

- d. The **Biodiversity Policy and Strategy for South Africa: A Strategy on Buffer Zones for National Parks**, (Government Gazette, 08 Feb 2012, No. 35020, (Notice no. 106 of 2012), provides that mining applications in buffer areas of national parks should be discouraged because of its adverse effect on biodiversity and ecological functioning of these areas.
- e. Additionally, the Mining and Biodiversity Guideline, 2013 guidelines rate the proposed mining area as **Category B – highest risk for mining and biodiversity importance**, due to the very sensitive nature of the area proposed as mining site, which:
- I) Falls within a critical biodiversity area (CBA). The area contains very special rare and endangered vegetation types. The site is listed by SKEP and Namaqualand District Municipality' SDF as a priority and Critical Biodiversity Area.
 - II) Includes the presence of very sensitive aquifers in the proposed mining area – which mining activities could severely impact on the purpose and values of NNP. This constitutes a fatal flaw for this mining right application.
- f. Sabies area is mentioned / included in this ESMP, while this specific area is still subject to provisions of the M&PRDA, (Mineral and Petroleum Resources Development Act, 28 of 2002), for purposes of prospecting licence application.
- g. The ESMP did not discuss the value of minerals, in terms of its national importance for the country, or whether it is classified as Strategic minerals and in national interest. In fact, the minerals proposed to be exploited, is not classified as Strategic Minerals, which further make this mining right application, even more problematic.
- h. Cumulative impacts has not been taken into account or properly mitigated. Cumulative impacts are those impacts from the project combined with the impacts from past, existing and reasonably foreseeable future projects that would affect the same biodiversity or natural resources collectively. In this instance, cumulative impacts would include infrastructures to be constructed in addition to the mining and associated infrastructure (mineral separation plant, primary concentrator plant, tailings dam, offices, workshops and stores etc. Furthermore, it would also include the construction of various ancillary infrastructure such as:
- I) Seawater intake, desalination plant, pumping station and pipeline
 - II) Waste water treatment works
 - III) Product transfer stations
 - IV) Airstrip
 - V) Upgrade of the provincial road to and junction with the N7 road
 - VI) Fuel Depot
 - VII) Construction and operation accommodation

5. Specific comment on the Specialists assessments.

a. *Surface and groundwater assessment*

The surface water assessment conducted by the Coastal & Environmental Services (October, 2014) provides a useful collation of the relatively sparse information on the rivers and estuaries of the study area. Their respective assessments of potential impacts on surface water related to (a) the tailings storage facility, (b) groundwater abstraction, and (c) river crossing infrastructure are particularly informative. As is common for arid areas, surface water quantity and quality in the study area are largely moderated through a groundwater contribution. The uncertainty related to, and risk associated with groundwater contamination, as a result of the Kamiesberg project is *significant*. The overall risk is further increased due to the long time-frame at which groundwater contamination plays out.

The saline plume from the Tailings and storage facility will result in an increase in salinity at the top of the Groen estuary. The Groen estuary is a B rated estuary and is considered an endangered environment (National Biodiversity Assessment 2011, SANBI). This naturally saline system is fed by groundwater of lower salinity which ensures the functionality of the estuary; once this source increases in salinity the estuary will lose ecological viability. This impact is unacceptable for an endangered environment within an National Park. A full estuarine impact study is required to determine these impacts.

b. *Groundwater assessment*

Approximately 33 000 cumecs per day of sea water will be piped to the site. As far as we can tell only a trivial amount of this is desalinated, and the vast bulk is used directly in the mining process, and is essentially disposed of with the backfill or in the unlined tailings/slimes dam.

Assuming that the normal 35g/litre salt concentration, SANParks calculated 1155 tons of salt a day being moved on site.

The density effects of saline water, which will cause the sea water to move downwards at a faster rate, was not modelled in the groundwater study. Furthermore, the groundwater study does not have sufficient climate/ rainfall data, making it impossible to model the hydrology of the area.

The groundwater study does not take in evaporative losses, which must surely increase the salt concentrations in the soil and groundwater. A concern for SANParks is that, why in such an arid area, the modelled salinity of the groundwater would be less saline than the sea water being introduced to the site in large quantities.

The groundwater study indicates that water with raised salinity reaches a number of boreholes on the Groenrivier, and it seems reasonable to assume that any extra saline water entering the estuary will increase estuary salinity overall, even if it does enter via the Groenrivier. The logic of the study cannot be followed, saying that the saline

groundwater impacts the top end of the Groenrivier, but not the Groenrivier outside the mine site. This appears to be hydrologically not sensible. Furthermore, the groundwater modelling scenarios are insufficient as the most important variables are omitted from the model. Omitting these variables from the groundwater model essentially renders the analysis as useless. The simulated salts concentrations from seawater and processed mine water seepage from backfill voids into the groundwater will pollute the system with hyper saline water for the next > 100yrs.

In the absence of comprehensive integrated monitoring or long –term rehabilitation plan for essentially the next > 100yrs, apart from the environmental impacts - SANParks is concerned that that the local population's socio-economic and cultural (livestock farming) aspects will be complete destroyed as a result of the groundwater contamination and abstraction.

Furthermore, the estuary seems to receive “fresher” groundwater, which should prevent the system from becoming totally hypersaline. It appears that this source of fresher water is at risk. It appears unreasonable for the groundwater study to write–off impacts of the saline water on the estuary, as the timelines for the impacts are such that the concentrations at the certain sites are still rising 100 years after mining.

A concern for SANParks is the plan to properly rehabilitate the area given the extremely high concentration of salt added to it. It seems that we are starting to look at a long term toxic desert, with risk to broader areas through salt being blown off exposed landscapes. Certainly, the tailings dam is going to be highly saline.

Recommendations for groundwater impacts

Lining the back fill voids with impervious material and considering modern treatment processes, to mitigate the groundwater impacts.

A full estuarine study on the impacts of loss of dilution and increased salt inputs into the system needs to be conducted – this is a very rare estuarine type and risks cannot be taken when considering its protection.

c. *Air Quality Assessment:* The specialist study found that all air quality matters were within legal requirements in the short-term. We question what the long-term impact of the sulphur dioxide and nitrogen dioxide deposition will be, as this is what SANParks and the surrounding communities are going to have to deal with.

d. *Faunal assessment:* The faunal assessment states that there are no threatened or endemic amphibians in this area. This is incorrect as, *Stongylopus springbokensis* and *Breviceps macrops*, are both listed as Vulnerable along the coast, the latter occurring in the coastal dunes on the Namaqualand coast. Researchers are currently conducting a survey to locate populations of both these species in Namaqua National Park - preliminary results indicate that the habitats are suitable and these species should be present.

Commercial exploration of all reptile species does occur in this area and the establishment of the mine, with the influx of people may result in more illegal poaching

of reptiles for trade. To state that NNP protects these species so no measures need to be put in place at the mine is ludicrous (Point 9.2 number 5, pg 80)! According to SKEP, a number of amphibian, reptile, bird and mammals species of conservation concern, occur within the mining area and will all be negatively affected by the operations of the mine.

There are no recommendations that mining staff be prohibited from killing or trapping animals for meat. This should be included in the report.

The suggested 2km buffer/ecological corridor is insufficient given the edge effects of the mine will in all likelihood be 50% of this area already (1km), the mining and biodiversity guidelines recommend 5km. Under pollution and contamination, the report does not note the effects of salt on the water systems, and the impact this will have on the amphibian and bird species living in the riverine and wetland areas.

Due to the occurrence of a threatened bat species at the mining site, night operations and excessive lights should be added to the list of recommendations.

The protected area expansion strategy is mentioned as not relevant to this project in the faunal survey as the mine is 5km from the expansion footprint. This is incorrect, as the mine borders on the park within the future expansion area of NNP.

3.5 Vegetation assessment: The mining site cuts directly through a large north-south portion of Namaqua Sand Fynbos. This vegetation type is highly dependent on acid pH levels and will be severely impacted by the mine operations, as well as the resultant increase in salinity from the use of sea water. Rehabilitation of this vegetation type back to Sand Fynbos will not be possible as suggested by the report. This vegetation type will be lost as the more saline tolerant Strandveld vegetation will take the place of the Sand Fynbos. Sand Fynbos is the richest of the vegetation types found in the mining area, and particularly on the ecotone between the Strandveld and Sand Fynbos. The impact to these will be severe and no amount of translocation or restoration will ensure their survival.

Although all the vegetation types within the mining area are listed as 'Least Concern' none of them have met the national conservation target of between 26-28% conserved. To reply merely on NNP to conserve these vegetation types is unrealistic, as ecosystems function on a landscape scale, and this mine will severely impact the conservation of large intact portions of vegetation types (point 4.1, pg 19). This is the second largest intact portion of Sand Fynbos remaining in Namaqua National Park, (pg 25).

The heuweljieveld in this area is also particularly rich in species and 2 new species were found in this assessment. The potential loss of known and unknown species, should the mine go ahead, is a serious concern (pg 21).

The coastal dune areas are poorly botanised, however historic records indicate that these are fragile systems and that rare and threatened species occur in small clumped populations. The building of the desalination plant here could potentially result in the loss of these populations.

SANParks experience in the translocation of plants to other areas in the arid environment has found that they do not transplant well and up to 100% died in the first year. This recommendation should be re-written and the plants should be kept ex situ in a nursery (preferably a Botanic Garden), and used as 'mother stock' to propagate new plants to be used in the rehabilitation of post-mined areas (given that they soils are not overly saline).

The recommended 300m ecological corridor through the mine site should be made larger (500m) should the mine proceed. (pg76).

e. *Rehabilitation assessment* - The report states that the high salinity of the soils from the mining plant is leached after 25 months and able to be rehabilitated. I question what the salt content of this soil was and the rainfall in the area that was tested, and then how this compares to the Khamiesberg mine project site (pg 13). The rehab of the mined areas will lag 2 years behind the mining operations (pg 19); however seeds in topsoil do not last longer than 12 months. Thus, the plan needs to consider collecting seed and sowing this onto the first sites to be rehabilitated post-mining. Thereafter, topsoil should not be stored longer than 12 months, it should preferably be moved directly onto an old mine site from a newly opened cut.

f. *Heritage assessment*: the recommended buffer around quartz outcrops of 5m should be increased as these areas are also rich in flora and 5m will not protect the outcrop.

g. *Waste assessment*: The location for the proposed landfill site has yet to be determined, this must be informed by the ground water and vegetation assessments and provided to stakeholders for comment.

The report states that liquid waste produces of the desalination process will be discharged into the ocean. We have not seen an impact assessment of what this discharge may do.

The visual impact of the 27m high tailings dump in this flat landscape will be an eyesore. The visual assessment is implying it's not important to SANParks because it will not be seen from the coastal camps. It will however, be seen from almost anywhere else in the park once you move away from the coast. The apparent assumption that these areas are not used by people/ visitors is also incorrect - we could very well have horse trails, 4x4 trails etc. there in future.

h. *Social and labour plan (SLP)* The Social and Labour Plan seems to be meeting all the legal requirements and is within the format required by the DMR. However, one cannot really get a sense of the anticipated turnover and /or projected profitability of the Mine, except in the SLP and ESP an indication that 270 Million tons of sand will be mined from 3,500ha over the 20 year life-span of the Mine. The Mine has committed

i. R 15 M to the SLP over the first 5-years of the life-span of the Mine. Unfortunately one cannot assess how reasonable an offer this is given the lack of information.

In terms of the current LED projects identified:

2.8.1 The projects are only infrastructure focused – DMR also encourages skills development and income generation projects.

The municipality is a small rural municipality and probably rightfully places emphasis on basic service delivery and bulk infrastructure and water is a priority concern. However, whilst the Mine will cover the capital costs the municipality will have to cover the operations and maintenance costs and this must be factored into the socio-economic impact and “off-set” calculations;

2.8.2 Whether these LED projects are sufficient to mitigate the socio-economic and environmental impact on the Mine is, however, questionable. ***The anticipated socio-economic impact of the Mine is significant***, e.g.

2.8.2.1 New comers, especially job-seekers, will be attracted into the area.

2.8.2.2 The municipality will need to deliver services and housing to these newcomers.

2.8.2.3 A significant number of jobs to be created will be short-term and construction related in the first few years of the Mine’s operations. These workers will be sourced through construction companies that will probably source unskilled and semi-skilled workers locally. Their future is uncertain and may contribute to growing unemployment and associated social problems within the community.

2.8.2.4 The long-term production jobs in the Mine will last 20 years. Economic activity within the community is limited so chances of employment within other sectors are scarce unless alternative forms of economic activity are stimulated during the life of the Mine.

2.8.2.5 The local municipality has no budget (Namakwa IDP 2012 – 2016) to finance LED projects (its focus is necessarily basic service provision) so requires private sector partners to come on board in that regard.

- 2.8.2.6 Conservation has not been specifically identified either by the municipality in its IDP or the Mine's SLP as a specific economic sector or an area of sustainable job creation. The sectors identified for growth are Tourism, Renewable Energy and Mariculture. However, they could be regarded as relatively compatible with conservation and could be linked to biodiversity and heritage protection. It is interesting to note that:
- 2.8.2.7 Both the Namakwa and Kamiesberg Municipalities note the biodiversity significance of their vegetation and their coastlines and the degradation thereof. Alien invasive vegetation and mining activities are causal factors identified for this degradation;
- 2.8.2.8 The Mine's proposed LED contribution does not correlate with the potential negative socio-economic impact of the Mine;
- 2.8.2.9 The SLP does not address broader environmental and biodiversity concerns within the community as its plans are focused on the Mine's operations and rehabilitation objectives;
- 2.8.2.10 We propose that the first 5-year projects are focused on basic service delivery, but we strongly argue that the Mine also has a social and corporate responsibility to promote alternative economic activity, and opportunities within their area of operation, in order to address the future opportunities of their workforce. In the case of the Kamiesberg Project, this is urgent, given the fact that the construction jobs to be created will be relatively short-term. The Mine also has a responsibility to contribute to biodiversity conservation within its broader environment.
- 2.8.2.11 We propose that to meet these imperatives, an additional project in the SLP could be on "Green Job Creation". These projects would be aligned to the Namakwa District's IDP where a number of these projects are already listed as indicated.
- 2.8.2.12 We propose the supporting of a "National Green Trust" that would operate within National Park Buffer Zones and Protected Areas that focus on:
- Building capabilities required for monitoring of mining activities through research and bursary opportunities;
 - Promoting conservation as a key sector for rural economic development and job creation through building capabilities to:
 - Undertake socio-economic analyses of Buffer Zones, their broader regional economies, and conservation-linked economic opportunity;
 - Facilitate stakeholder engagement processes within Buffer Zone

- Facilitate the extension of protected areas through private and public led initiatives and partnerships;
- Input into Mining
- Input into Municipality Spatial development Frameworks, Integrated Development Plans and LED Strategies; and
- Promote Green Job Creation.

6. SANParks REQUIRES THE FOLLOWING STUDIES.

6.1 A Full Economic evaluation study

Given the very high biodiversity importance of the proposed mining area, SANParks request that a full economic evaluation study be done.

A full economic valuation of mining compared with other reasonable/feasible alternative land uses, undertaken as a necessary component of the EIA, would determine whether mining would be the optimum sustainable land use in the proposed mining area. The economic valuation should ideally address the values of biodiversity and ecosystem services that conventional economic analysis excludes, since their value is not traded or priced in the marketplace.

A full economic valuation may show that the value of the intact ecosystem to local communities and society exceeds the value of mining as the new proposed land use. The economic evaluation needs to clearly show whether it would be in the national interest to exploit these minerals. Furthermore, the study would also assess whether other alternative deposits or reserves exist, which could be exploited in areas, which are not biodiversity priority areas or less environmentally sensitive areas.

6.2 A full estuarine study

A full estuarine study on the impacts of loss of dilution and increased salt inputs into the system needs to be conducted – this is a very rare estuarine type and risks cannot be taken when considering its protection.

6.3 A full tourism impact study

A full tourism impact study, in terms of the potential impacts on tourism opportunities in the park. The park is heavily dependent on its sense of place, and it appears that the tailings facility will be visible across much of the park. Furthermore, the increased traffic and other mining activities on the road to the Groen River mouth could impact on tourism in this area.

6.4 A full peer review

Given the very high biodiversity importance of the proposed mining site, SANParks are of the opinion that a qualified professional should perform a **full review of the Draft Environmental and Social Management Plan and Monitoring Programme**, (ESMP_r), as there are sufficient omissions and discrepancies to raise significant concern.

SANParks reserves the right to revise these comments based on additional information that may be received, additionally, to oppose the mining right application if these comments are ignored.

Yours faithfully



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APPENDIX H: UPDATED FAUNAL AND FLORAL SPECIES LISTS**Plant species**

Species	Namaqualand Sand Fynbos	Namaqualand Strandveld	Hardeveld	Coastal fringe	Only seen in proposed mining area	Red List Status	NCNCA protected species
Acanthopsis carduifolia							
Adenogramma mollugo							
Agathosma elata						EN	
Albuca grandis							
Albuca secunda							
Aloe krapohlina						DDD	
Amphibolia laevis							
Amphiglossa tomentosa							
Antimima sp							
Arctotis decurrens							
Arctotis sp nov 1.(perennial, orange)						STBA	
Arctotis sp nov 2 (rubrosabulosa MS)							
Argyrolobium velutinum						EN	
Aspalathus albens						VU	
Aspalathus cuspidata							
Aspalathus quinquefolius							
Aspalathus spinescens ssp lepida							
Asparagus aethiopicus							
Asparagus alopecurus							
Asparagus capensis							
Asparagus exuvialis							
Asparagus rubicundus							
Babiana brachystachys							

Species	Namaqualand Sand Fynbos	Namaqualand Strandveld	Hardeveld	Coastal fringe	Only seen in proposed mining area	Red List Status	NCNCA protected species
Babiana confusa							
Babiana grandiflora							
Babiana hirsuta							
Babiana sinuata							
Berkheya fruticosa							
Boophone haemanthoides							
Brassica tournefortii							
Brownanthus sp							
Brunsvigia bosmaniae							
Calobota angustifolia							
Caesia sabulosa						VU	
Calobota lotononoides						NT	
Calobota sericea							
Cephalophyllum aff framesii							
Cheiridopsis sp nov						STBA	
Chlorophytum viscosum							
Chrysocoma longifolia							
Chrysocoma ciliata							
Chrysocoma sp							
Cissampelos capensis							
Cladoraphis cyperoides							
Cleretum bellidiformis							
Cleretum rourkei							
Cliffortia juniperina							
Cliffortia teretifolia							
Clutia daphnoides							

Species	Namaqualand Sand Fynbos	Namaqualand Strandveld	Hardeveld	Coastal fringe	Only seen in proposed mining area	Red List Status	NCNCA protected species
Clutia aff polifolia							
Conicosia elongata							
Conicosia pugioniformis							
Conophytum pageae							
Corycium crispum							
Cotula thunbergii							
Cotyledon orbiculata							
Crassula deceptor							Protected
Crassula expansa							Protected
Crassula muscosa							Protected
Crassula nudicaulis							Protected
Cyanella orchidiformis							Protected
Cytinus sanguineus							
Dicrocaulon ramulosum							
Dicrocaulon sp 1							
Dicrocaulon sp 2							
Didelta carnosia							
Dimorpotheca pinnata							
Dimorpotheca pluvialis							
Dimorpotheca tragus							
Diosma ramosissima							
Diospyros austro-africana							
Dischisma spicata							
Drosanthemum sp							
Drosanthemum salicola							
Ehrharta barbinodis							

Species	Namaqualand Sand Fynbos	Namaqualand Strandveld	Hardeveld	Coastal fringe	Only seen in proposed mining area	Red List Status	NCNCA protected species
Ehrharta calycina							
Elegia sp nov						STBA	
Elytropappus rhinocerotis							
Eriocephalus africanus var paniculatus							
Eriocephalus racemosus							
Eriospermum arenosum						VU	
Eriospermum paradoxum							
Eriospermum sp							
Euclea tomentosa							
Euphorbia burmanii							Protected
Euphorbia caputmedusae							Protected
Euphorbia tenax							Protected
Euphorbia tuberosa							Protected
Euryops tenuissimus							
Felicia australis							
Felicia dregei							
Felicia filifolia							
Felicia hyssopifolia							
Ferraria flava							
Ficinia argyropa							
Ficinia deusta							
Ficinia indica							
Frankenia pulverulenta							
Galenia africana							
Galenia fruticosa							
Galenia sarcophylla							

Species	Namaqualand Sand Fynbos	Namaqualand Strandveld	Hardeveld	Coastal fringe	Only seen in proposed mining area	Red List Status	NCNCA protected species
<i>Galium capense</i>							
<i>Gazania tenuifolia</i>							
<i>Gethyllis britteniana</i>							
<i>Gethyllis ciliaris</i>							
<i>Gladiolus carinatus</i>							
<i>Gloveria integrifolia</i>							
<i>Gnidia clavata</i>							
<i>Grielum grandiflorum</i>							
<i>Grielum humifusum</i>							
<i>Gymnosporia buxifolia</i>							Protected
<i>Hebebstreitia cordata</i>							
<i>Hebensreitia sp</i>							
Helichrysum dunense						VU	
Helichrysum tricostatum						NT	
<i>Helichrysum sp</i>							
<i>Heliophila cornuta</i>							
<i>Heliophila crithmifolia</i>							
<i>Heliophila juncea</i>							
<i>Heliophila sp</i>							
<i>Hermannia cuneifolia</i>							
<i>Hermannia heterophylla</i>							
<i>Hermannia scordifolia</i>							
Hermannia sp nov						STBA	
<i>Hermannia trifurca</i>							
<i>Hessea pilosula</i>							
<i>Hirpicium alienatum</i>							