PRELIMINARY COMMENTS FROM THE SERINGVELD CONSERVANCY ON THE APPLICATION OF KROSA (PTY) LTD SAND MINE, ON PORTIONS 22, 72, 74, 75, 76 OF KROKODILSPRUIT 290 JR: INTEGRATED WATER AND WASTE MANAGEMENT PLAN (IWWMP)

Krosa (Pty) Ltd Sand Mine lies within the borders of the Seringveld Conservancy. A summary of the unique Seringveld biodiversity and challenges it faces follows:

**Exceptional Biodiversity in Dinokeng: The Unique Seringveld Conservancy**

The 18 000 hectare Seringveld Conservancy - lying just north-west of the town of Cullinan in north-eastern Gauteng and proof of Dinokeng’s exceptional biodiversity - was established in 1997 by a group of concerned residents who recognized the exceptional natural and historical heritage of the area.

The Seringveld is part of the southernmost outlier of the Waterberg geology and flora and is characterised by deep sandy soils, which support specialised plant and animal communities.

Underground trees, known as *pyrogenic geoxylic suffrutices*, contribute to an extremely stable and unique ecosystem. These underground trees are an important characteristic of the Seringveld, as the top layer of soil accommodates a vast network of underground ‘forests’.

Prof. Braam van Wyk, plant taxonomist from the University of Pretoria explains *pyrogenic geoxylic suffrutices*. “It is a very peculiar growth form that is associated with our grasslands, and it is very much a type of growth form in Africa. It is not found in significant numbers anywhere else in the world, except perhaps to a limited degree in South America. It is a growth form where you get plants, woody plants that can be compared to underground trees, and all that you see are these green twigs which can be compared with a canopy of the tree. And this is probably one plant sitting here, or maybe even this whole area may be one plant, and it’s the canopy that just sticks out, the tips of the branches above ground. These tips may burn down every year, but the rest of the tree stays untouched underground. Why they have adopted this strategy… it is a very interesting challenge to come up with reasons. Fire, frost, a shallow water table and grazing have all been considered. There are lots of interesting things we can say about the reasons why plants have adopted this strategy and why it mainly evolved in Africa. They are called clones, and are essentially immortal, nothing can kill them, except for habitat destruction. Grazers can not kill them, fire can not kill them and they are drought resistant. They grow extremely slowly, and if you look at the diameter of some of these clones, they must be the oldest inhabitants of our grasslands. I would say easily more than a thousand years for many of these clones since the first seed arrived for that particular species. But I would not be surprised if some of them are one day shown to be perhaps more than 10 000 years old, amongst the oldest plants in the world, much older than any tree that you are going to see. They are very peculiar plants and we have quite a number of these species in our grasslands.”

A specialised faunistic component of animals, reptiles, amphibians and insects live underground in the deep sands of the Seringveld. The Seringveld, which lies in the upper catchment of the Crocodile River system, makes an important contribution to the hydrology of the catchment area. The deep soil profiles, with their associated vegetation, act like a regional sponge and have a massive water storage capacity that benefits the total water flow regime of a region through slow release of water over longer time periods.

Wetlands benefit all wildlife and human communities down-stream because of natural flood control effects and availability of moisture over longer time periods. The underground trees stabilize the soil, greatly limiting soil erosion.
A practical demonstration of the flood-control, flow augmentation and sponge-effect benefit of wetlands was witnessed in Seringveld during 2007. During the end of 2006 and from January 2007 onwards, very little rain fell in Seringveld. By February 2007, the Boekenhoutspruit has dried up, which originates in the wetlands from Seringveld’s south-eastern border and flows in a northerly region, to later flow into the Pienaars River, which then flows into the Crocodile River. However, Seringveld received a nice early rain shower of about 40 mm towards the end of August 2007, and some weeks later, before any follow-up rains fell, a miracle occurred as it was noted that the Boekenhoutspruit has started to slowly flow again from its southern end, slowly at first, but later on quite a steady stream of clean, clear water. What had been witnessed, was the releasing of water from the wetlands on Seringveld’s south-eastern border into the Boekenhoutspruit and the slow release of that single August 2007 shower from these wetlands, allowing benefits from this shower over a much extended period, and with benefits to many more downstream from where the rain shower occurred.

The Seringveld is on the transition from the lower lying, warmer bushveld to the grasslands of the higher lying relatively cooler Highveld, and such transition or ecotone regions are complex and dynamic, and are characterised by the presence of plants with a high degree of evolutionary activity.

Ecotone areas are therefore important in the enabling of biomes to adapt to change. With regard to climate change, increases in ambient temperatures in the Waterberg region may cause a shift in the typical Waterberg plant life (and associated fauna) to cooler areas towards the south.

The Seringveld could be one of the last vestiges that could act as a replacement or substitute region where this specific plant life may continue to exist despite global warming.

**Plants**

The wild seringa (Burkea africana), after which the area is named, is one of the most obvious indicators of the sourish vegetation types on sandy soils. Other typical tree species include the Transvaal beechwood or boekenhout (Faurea saligna) and peeling plane (Ochna pulchra). The Seringveld is also home to both the silver and green variants of the silver clusterleaf (Terminalia sericea).

The simplistic view of this area as sourveldt with a low grazing capacity does not do justice to the delicate balance that exists beneath the soil surface: Unique and interesting relationships exist between the plants and a wide variety of insects. These relationships have however not yet been studied.

This complexity and our lack of understanding of it is never more clearly illustrated than with the fact that it is not yet possible to cultivate a fully grown wild seringa from seed, because the seedlings remain small and die with time. This indicates a deficiency of some as-yet-unknown factor or symbiosis, which is provided in the natural situation.

It is believed that so-called rehabilitation of disturbed land in the true sense of the word of the Seringveld is not possible due to the existence of the numerous clonal underground trees. These plants represent genotypes that have been selected for this specific habitat over many thousands of years. It is seriously doubted if mine-damaged areas would be colonised soon (even within several decades or perhaps centuries), especially by seed (which is formed in very limited quantities in any case in the Seringveld), since these underground trees have to a great extent lost the ability to propagate through seed.

**Animals**

The fauna of the Seringveld is rich and varied, even if already severely disturbed by human activity. Large mammals such as kudu, ribbok, duiker, steenbok, warthog, porcupine, jackal, brown hyena, caracal, otter, genet, baboon, vervet monkey and bush pig are still present. Even some sightings of leopard have been reported.
The Seringveld sandveldt is also the traditional habitat of the aardvark. There have been a few sightings recently but it is uncertain to what extent they still exist in this region. The Seringveld is also the habitat of the unique and extremely rare underground aardvark cucumber (Cucumis humifructus), which lives in symbiosis with the aardvarks.

Herbarium records show that aardvark cucumbers did exist in the Seringveld near Cullinan but it appears that the plant had become extinct in the area recently, possibly due to the decline of the aardvark population.

The Seringveld has a high concentration of red data bird, insects, invertebrate and animal and plant species listed in one single area and biome. Rock python and giant bullfrog are seen regularly in our region.

**Challenges**

Habitat destruction and fragmentation of protected areas become an ever-increasing problem and mainly occurs, amongst other things due to roads, subdivisions and development. However, sand mining undoubtedly contributes by far the most towards severe fragmentation.

It is important to create corridors or connective refugia of continuous green zones wherein natural wildlife (fauna and flora) can exist, and more importantly, can pass through. Such continuous migration of fauna and flora is critical for the continued existence of fauna and flora, not only to find suitable habitat to survive in by being able to migrate, but also to minimize in-breeding.

Connective refugia have a much greater chance of absorbing negative impacts and a much greater resilience against traumatic disturbance like pollution or habitat destruction, since their inherent buffering abilities allow nature to repair the damaged areas by itself when compared with unconnected regions.

It is also important to include as many different species in such areas and to allow exchange of energy and geo-chemical elements to continue with the minimum disturbance. Rivers and wetlands play an important role in this respect since their natural morphology is of a continuous nature by supplying and draining water to and from a region.

The vast destruction caused by illegal and irresponsible legal sand mining over many decades has destroyed a significant part of these refugia, in some cases almost forever in terms of human life spans.

Ecotourism remains an answer to the preservation of the region’s exceptional biodiversity. Ecotourism, as opposed to mining, is a viable solution because it is sustainable and has a much greater capacity to create long-term employment and alleviate poverty.

The Seringveld Conservancy is registered with the Gauteng Department of Agriculture, Conservation and the Environment (GDACE), and is a member of the Gauteng Conservancy Association (GCA), which was formed to promote conservation on private property in Gauteng and to protect the province’s fast-disappearing greenbelt areas. The Gauteng Conservancy Association is affiliated to the National Association of Conserving South Africa (NACCSA), which promotes conservation on private property nationally in SA.

The 240 000 hectare geo-spatial tourism destination Dinokeng - which borders both Mpumalanga and Limpopo provinces and is resplendent with natural, cultural and historical attractions - was established close to the metropolitan areas of Joburg, Tshwane and Ekurhuleni to promote economic growth and social upliftment, thereby relieving the burden of poverty, particularly for the historically disadvantaged communities living in the area.

The Seringveld Conservancy would like to thank Prof. Braam van Wyk, plant taxonomist from the University of Pretoria; Nico Grobler, ecologist from Gauteng Nature Conservation; Piet-Louis Gundling, geologist, wetland- and peatland specialist and former Seringveld Conservancy committee member as well as Dr. Pete Irons, veterinarian, lecturer at the
University of Pretoria and former Seringveld Conservancy chairman for their assistance and contributions towards documenting the above-mentioned unique characteristics of the Seringveld.

GENERAL COMMENTS

The basic concerns regarding the Krosa IWWMP application are if there will be enough capacity in the existing ground water sources and in that of the Krokodil Spruit, and if effective policing of undertakings made in the Krosa application can be performed by the relevant state departments, namely the DME and the DWA&F.

We do not believe that the demands on the water system are sustainable, and it is our experience that the said departments do not currently have the capacity to perform the required policing functions.

The abstraction of some 48 m$^3$/h of water is currently taking place at Krosa without a water use license, while the return water dam, the 3 sludge settling ponds and the 2 dams in the Krokodil Spruit have been operated for many years without being registered.

Has it been proven that the abstraction of more than 36 m$^3$/h from the Krokodil Spruit and 12 m$^3$/h of borehole water is sustainable, and what are the long-term impacts on the region as whole?

Already as early as 1997, it has been documented that it is possible that a reduction in borehole delivery rates may be contributed to sand mining operations at Krosa, while several complaints were also formally lodged due to wide-spread pollution resulting from this sand mining operation.

We would require historic records of the water table in the existing boreholes and an undertaking to monitor these levels regularly.

The life of the mine is estimated at 14 years, yet severe habitat destruction has taken place and will continue to take place. It is documented that 1 040 000 m$^3$ of sand will be removed from a total area of 88 ha, at a depth of 6m. It is debatable if the proposed end land use, namely game farming/grazing will be feasible, practical and possible on land which will be lower-lying by some 6m over 88 ha of mined area. And this depth is applicable for the current owner, how much sand was removed from these properties prior to the current owner starting his operations?

Mining is thus not aimed at long term sustainable job creation, and the skills developed may not have much relevance to post-mining activities in the region.

The region is earmarked for eco-tourism as part of the Gauteng Provincial Government’s Dinokeng Blue IQ Project, and it is uncertain how intensely mined areas can compliment this initiative.
It is also stated that one of the Krosa’s priorities will be to prevent pollution, yet it is well documented how much of the pollution of our region can be attributed to unchecked and insensitive sand mining.

Serious transgressions have also been witnessed and documented, including changing the course of the Krokodil Spruit by the applicant to allow sand mining into and close to this spruit.

It is uncertain if the undertakings regarding the stripping and storage of topsoil have been adhered to, and also if strip mining as proposed is actually taking place.

It is also uncertain if the immediate replacement of topsoil takes place as is stated in the application.

Many sandveld-specific plants of the Seringveld Conservancy do not grow from seeds.

For how long can Seringveld-specific top soil be “stored” before it becomes sterile?

An undertaking is made in the application to increase soil fertility, to establish natural veldt to ensure that rainwater percolates into the ground and replenish ground water sources. What has been done up to now, and what is going to be done to establish bushes, shrubs and trees endemic to this region?

The accepted minimum ground depth required by each of the plant species listed in the application should be specified. Unless sufficient depth is available, many plants will fail to establish. It is stated that an excavation depth of 6m will be allowed in certain regions. Regions mined to such depths and filled with coarse waste material will not retain sufficient water to allow trees to grow there.

This application is about a license for water abstraction: the soil to be used for filling as part of the rehab program will mostly be stripped of its water-retaining capacity, so little will be available to retain moisture, and the water supplying capacity of the Krokodil Spruit will be seriously threatened.

**SPECIFIC COMMENTS**

1.4.16 Fuel is stored on site, without proper studies and without formal applications. Is there capacity to comply with all the undertakings made?

In paragraph 2.9.1 it is alleged that bull-frogs will not be able to live and breed in this region. This statement is untrue, as there are many sightings of bull-frogs in our region.

The number of bird species indentified within the Seringveld Conservancy is approximately 300.
The Magalies Water Board cannot and doesn’t supply water to this region. Land owners are entirely dependant on boreholes for potable water supplies.

As far as EMP of 2001 and the EMPR’s of 2006 and 2008 for Krosa are concerned, are these compliant with all relevant regulations and requirements? The Seringveld Conservancy was invited to partake in a public participation process re. these applications, but lodged a complaint to Shangoni Management Services (Ms. Lee-Anne Meiring) in March 2006 that Krosa’s public participation process was woefully inadequate. What improvements have there been made re. this matter by Krosa since then?

Water use management must also consider water use in the affected region by activities other than sand mining, especially those that are more sustainable.

Sand/mud/polluted run-off water from rain storms should be better controlled.

Can it be proven that 80% of the process water stored can be reused sustainably from the 3 sludge settling ponds in permeable sandy soil conditions?

3.1.1.4 Can the undertakings in this paragraph be achieved?

3.4. Waste management

Inadequacies have been documented in the application.

3.4.1.3 Proposed fuel storage: 3 x 83 kl tanks aboveground & 3 x 83 kl tanks underground. Can the undertakings be achieved?

3.4.2 Motivate that 50 people per shift produce very little wastewater.

3.4.2.2 Storm water run-off shouldn’t enter the sludge settling system.

3.4.5. Our region has experienced severe dust blown up from sand mining areas during the dry and windy season.

3.4.6. Noise from machinery has been heard up to 5 km from Krosa sand mine. Noise after normal working hours is undesirable in this region earmarked for eco-tourism.

Chapter 4: Water use license application:

Can the surrounding hydrological system accommodate the extraction of such quantities of water, not only from Krosa sand mine but also from the many sand mines in this region?
Can it be proven that the 7 French drains and 6 long drops serving 50 people have no negative impact on the ground water of the region? Are employees housed on the properties? If so, how many?

**Chapter 5: Risks**

Wetlands and water courses are drained to sites excavated to up 6m depth, thus drying out regions. The previous owner also mined sand at this site. From where is the 6m excavation depth measured?

It has been witnessed that sand mining in this region has been right down to expose bedrock at the bottom of water courses.

A lower limit than 6 m is requested on the excavated depth.

Sterilized topsoil as per p165 is unacceptable.

5.7 The residual impacts of sand mining are not low.

Destruction of vegetation is severe at sand mining sites. Regrowth of Seringveld specific plant types at such sites are unlikely to occur in decades and probably centuries to come.

In studies related to attempts to rehabilitate grassland which was ploughed or where pipelines have been laid, it was shown that even after 100 years since the disturbance, grasslands have not been able to recover to their pristine or climax undisturbed state. Note that this was for minor disturbances such as ploughing, compared to mining operations where soil is not merely disturbed but actually removed. It is a scientific fact that the situation for the Seringveld and other sandveld regions in general is far worse, due the presence of the abovementioned colonial underground trees with their complex relationships being negatively affected by the disturbance and removal of the top soil layers by mining. Inspection of areas in the Seringveld region mined some 30 to 40 years ago clearly shows the sterile nature of much of such lands.

Destruction of endemic vegetation leads to habitat destruction for the many species of animals found in the Seringveld.

**Chapter 6:**

Skills are developed and training is provided mainly for use in the sand mining industry, and is not necessarily broad-based.

The only advantages to the community are listed as the maintenance of the gravel road from the R573 tar road and the tuck shop which is open to the whole community.
Job losses of the 124 people to be employed when in full operation, will be inevitable when the mine closes after 14 years, and demonstrates the non-sustainability of jobs associated with sand mining.

Work is mostly provided at Krosa for persons from outside of this region. Residents and landowners of this region benefit little if anything from Krosa’s operations.

Sand mines negatively affect the value of neighbouring properties.

**Chapter 7:**

Will the records of the water quantity abstracted from the Krokodil Spruit and the 4 boreholes be available to I&AP’s?

And the records of the water table in the existing boreholes?

**Chapter 9: Communication**

We do not believe that the public participation process was adequate and reasonable, and motivate this statement with the aide of the following email:

----- Original Message -----  
From: Jan Visser  
To: DEO@dwaf.gov.za  
Cc: YakoP@dwaf.gov.za ; MukondiM@dwaf.gov.za ; Mariette Liefferink @ PEA ; Koos Pretorius  
Sent: Thursday, February 19, 2009 7:28 AM  
Subject: Request for extension of period to comment on application for Integrated Water and Waste Management Plan: Krosa sand mine, Cullinan.

For attention: Ms. Deborah Mochotli, Director: WATER USE LICENSES DEO@dwaf.gov.za  

Copies to:

1. Ms. Pam Yako, DG of DWAF YakoP@dwaf.gov.za  
2. Ms. Mukondi Madzivhandila, PA to DG of DWAF MukondiM@dwaf.gov.za  
3. Ms. Mariette Liefferink, CEO of the Federation for a Sustainable Environment (FSE)  
4. Dr. Koos Pretorius, Director of the Federation for a Sustainable Environment

Dear Ms. Mochotli,

Ms. Mariette Liefferink, CEO of the Federation for a Sustainable Environment, referred me to you re. the abovementioned matter.

I represent the Seringveld Conservancy, comprising some 18 000 ha, which was founded in 1997 by a group of concerned residents in the region north-west of the town of Cullinan, Gauteng, to protect the exceptional natural habitat and historic sites of this region. The Seringveld Conservancy is registered with the Gauteng Department of Agriculture, Conservation and the Environment (GDACE). There is a long history of unchecked and insensitive sand mining within the Seringveld Conservancy.
In Sept 2008, as a registered interested and affected party (I&AP), we received notification from Mr Johan Nieuwoudt of Shangoni Management Services in Pretoria (johan@shangoni.co.za, Tel 012 348 0272; 072 250 6151) of the intention of one of the sand mines in our region, Krosa (Pty) Ltd, to apply for an Integrated Water and Waste Management Plan (IWWMP) to the Department of Water Affairs & Forestry (DWAF).

On Dec 18th 2008, I received notification by email from Mr Nieuwoudt of Shangoni that the IWWMP application is in a final state and a hard copy of it is ready for our perusal at the SAPS Kameeldrift station near Pretoria, until the end of January 2009. On Dec 20th 2008 I replied by email to Mr Nieuwoudt that we require a copy of the IWWMP application, as we find it inconvenient to have to travel to an SAPS station outside of our area, and that we would have to do so after normal working hours and on weekends to study the lengthy and involved IWWMP application there.

Mr. Nieuwoudt replied by email to me on January 6th 2009 that the IWWMP application is too big to send via email, but that an electronic copy of it shall be available on CD for us at the Krosa sand mine in our region from January 9th 2009. He also said that it will be too expensive to print copies thereof to all the I&AP's.

I stated to him by email that the CD electronic copy is acceptable, but that we would also require 4 hard copies, i.e. 3 for the Seringveld Conservancy and related organisations, and 1 copy for the Dinokeng Land Owners Association, who is also an I&AP in this matter. I stated by email to Mr Nieuwoudt that if Shangoni is unwilling to supply us with hard copies of the IWWMP application, we may consider to lodge a complaint against Shangoni and Krosa sand mine that the public participation process re. the Krosa IWWMP application may have been inadequate.

I then received a somewhat intimidating phone call from a Mr. Jan Nel, who I believe is the owner of Shangoni Management Services, arguing with me that we should be satisfied with studying the Krosa IWWMP application at the Kameeldrift SAPS station, and if I'm aware of the high amount of the extra costs which will have to be incurred to print the requested number of copies. I reiterated our position that we find it unfair to have to travel after hours to study the IWWMP application at the Kameeldrift SAPS station, and eventually he rather reluctantly agreed to send us the 4 copies I requested.

The 4 said hard copies were delivered by Shangoni to one of my neighbours on January 14th, and I assumed that we had 30 days from said date to comment on the Krosa IWWMP application, which would have been up to Feb 14th 2009.

When I realised the amount of work required to fully study the Krosa IWWMP application and its implications on our region, on Feb 11th and again on Feb 16th 2009, I requested extension of the cut-off date of Feb 14th up to Feb 23rd 2009 by email to Mr Nieuwoudt. I have to date not yet received any email or written reply of my request for extension from Mr Nieuwoudt or from Shangoni.

On Wed afternoon Feb 18th 2009 I phoned the Krosa sand mine to obtain the promised CD electronic copy of the IWWMP application, but the personnel I spoke to said that they had received hard copies of the IWWMP application from Shangoni, but that they did not receive any Krosa IWWMP application in electronic format on CD from Shangoni.

I phoned Mr Nieuwoudt on Wed afternoon Feb 18th to enquire about the requested extension period, and also about the CD not being available to us at the mine as promised. I said to Mr Nieuwoudt that I needed the CD (amongst other reasons) to be able to send parts of the Krosa IWWMP application to a Seringveld Conservancy co-worker who is currently overseas. Mr. Nieuwoudt replied that he grants us the requested extension period, and that we would be able to collect a CD electronic copy of the IWWMP application from Shangoni’s office on Thurs Feb 19th 2009. I thanked him and undertook to arrange for collection thereof.

However, a short while later, I received a message from Mr. Nieuwoudt that Shangoni had changed their mind, and that his boss had decided that they cannot grant the requested extension period, and also that the promised CD is no longer available to us. I phoned Mr Nieuwoudt, and he then said that we’ve had enough time to respond to the Krosa IWWMP application, that the 30 days period for comments is
prescribed by DWAF, that Shangoni is obliged to comply with it and therefore cannot grant us the requested extension period. I replied that I would then send an email to my contacts in DWAF to request from them the granting of the requested extension period. Re. their refusal to supply the promised electronic copy of the IWWMP application on CD to us, he said that the period for comments has expired, and that they also do not want me to be able to send parts of their electronic IWWMP application to my overseas co-worker.

Therefore Ms. Mochotlhi, I respectfully request you to consider to grant our reasonable request for extension of the period for comments on the Krosa IWWMP application, and to also request Shangoni Management Services and Krosa Sand Mine to make the promised electronic CD copy of the Krosa IWWMP application available to us.

Furthermore, the unwillingness of Shangoni to supply the promised CD now makes it difficult for us to complete our comments within our requested extension period.

Sincerely,

J.H. Visser
Seringveld Conservancy, Cullinan