF LICENCE

APPENDIX III

SECTION 21(c) OF THE ACT

2. IMPEDING OR DIVERTING THE FLOW OF WATER IN A WATERCOURSE.

2.1 This section of the licence authorises the licensee to impede or divert the flow of water in the River on the Remaining Extent of the farm Mozib 279 and the Remaining Extent of the farm Than 280, by carrying out and complete the construction and upgrading of a low water bridge in the River.

2.2 The construction works shall be carried out in such a way as to ensure that other water users will be able to exercise their legitimate rights during the execution and after completion of the activities referred to in condition 2.1, and according to all relevant objectives, design and construction details and provisions, including those dealing with the time-table, duration and sequence contained in the Report.

2.3 The upgrading of the low water bridge shall be designed and supervised by a competent person approved by the Regional Director to ensure that the entire integrity of the riparian habitat of the River is restored.

2.4 The designer of the construction works shall have a full-time civil supervisor or a suitably qualified environmental scientist on the site during construction and upgrading of the bridge and the contractor shall have an approved site agent and a full-time approved senior foreman on site during construction.

2.5 The low water bridge shall be upgraded based on the results of the "Environmental Impact Assessment Report", which shall be completed and submitted to the Regional Director within six months after the issuance of this licence.

2.6 The complete construction of the low water bridge shall be done and completed during the dry seasons (May to September) when there is a reduction in the flow of the River.

2.7 The structure of the low water bridge or any temporary crossing shall be non-erosive, structurally stable and may not induce any flooding or safety hazard. The crossing shall be inspected regularly for accumulation of debris, blockage, erosion of abutments and overflow areas. Debris must be removed and damages must be reinforced and/or repaired immediately.

2.8 The flow of the River at the co-ordinate points as indicated in the application for impeding or diverting the flow of the water in the watercourse, may only be altered on approval of the "Environmental Impact Assessment Report" as required in terms of section 22 of the Environment Conservation Act, 1989 (Act 73 of 1989).

2.9 The complete flow impediment system shall be designed to handle a normal flood event, in accordance with the Report referred to in condition 2.2

2.10 The total area that may be affected by the construction of the bridge, including the riparian zone, shall be protected against erosion of indigenous riparian vegetation, as referred to in the Report, to the satisfaction of the Regional Director. Soils that have become compacted through the activities of the development shall be loosened to an appropriate depth to allow seed germination. Overburden shall be evenly redistributed over exposed areas as soon as possible after the operation has been completed and plants, which are indigenous to the immediate surroundings, shall be used for rehabilitation.

2.11 Increased runoff due to vegetation clearance and/or soil compaction shall be managed and steps shall be taken to ensure that storm-water does not lead to bank instability and excessive levels of silt entering the River.

Acting Manager: Water Use

3.1 **OPERATION OF A FLOATING BARGE EQUIPMENT**

3.1.1 The licensee shall submit an operation plan of the barge mining within two weeks after the issuance of this licence.

3.1.2 The plan shall contain information on the barge mining method, the impacts associated with this method, and mitigation of impacts.

3.1.3 The plan shall clearly define the area where barge mining is going to take place, including the co-ordinates and total area to be mined.

3.1.4 The licensee shall submit the "Environmental Management Programme Report" containing details of mining plans and procedures of mining in the river bed and mining activities taken place on the bank of the River, for approval by this Department within two weeks after the issuance of this licence.

Acting Manager: Water Use

CONDITIONS OF LICENCE

APPENDIX IV

SECTION 21(f) And (g) OF THE ACT

3. **DISCHARGING WASTE OR WATER CONTAINING WASTE INTO A WATER RESOURCE THROUGH A PIPE, CANAL, SEWER, SEA OUTFALL OR OTHER CONDUIT AND DISPOSING OF WASTE IN A MANNER, WHICH MAY DETRIMENTALLY IMPACT ON A WATER RESOURCE.**

3.1 This section of the licence authorises the disposal of a maximum of 250 000 (two hundred and fifty thousand) cubic metres (m^3) of slurry per day into tailings dams on the Remaining Extent of the farm Mozib 279 and the Remaining Extent of the farm Than 280, of which the supernatant shall be discharged back to the River on the same properties.

3.2 The quality of the water containing waste to be disposed back into the River shall not exceed the following specified limits:

Variable	Limit
pH	6.5-9.5
Total Dissolved Solids (TDS)	<721 mg/ℓ
(Sodium) Na	<172 mg/ℓ
(Magnesium) Mg	<41 mg/ℓ
(Potassium) K	<50 mg/ℓ
(Chloride) Cℓ	<200mg/ℓ
(Sulphate) SO_4	<366 mg/ℓ
(Calcium) Ca	<53 mg/ℓ
(Suspended Solids) (SS)	<25 mg/ℓ

3.3 No petroleum products shall be stored or used for the purpose of filling up machinery or tanks within the 1:100 year floodline. The licensee shall create a bunded area outside the 1:100 year floodline for that purpose.

3.4 The licensee shall put measures in place to prevent siltation and erosion during the mining operation. The sediment and water containing waste resulting from the mining operation shall be pre-treated to comply with the above limits before it is returned to the River.

3.5 The construction of the tailings dams shall be carried out under the supervision of a professional civil engineer, registered under the Engineering Profession of South Africa Act, 1990 (Act 114 of 1990), as approved by the designer.

3.6 Within 30 days after the completion of the activities referred to in condition 3.5, in accordance with the relevant provisions of this licence, the licensee shall in writing under reference 16/2/7/C920/A7/1 inform the Regional Director thereof. This shall be accompanied by a signature of approval from the person referred to in condition 3.5, that the construction was done according to the design plans referred to in the Report.

3.7 The disposal of mine waste or residue shall be done in accordance with Government Notice No. 704 of 04 June 1999 and SABS Code 0286.

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4. MONITORING AND REPORTING

4.1 Water quality monitoring must be done on a quarterly basis.

4.2 The water quality of the boreholes intended for human consumption must be monitored bi-weekly to monitor any biological and chemical contamination.

4.3 The quality of the water containing waste shall be monitored by taking grab samples upstream and downstream of the mining activities, which shall be analysed, for the following parameters:

Variable	Unit
pH	
Electrical Conductivity (EC)	mS/m
Suspended Solids (SS)	mg/ℓ
Total Dissolved Solids (TDS)	mg/ℓ
Nitrate (N)	mg/ℓ
Sulphate (SO4)	mg/ℓ
Phosphate (P)	mg/ℓ
E.Coli	counts/100 mℓ
Total Coliforms	counts/100 mℓ

or any other variable deemed necessary from time to time by the Regional Director.

4.4 Analysis shall be carried out in accordance with methods prescribed by the South African Bureau of Standards (SABS), in terms of the Standards Act,1982 (Act 30 of 1982).

4.5 The date, time and monitoring point in respect of each sample shall be recorded with the results of the analysis, and submitted to the Regional Director within 20 days after the date the monitoring was carried out.

5. INTEGRATED WATER AND WASTE MANAGEMENT

5.1 Sediments that settle within the tailings dams must be disposed of in a way that enhances revegetation of disturbed areas, both during routine maintenance and prior to mine closure.

5.2 Retaining walls must be erected to prevent washing water from the works area to come into contact with areas other than the tailings dams.

5.3 The tailings dams must be located well above the 1:100 year floodline as stipulated in Government Gazette No. 704, dated 4 June 1999.

5.4 The tailings dams must be inspected at least once a day for leaks and repaired where necessary.

5.5 The disposal of sediment must take place in a manner that will not constitute an additional source of runoff into the river system and does not contribute to localised salinisation.

5.6 French drains or chemical toilets must be located well above the 1:100 year floodline as stipulated in Government Gazette No. 704, dated 4 June 1999. No septic tanks shall be erected in the vicinity of the River or within the 1:100 year floodline area or within a horizontal distance of 100 meters from any watercourse or water resource.

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CONDITIONS OF LICENCE

APPENDIX V

SECTION 21(i) OF THE ACT

6. ALTERING THE BED, BANKS, COURSE OR CHARACTERISTICS OF A WATERCOURSE.

6.1 The licensee shall start with barge mining in the Vaal River on the properties mentioned in paragraph 4(a) at the geographic location S 28° 27' 00.0"; E 24° 19' 35.0" and end the barge mining on the same properties at the geographic location S 28° 27' 21.0"; E 24° 16' 11.3" covering a total distance of 17 000 meters.

6.2 The licensee shall construct the low-water bridge in accordance with the recommendations made in the "Environmental Impact Assessment Report".

6.3 The licensee shall rehabilitate the spillway for boats and the illegally constructed walls as mentioned in the Report to the satisfaction of the Regional Director. Such rehabilitation shall form part of the total rehabilitation plan of the area.

6.4 All mining support activities shall take place within a 50 meters horizontal distance away from the banks of the River to protect the integrity of the riverine ecosystem, including the riparian vegetation.

6.5 The licensee must put adequate erosion control measures in place during the design, construction, operation and post construction phases.

6.6 Stockpiles and overburden shall not be stored within the riparian zone of the River and must be well above the 1:100 year floodline or 100 meters horizontally or more away from the River or any other watercourse or water resource.

6.7 The number of heavy-duty machinery used in the mining support areas shall be limited to a minimum and must be confined outside the 50 meter buffer area. The buffer area shall be clearly demarcated with beacons.

6.8 Mining support activities and associated infrastructure, must avoid drainage lines of lateral tributaries. Where this is not possible, measures to divert storm-water from mining support activities must be taken pro-actively.

6.9 Increased runoff due to vegetation clearance and/or soil compaction in the mining support areas shall be managed, and measures shall be taken to ensure that storm-water does not lead to bank instability and excessive levels of silt entering the River.

6.10 Mining support activities must start up-stream and proceed into a down-stream direction, in order to proceed with that the recovery processes immediately.

6.11 Soils that have become compacted through the mining support activities must be loosened to an appropriate depth to allow seed germination.

6.12 The licensee shall ensure that these impact management measures are stable and self- sustaining in the long term. The licensee shall remain liable if these measures fail.

6.13 No sediment shall be allowed to return to the River. The licensee must ensure that measures are in place to mitigate the impacts of sediment re-suspension.

6.14 Only pre-treated water from return water dams shall be allowed to return to the River.

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7. RIPARIAN AREA

7.1 Access roads shall not encroach into the riparian zone but will be allowed to the river at specific points.

7.2 The proposed tailings dams may not be situated within the riparian zone or within any drainage line, and must be well above the 1:100 year floodline or 100 meters or more horizontally away from the River or any watercourse or water resource.

7.3 Alien vegetation must not be allowed to colonise the mining support area, and all new alien vegetation growth must be controlled.

7.4 Installation of water pumps and pipelines required for washing of alluvial material on site must be such that disturbance to the aquatic riverine habitat is minimised.

7.5 Use of large machinery within the River channel is not permitted. Vehicles and other machinery must be serviced well above the 1:100 year floodline or within a horizontal distance of 100 meters away from the River or any watercourse or water resource. Oils and other potential pollutants must be disposed off at an appropriate licensed site, with the necessary agreement from the owner of such a site.

8 REHABILITATION OF DISTURBED MINING SUPPORT AREAS

8.1 Any mitigation measures and recommendations regarding both the implementation of additional measures to protect the environment and any changes required to existing recommended measures must only be implemented after approval by the Regional Director or his/her representative.

8.2 A photographic record must be kept of each mining support area to assist the rehabilitation process, and to draw attention to problems in the implementation of the rehabilitation procedures.

8.3 Overburden must be evenly redistributed over exposed mining support areas as soon as possible after the operation has been completed.

8.4 All reasonable steps must be taken to maintain the wilderness qualities of the River.

8.5 A plant species list comprising of species, which occurred in the mining support area prior to the onset of mining support activities, must be drawn up as part of the mining management plan for rehabilitation.

8.6 Plants that are indigenous to the immediate surroundings must be used in the rehabilitation of the disturbed areas.

8.7 Invasive exotic plants must be monitored and controlled.

8.8 Activities that lead to elevated levels of turbidity must be minimised.

8.9 A layout plan of the mining support areas and records relating to the compliance/non-compliance with the environmental conditions must be kept and shall be made available to the Regional Director on request.

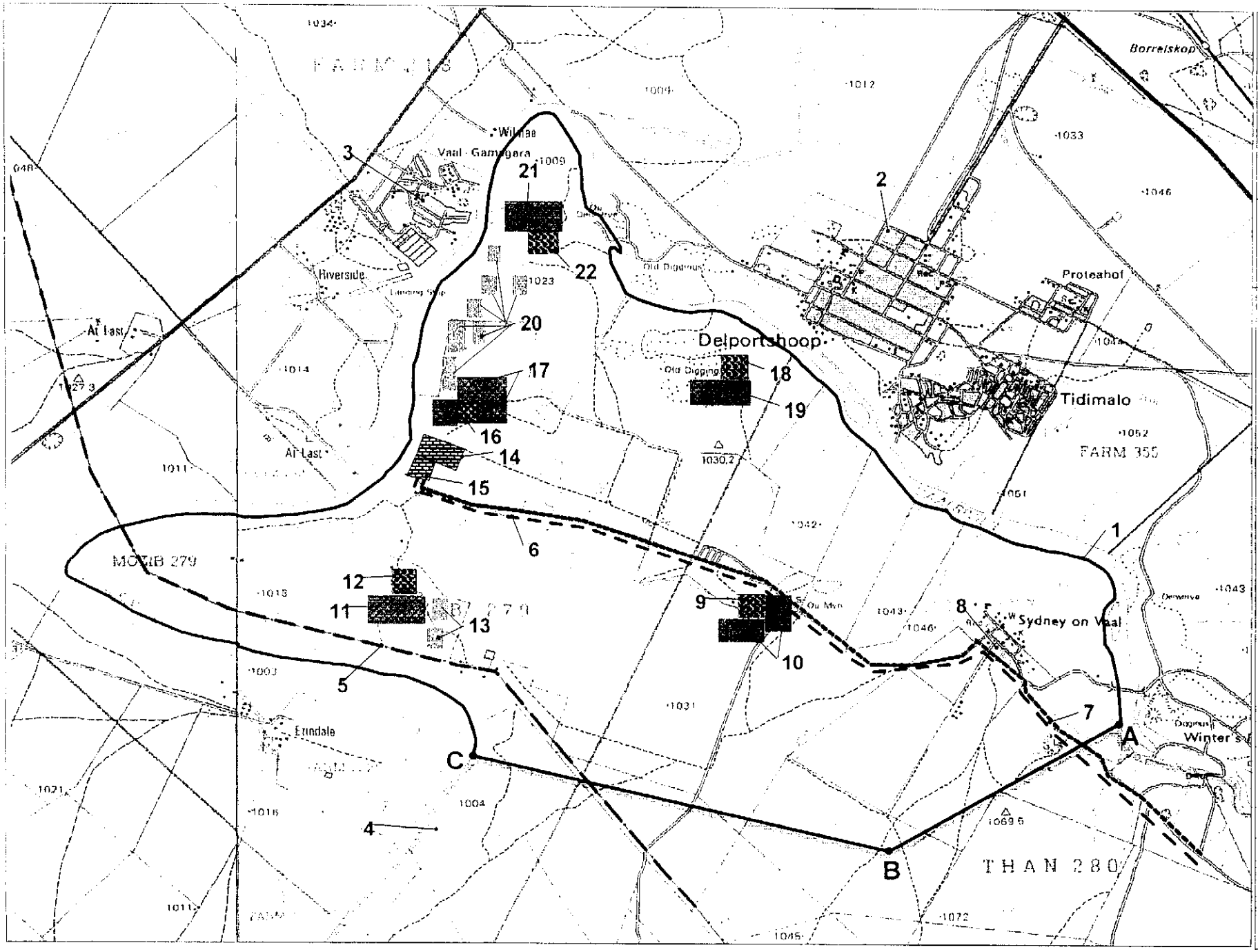
8.10 The success of the proposed rehabilitation plan must be monitored and changes must be made after consultation with the Regional Director or his/her representative if deemed necessary.

END OF LICENCE

Acting Manager: Water Use

FIGURES

Figure 3: Infrastructure Map



Co-ordinates:
WGS 84/WGS 84

A: 24.3258 -28.4536
B: 24.3059 -28.4647
C: 24.2699 -284566
C-A: Bank of Vaal River

Scale 1:50000

Legend:

1. Mining Right area
2. Delportshoop Municipality
3. Vaal-Gamagara pump station
4. Deproclaimed Vaalbosch National Park
5. High voltage power line
6. Normal power line
7. Entrance road
8. Old lodge with workshop
9. Old Ramp
10. Old Slimesdam
11. Old Slimesdam
12. Old Ramp
13. Excavations
14. Sorthuis
15. Workshop
16. Ramp - operational
17. Slimesdams - operational
18. Old Ramp
19. Old Slimesdams
20. Excavations
21. Slimsdam - operational
22. Ramp - operational