PO Box 395 Pretoria 0001 South Africa
Tel: +27 12 841 3293
Fax: +27 12 841 3594
Email: pashton@csir.co.za

CSIR Natural Resources and the Environment

7 February 2008

Your Ref.: 402239/8.120

Mr Brett Lawson
Project Manager
Ninham Shand Consulting Services
P.O. Box 509
George
6530
South Africa

Dear Brett,

INTERNAL REVIEWER'S REPORT ON THE DRAFT SEIA REPORT PREPARED FOR THE "SOCIAL AND ENVIRONMENTAL IMPACT ASSESSMENT: PROPOSED EXPANSION PROJECTS FOR RÖSSING URANIUM MINE IN NAMIBIA: PHASE 1"

I have reviewed the Draft SEIA Report sent to me by Genie DeWaal of Ninham Shand Consulting Services via courier on 31 January 2008 and I append my written report on my review for your consideration. In my report, I have noted a few minor points that need to be addressed when producing the final version.

May I take this opportunity to congratulate you and the team on the scope and quality of the materials presented in the SEIA report. In my professional opinion, the document complies with the expectations of an EIA report.

I trust that my comments and recommendations will prove to be useful to the team.

Kind regards and best wishes

Peter J. Ashton PhD, PrSciNat, EAPSA [Cert.]

CSIR – Natural Resources and the Environment:
Principal Scientist and Divisional Fellow
Aquatic Ecologist, Water Quality and Water Resources Specialist

University of Pretoria:
Extraordinary Professor of Water Resources Management

INTERNAL REVIEWER'S REPORT

DRAFT SOCIAL AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT: PROPOSED EXPANSION PROJECTS FOR RÖSSING URANIUM MINE IN NAMIBIA: PHASE 1 ~ ACID PLANT, ORE SORTER AND SK4 PIT"

This document comprises a formal record of my review of the Draft Social and Environmental Impact Assessment Report sent to me by Mr Brett Lawson of Ninham Shand Consulting Services via courier on 31 January 2008. The documents provided to me were arranged in two volumes; the first consisted of the draft Social and Environmental Impact Assessment Report (the draft SEIA Report), while the second volume consisted of ten annexures – or specialist reports – plus one annexure of supporting illustrations. The review of the draft SEIA Report required frequent reference to the draft Scoping Report that had been produced during October 2007. The different documents that were examined are listed below.

Document No.	Description of Contents	Approximate Size (pages)
Vol. 1	Draft Social and Environmental Impact Assessment Report	143
Vol. 2		
Ann. A	Draft Social and Environmental Management Plan	53
Ann. B	Minutes of meetings	12
Ann. C	Socio-Economic Impact Assessment	95
Ann. D	Air Quality Assessment	119
Ann. F	Bacteriological information	3
Ann. G	Visual impact assessment	85 + 61
Ann. H	Water Management	22
Ann. J	Energy balance	8
Ann. K1	Biodiversity assessment	44
Ann. K2	Biodiversity baseline and earlier studies	126
	Draft Scoping Report (October 2007)	111

I have structured my comments on the SEIA Report into seven sections: Scope of study, Technical completeness of report, Reliability of information provided, General appearance of report, Terminology and language used, Acceptability of the SEIA report and specialist report annexures, and Overall impressions; these are listed below.

I have evaluated the acceptability of the SEIA Report and its supporting annexures according to the evaluation categories recommended in the "*Guideline for Review of Specialist Input in EIA Processes*", produced by the Department of Environmental Affairs and Development Planning of the Western Cape (Keatimilwe and Ashton, 2005). My overall assessment of the various documents according to these evaluation categories is discussed briefly in section 6 and is summarized in the table at the end of this report (page 5).

1. Scope of study

The draft SEIA Report covers the impact assessment stage of a comprehensive environmental impact assessment (EIA) conducted for the first phase of planned expansion activities at Rössing Uranium Mine. The draft SEIA Report is supported by ten documents (annexures) that record the findings of specialist investigations and minutes of stakeholder meetings.

It is noted that Rössing Management prefer to use the term "SEIA" instead of the more normal "EIA" for this study as a way of emphasizing the importance that they attach to social issues. This should be seen as purely an internal approach because the word "social" in "SEIA" is redundant.

Subsequent phases of the planned expansions at Rössing will only take place at a later date and their potential impacts will be evaluated in subsequent EIA investigations.

2. Technical completeness of report

The scope and content of the draft SEIA Report are in full accord with standard practice for EIA reports that describe and evaluate the potential impacts of planned development activities.

The evidence presented and conclusions drawn in the draft SEIA Report are supported by clear descriptions of the need for the project, the particular activities comprising the planned developments, the potentially affected environment, the anticipated scope, scale and complexity of the potential impacts that are likely to occur, the possible mitigatory actions that could be implemented, and the resulting impacts post-mitigation. This matches well with accepted professional practice for reports on environmental impact assessment studies.

I list here a series of minor points that the Consultants should address when preparing the final version of the SEIA report and the SEMP report. Importantly, all of these corrections are minor and do not detract from the technical completeness of the documents.

Draft SEIA Report

- Page viii – glossary – the word "kilogram" should be corrected to "kilogramme"; "ton" should be corrected to "tonne"; "meter" should be corrected to "metre". The use of an "English (UK)" spellchecker instead of an "English (US)" version would eliminate this problem.
- Page xv – insert the word "negative" after the word "possible" in the last line.
- Page xviii – the words "may be affected" are ambiguous – the plants <u>will</u> be affected unless they are moved.
- Page xviii – the site for waste rock disposal (from the SK4 pit) should be identified as part of the activities investigated in this first phase.
- Page xix – the wording of the mitigation activity in the socio-economic activity is vague and does not specify who should do what by when to achieve a desired outcome.
- Page 3 – No substantive reasons are given for the decision to split phases 1 and 2.
- Page 10 – the Convention on Biological Diversity appears to have been omitted from the list.
- Page 13 – the footnote (#8) is vague and provides no information on precisely who or which organization has undertaken the specialist studies.
- Page 13 – no reasons are provided as to why a Rio Tinto staff member is engaged in the specialist studies (energy) – this could compromise perceptions of 'independence'.
- Page 8 – second-last paragraph – the words "7 bar steam" are not acceptable SI units for steam pressure – these should be expressed in kilopascals (kPa).
- Page 21 – third line – the numeral '3' in sulphur trioxide should be a subscript.
- Page 24 – No information is provided on the likely low radioactivity levels of the waste rock and sub-grade ore that would be distributed from the ore-sorting plant.
- Pages 48-49 – the significance of an impact also depends on the character and identity of the 'target' that is likely to be affected and not just the spatial extent and duration (i.e. the context) and intensity of the impact. It is important to acknowledge to whom the impact may be of significance.
- Page 50 – cumulative impacts can and should be considered at the project level if best practice is to be achieved.
- Page 67 – second paragraph deals with *Legionella* – this appears to be misplaced in the section on impact assessment of the acid plant.
- Page 67 – third paragraph – substitute the word "known" for the word "know" in the fifth line.
- Page 81 – The text says "medium negative significance" (without mitigation) while the table shows "low negative significance".

Draft SEMP Report

- Page 8 – insert the word "of" between the words "principles" and "environmental" in line 4 of the first paragraph.
- Pages 38 and 48 – the spelling of the Latin name *Lithops ruschiorum* should be corrected to remove the letter "l" at the end of "*ruschiorum*"

3. Reliability of information provided

The information provided in the draft SEIA Report has been extracted from the results of specialist studies (listed as annexures in Volume 2) and previously published information. Where conclusions have been drawn regarding the likely significance of a potential impact – both before and after mitigation – the reasons for the selection of particular levels of significance are clear and unambiguous. The methods used to obtain or derive numerical data are clearly described and are considered to be appropriate and reliable for their stated purposes. The derivation of significance ratings follows a carefully structured and unambiguous set of guidelines – while some significance ratings may appear to be subjective, the standardized approach used to derive these ratings removes uncertainties and is fully in accord with current best practice.

In many parts of the draft SEIA, the predicted impacts are referred to as if there is absolute certainty that the project will proceed and the impacts will occur precisely as predicted. It is normal professional practice in EIA reports to refer to these as "potential impacts" – recognizing that if authorization to proceed is granted, then the impacts are very likely to occur as predicted.

4. General appearance of report

The report is logically structured and attractively laid out, with a good balance of text, photographic illustrations, graphics and white spaces. The numbering system used in the report provides clear guidance to readers and is linked to the detailed contents page. All tables and graphs have been carefully laid out – though it is unusual to find legends for tables located below the table. Several figures contain distracting forms of "shadowing" – this detracts from the quality of the report and shadowing should not be used to embellish illustrations in a formal report.

All of the graphical illustrations and photographs provide useful additional or supporting perspectives on the written text. I note, however, that much of the value that is provided by these coloured illustrations would be lost if the report is printed in black and white.

5. Terminology and language used

The draft SEIA Report has been professionally produced and has been written is an easily understood style. Where specific technical terms have been used to convey some aspect of a complex technical process or situation, these terms are clearly explained. The detailed glossary provides a set of clear explanations for scientific units, terminology and specific institutions.

The draft SEMP is also clearly written and provides straightforward guidance on the specific management decisions and actions that need to be taken by clearly identified individuals. This will make it relatively easy to incorporate the guidance elements into the tender documents that will be issued for specific aspects of the project once final approval to proceed has been obtained from the Namibian authorities.

Both of these reports provide good examples of how to write a technical report in a way that ensures that it can be read and understood by an array of stakeholders from diverse backgrounds.

6. Acceptability of SEIA report and specialist report annexures

The annexures that comprise volume 2 of the draft SEIA consist of specialist reports that record the technical findings of the different specialist studies that were carried out to evaluate particular aspects of the proposed project activities.

The first annexure is the draft Social Environmental Management Plan (draft SEMP). This document has also been evaluated and referred to above.

One of the remaining annexures (Annexure E – acid plant study) was not available and could not be reviewed. Three other annexures (Annexure B - minutes of stakeholder meetings; Annexure F – a review of the bacterium *Legionella*, one species of which causes Legionnaire's Disease; and Annexure J – an energy balance for the Rössing Uranium Mine) do not meet the requirements for a specialist report. While Annexure J – the energy balance study – provides interesting insights, the report does not contain pertinent information to evaluate the potential impacts of the proposed development activities at the mine and does not enhance decision making.

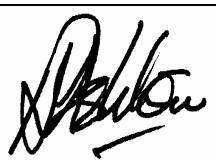
Three of the annexures (Annexure C – socioeconomic impact assessment; Annexure D – air quality assessment; Annexure G – visual impact assessment) are particularly thorough and present excellent overviews of their respective technical subjects. One annexure (Annexure K – biodiversity assessment – provides a wealth of historical and current data on biodiversity of the area around Rössing. However, the information that is available reflects sporadic observations with the result that this specific annexure is largely descriptive and it is difficult to confirm possible adverse or positive impacts on biodiversity that might arise if approval is granted for the new project developments to proceed.

The last annexure (Annexure H – water management) provides a good overview of the prevailing and predicted water situation in and around the Rössing Uranium Mine. While this report provided almost no information on the relevance of legislation, policies and plans, the information contained in the report is adequate for decision-making purposes. The fact that the author of this particular report is a Rössing staff member resulted in a query "?" being placed against the "Ethics" considerations in the evaluation table. This 'flag' is required where the independence of a specialist cannot be verified, despite the obvious professional competence of the individual concerned.

7. Overall impressions

The draft SEIA Report, the draft SEMP and the support specialist reports (annexures) contain an enormous amount of technical information. While this level of detail may appear to be excessive to some readers, the details provide good value through their substantiation of the statements made and conclusions drawn related to the potential impacts likely to arise if the project activities are approved.

My overall impression after reviewing the documents is that the reports are of high quality, a good reflection of the professional competence and abilities of the Consultants, and should be accepted as fulfilling the requirements for an EIA report.



Peter J. Ashton PhD, PrSciNat, EAPSA [Cert.]
7 February 2008

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Principal Scientist and Divisional Fellow
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Summarized scores in nine evaluation categories for the main SEIA Report and for the eleven identified specialist reports (Note: Annexure E – Acid Plant – was not available for evaluation and could not be evaluated). [The evaluation categories used are those listed in Keatimilwe and Ashton (2005)].

Evaluation Category	Main SEIA Report (Volume 1)	Specialist Reports (Annexures) – Volume 2									
		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**K**
A. Ethics	A	A	N/A	A	A	?	N/A	A	?	?	A
B. Adequacy of information	A	A	N/A	A	A	?	N/A	A	A	I	A
C. Clarity of report	A	A	N/A	A	A	?	N/A	A	A	A	A
D. Consideration of alternatives	A	N/A	N/A	A	A	?	N/A	A	A	I	A
E. Description of the project and the affected environment	A	N/A	N/A	A	A	?	N/A	A	A	I	A
F. Description of legislation, policies and plans	A	N/A	N/A	A	A	?	N/A	A	I	I	A
G. Identification of key issues	A	N/A	N/A	A	A	?	N/A	A	A	A	A
H. Prediction and assessment of impacts	A	N/A	N/A	A	A	?	N/A	A	A	I	A
I. Recommendations for management and monitoring	A	A	N/A	A	A	?	N/A	A	A	I	A
General Impressions	A	A	N/A	A	A	?	N/A	A	A	I	A

Evaluation criteria used to score each category assessed:
A = Acceptable; **I** = Inadequate; **N/A** = Not applicable; **?** = Uncertain.

Identification of Specialist Reports provided as Annexures in Volume 2:
A = Draft Social and Environmental Management Plan; **B** = Minutes of meetings; **C** = Socio-Economic Impact Assessment; **D** = Air Quality Assessment; **E** = Acid Plant Study (**Not available for review**); **F** = Bacteriological information; **G** = Visual Impact Assessment; **H** = Water Management; **J** = Energy Balance; **K** = Biodiversity Assessment.

Reference:
Keatimilwe K and Ashton PJ (2005). *Guideline for the Review of Specialist Input in EIA Processes: Edition 1*. CSIR Report No. ENV-S-C 2005-053-B. Republic of South Africa, Provincial Government of the Western Cape, Provincial Department of Environmental Affairs and Development Planning, Cape Town, South Africa. 32 pages.

The Southern African Institute for Environmental Assessment
P.O.Box 6322
Ausspannplatz
Namibia

EXTERNAL REVIEW OF THE SOCIAL AND ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED EXPANSION PROJECT FOR RÖSSING URANIUM MINE (ACID PLANT, ORE SORTER AND SK4 PIT)

EIA REPORT REVIEW FORM AND CHECKLIST[1]

This review form provides a structure that helps the reviewer to assess the EIA's various components in a scientific way. However, the reviewer must try at the same time to maintain a perspective of the "bigger picture" and to consider whether the EIA report makes sense as a whole, and if the process was conducive for planning.

This review form is divided into the following sections:

1. Methodology utilised in compiling the EA report
2. Legal, Policy and Administrative Requirements
3. Description of the project
4. Assessment of alternatives to the project
5. Description of the environment
6. Description of impacts
7. Consideration of measures to mitigate impacts
8. Non-technical summary
9. General approach

Instructions to reviewers:

1. For each question, consider first whether the information is relevant to the project. If not, mark it "no" and go to the next question.
2. If the information is relevant, read that section of the EA report and establish whether the information provided is:

- **Complete or comprehensive (C)**: all information required for decision-making is available. No additional information is required even though more information might exist.
- **Acceptable or adequate (A)**: the information presented is incomplete, but the omissions do not prevent the decision-making process from proceeding
- **Inadequate (I)**: the information presented contains major omissions. Additional information is necessary before the decision-making process can proceed.

Complete this table:

Name of the project	Proposed Expansion Project for Rössing Uranium Mine
Country where the project is to be located	Namibia
Name of company which compiled the EA report	Ninham Shand
Date that the EA report was completed	January 2008
Name of reviewer	B Walmsley and P Tarr with input from the delegates who attended the authorities training workshop (13-15 February 2008)
Address of reviewer	PO Box 380, Noordhoek 7979, RSA and P.O.Box 6322, Ausspannplatz, Namibia
Date of review	23 January to 20th February 2008

[1] Review form developed by the Southern African Institute for Environmental Assessment.

Summary appraisal of the EA report (to be completed only after the detailed assessment has been done)

	Judgement (C/A/I)	Comments
1. Methodology utilised in compiling the EA report	A	The environmental description and other important components of the EIA report were found in the Scoping Report which made reading a bit awkward. The impact description provided almost no quantitative data – it was all found in the specialist studies, located in a separate volume. Having a separate volume for specialist studies is accepted practice as binding everything into one volume inevitably results in a report that it too bulky – and intimidating! However, a summary of the findings of the specialist studies in the main report would have been useful.
2. Description of the project	C/A	Generally good but the information is spread across three volumes.
3. Assessment of alternatives to the project	C/A	The few alternatives that were available were addressed well. However, two of the arguments for a preferred alternative may need clarification, notably: the decision not to house workers in Arandis; and to go with wet cooling rather than dry cooling in the acid plant.
4. Description of the environment	A	Adequate for the nature of the expansion project in a largely 'brownfields' environment. As noted above the information is spread over several documents (scoping report, SEIA and the specialist studies).
5. Description of impacts	C	This was done in a thorough and systematic manner.
6. Consideration of measures to mitigate impacts	A	Adequate insofar as the expansion project will take place in an already well-controlled environment (but anyone who is not familiar with the site may not be aware of the existing environmental management systems). Mitigation measures provided in the main report and the SEMP are merely recommendations at this stage and some are even beyond the scope of Rössing's responsibility. The environmental management methodology proposed for the construction and operational phases is well set out.
7. Non-technical summary	C	Good
8. General approach	A	A concern we have is the manner of phasing the project into two, with this SEIA being conducted on Phase 1 only. The cumulative effects of both phases of the project need to be considered together especially with regard to resources use (water and energy) and the effects of waste rock, groundwater pollution, dust and total radiation dose from all the new project components. You might consider including a paragraph or two in the Executive Summary to explain the rationale for the split and a comment about cumulative impacts (of the two phases)

Grading of overall report as follows: (shaded box is our choice)

Excellent: The EA report contains everything required for decision-making on the project. There are no gaps.	
Good*:* The EA report contains most of the information required as far as it is relevant in the particular circumstances of the project; any gaps are relatively minor.	
Satisfactory*:* The information presented is not complete; there are significant omissions but in the context of the proposed project, these are not so great as to prevent a decision being made on whether the project should be allowed to proceed.	
Inadequate: Some of the information has been provided, but there are major omissions; in the context of the proposed project these must be addressed before a decision on whether the project should be allowed to proceed can be taken.	
Poor: The information required has not been provided or is far from complete and, in the context of the proposed project, the omissions must be addressed before a decision on whether the project should be allowed to proceed can be taken.	

In our opinion…(answer is shaded)	**Yes**	**No**	**Partially**	**Don't know**
Did the EA process include genuine public participation?				
Were the consultants unduly influenced by the proponent or the Authorities?				
Did the EA report focus on the 5 most important issues?				
Is the EA report of acceptable quality?				
Will the EA report help to make a more informed decision about the project?				

		Relevant? Yes/No	Judgement (C/A/I)	Comments
1.	**METHODOLOGY**			
1.1	Does the report set out the assumptions and limitations of the study?	Y	A	Some of the assumptions and limitations are listed but the rationale for splitting the project into two phases is not well justified. Does not explicitly address the issue of cumulative impacts as being a limitation on the assessment of impacts.
1.2	Does the report clearly explain the methodology used in the EIA, public participation process and in each specialist study?	Y	C	The IA methodology is clearly set out and explained, the PPP is clearly described and the ToR for the specialist studies are provided in the Scoping Report. Each Specialist study provides a description of the methodology employed.
1.3	Does the report indicate what data are inadequate or absent?	Y	A/I	Statements of confidence are included in each impact assessment, but some elements of the project are not well described - e.g. the acid plant
1.4	Did the EA process include genuine stakeholder consultation?	Y	C	This was very comprehensive. However the minutes from the last round of public meetings need to be included in the final report and public issues and concerns need to be cross-referenced to the relevant parts of the text. The exclusion of the last minutes in this version of the report is acceptable as they are yet to be verified.
1.5	If so, were the general public and/or affected communities included in the consultation?	Y	C	As is the norm with Rössing, a concerted effort was made to identify and consult as many Interested and Affected Parties as possible and practical.
1.6	Were capacity building programmes required to enable informed stakeholder involvement and are they described?	N	-	The majority of the affected public in the region are familiar with the PP process and with mining issues and therefore do not require capacity building programmes to participate in the PPP. In this regard, Rössing have been instrumental in raising public awareness about mining related issues and they provide the public with regular news about their operations.
1.7	Have the views of stakeholders been meaningfully incorporated into the findings of the EA?	Y	A	Given that the latest minutes were not included, it is hard to say if all comments have been incorporated. However, this will be clarified as soon as the minutes become available.

		Relevant? Yes/No	Judgement (C/A/I)	Comments
1.8	Does the report include lists of interested and affected parties consulted, as well as their original submissions and comments?	Y	A	Add Nampol to the list of stakeholders. See comment for 1.7 above. Note MAWRD should be MAWF (section 1.6.2)
2.	**LEGAL, POLICY AND ADMINISTRATIVE REQUIREMENTS**			
2.1	Have the relevant international treaties, conventions and agreements been listed with reference to where and how these obligations have been met on this project?	Y	A	Page 10: "the extent to which these …conventions may be relevant to the undertaking of the present SEIA *are being evaluated as the process continues"* What does this mean exactly? Will we see an evaluation in Phase 2?
2.2	Have the relevant policies of the country been listed with reference to where and how the obligations have been met on this project?	Y	I	The WASP, Water Resources Management White Paper and Act, and the National Environmental Health Policy are not listed. The Environmental Management Act is referred to in the document, but not listed under the list of legislation.
2.3	Have the relevant laws and regulations of the country been listed, with reference to project compliance?	Y	A	We would have liked to have seen summary tables in the impact discussion section showing the findings of the specialist studies in relation to the relevant standard. This information was buried in the specialist studies volume.
2.4	Have the relevant standards and guidelines for compliance been listed?	Y	C	Yes, in the specialist studies
2.5	Has the EIA administrative process been described together with project compliance?	Y	C	This is nicely laid out in Chapter 1 – figure 2 very clear.
3.	**DESCRIPTION OF THE PROJECT**			
Land requirements				
3.1	Has the land ownership status been described?	Y	C	The project is an expansion within an existing mining license area.
3.2	Has the land required for the project and any associated services, been described and clearly shown on an appropriately scaled map?	Y	C/A	The air quality isopleth maps could benefit from showing the license area boundary. Need to show the location of the Trekkopje construction camp site on a map, given that it is one of the construction phase accommodation options.
3.3	For a linear project, has the land corridor and need for earthworks been described and shown on an appropriately scaled map?	N		-
3.4	Has the re-instatement after use of temporary landtake been described?	N		The project is an expansion project on an already disturbed site in a current license area.

		Relevant? Yes/No	Judgement (C/A/I)	Comments
3.5	Have local, regional and national plans e.g. SEAs, structure plans, integrated development plans, environmental action plans, zoning plans been reviewed in order to place the project into context?	Y	I	There is acknowledgement of the fact that there are several other uranium mining projects in the area, but the cumulative impacts of such projects are not adequately addressed (it is of course difficult to do so in a project level EIA). For example – the whole question about the future sustainability of Arandis. The argument presented is that the town has become too dependent on Rössing and therefore workers should not be accommodated there because it will perpetuate the dependency on mining. This conclusion is debatable given the need for additional people in the town to support economic diversification. This is of course one of the key issues that the SEA will need to address and we look forward to lively debate in the months ahead! There is no mention of NACOMA, the Rössing SEA, the Erongo Regional Development Plan, the NW Tourism Plan or any other planning and policy documents relating to the central Namib coastal area. In view of the impact of the new project on *inter alia*, water supply, energy, housing, roads, port etc, more mention is needed of the place of Rössing in the prevailing planning context, especially vis a vis tourism, other mining ventures, port expansion projects, predicted energy and water supply problems etc. Much of this can be drawn out of the sustainability assessment.

		Relevant? Yes/No	Judgement (C/A/I)	Comments
Project description				
3.5	Have all the project components been described, including e.g. a process flow sheet, water balance, suitable diagrams and layout plans?	Y	A/I	Layout plans – need to use more simplified diagrams and topographic maps. For example, figure 7 is not particularly enlightening. Separation of the project into two phases makes it difficult to assess the overall impacts, e.g. some of the potential impacts from phase 1 are only dealt with in phase 2, e.g. botanical biodiversity in the SK block. What if phase 2 does not happen? How will phase 1 impacts be dealt with? A summary description of the biodiversity must be included in the phase 1 SEIA report. On pages 23-24 of the Scoping Report, it lists a number of aspects relating to the acid plant which were supposed to be described in detail in the SEIA report, but this level of detail is not provided in the SEIA report. There is also confusion relating to whether the plant will be air cooled or not – on p.23 of the Scoping report it states that air cooling is the preferred option and then lists cooling water as an output, suggesting wet cooling. The interface with other EIAs (timing, status, standards adopted etc) for the Walvis Bay sulphur handling facility and the desalination plant needs to be more clearly set out.
3.6	Is there a life cycle analysis?	Y	I	No life cycle analyses have been undertaken. The scope of the consultant's brief needs to be clear on the scope of the EIA wrt life cycle analysis.
3.7	Have the technologies to be used been described, with a motivation as to how they comply with BATNEEC and BEO principles?	Y	I/A	Not explicitly. More information could have been provided on the acid plant for example and how the proposed design is state of the art, especially wrt emissions and sulphur transport options.

		Relevant? Yes/No	Judgement (C/A/I)	Comments
				The scoping report suggests that the acid plant may use 'dry' cooling technology (p.23), but the main report assumes that wet cooling will be employed. Given the shortage of water in the region is wet cooling the BEO or even BATNEEC? The motivation for wet cooling needs to be clearly stated. Has Rössing looked at all possible ways of saving water e.g. greater use of chemical binders on the roads rather than water?
3.8	Have the social issues related to the project been described e.g. number of employees, percent from local community, transportation, accommodation, support services, recreation facilities, employment structures, skills breakdown, BEE, training, skills transfer etc?	Y	C	Comprehensively addressed.
Waste and emissions				
3.9	Have the sources, types and quantities of waste generated during different scenarios for construction and operation been estimated e.g. air emissions, process effluent, runoff, noise and vibrations, odour, liquid and solid waste?	Y	A/I	There needs to be more information regarding the sources, types and quantity of wastes which may be generated during construction.
3.10	Have the predictions in the report been scientifically calculated, with the results clearly presented for different scenarios?	Y	C/A	The predictions have been scientifically calculated, but a major shortcoming in this report is the fact that information is spread over several reports and the results are not clearly presented in the main SEIA report. More use could have been made of summary tables.
3.11	Has a risk assessment been performed, including the identification of exposure pathways, probability and consequences?	Y	I	A risk assessment was done, but the specialist report was unavailable at the time of the review. Furthermore, it states on pages 78 and 89 of the SEIA that the issue of radiological emissions from the ore sorter plant and SK4 pit respectively will be 're-examined' in Phase 2 in 'more appropriate detail'. It is unclear therefore if the work being done for Phase 1 is adequate or not. Managing public perceptions of radiological emissions is of critical importance and while the risks at Rössing are known to be low (to those who know), the public probably require more quantitative and conclusive assurances.
3.12	Does the report discuss ways in which the wastes can be reduced, recycled or re-used?	Y	I	The report alludes to the fact that waste heat from the acid plant could be used to generate electricity, but how this will happen is not made clear. The fate of wastes is not

		Relevant? Yes/No	Judgement (C/A/I)	Comments
				well documented – there should be a subsection in section 5.7 dealing with waste. For example, is there enough capacity in the domestic and industrial waste dumps at the mine to handle the increased waste stream from the expansion project (both phases)? What happens to contaminated soil? Mention is made of the hazardous waste site on the tailings dam – is this large enough to handle new waste, how is it designed, managed and controlled? Needs greater elaboration.
3.13	Have the ways in which wastes will be stored, handled or treated prior to disposal been explained?	Y	I	See comment on 3.12 above.
3.14	Has the receiving environment where such waste will be disposed, been identified and described?	Y	I	See comment on 3.12 above
Project inputs				
3.15	Are the nature and quantities of materials needed during construction and operation, clearly indicated e.g. water, power, lubricants, raw materials, ore, structural components, fill, etc?	Y	A	The main bulk items (water, power, sulphur) have been listed.
3.16	Have the sites from where these materials will be sourced, been identified and assessed in terms of impacts, in the EA report?	Y	A/I	Sources of construction materials e.g. sand, crushed stone have not been identified. The quantities of input materials during operations have been stated. However, we have a query about the use of freshwater for cooling in the acid plant. On what grounds was dry cooling rejected? (we understand from subsequent discussions with the consultants and Rössing that energy and costs were the main factor). What are the lost opportunities to other economic sectors on the coast of using desalinated water for cooling purposes when other technologies exist?
3.17	Have the impacts of transportation of all materials, personnel and visitors to the project site during construction and operation been assessed?	Y	I	The impact of increased traffic during construction and when the expansion project becomes operational (phases 1 and 2) has not been addressed adequately in this report. The issue of increased traffic and carbon footprint due to accommodating new workers in Swakopmund rather than at Arandis has not been recognised as an issue. Nor has the cumulative impact of traffic arising from other mining operations been considered. There should be a new sub-section in

		Relevant? Yes/No	Judgement (C/A/I)	Comments
				section 5.7 addressing traffic in a quantitative manner. The fact that the transportation of sulphur will be outsourced to TransNamib (pg 21) means that there will need to be an appropriate safeguard commitment from TransNamib to ensure that environmental standards are met.
3.18	Have the means of transporting materials, products, workers and visitors to and from the site during construction and operation, been explained?	Y	A/I	Partially. The issue of worker transportation has not been addressed, though it will likely be a case of status quo.
3.19	Has the project timetable been clearly set out for each project phase: construction, operation, decommissioning and closure.	Y	I	The report could benefit from a diagram showing the overall scheduling of Phases 1 and 2 projects in years, together with a better explanation as to why the SEIA process had to be split.
1	**ALTERNATIVES**			
4.1	Were alternatives to the project considered in the EA?	Y	C	
4.2	If alternatives were considered, are the reasons for selecting the proposed alternative adequately described?	Y	C/I	The reasons for choosing preferred alternatives are generally well described. However, there are 2 aspects where this is not the case: 1) the argument to house new workers in Swakopmund as opposed to Arandis is debatable; 2) there is little justification for choosing wet, rather than dry cooling in the acid plant. Both of these aspects require greater clarity. The mine needs to give more consideration to the use of renewable energy sources for certain aspects e.g. lighting, hot water, etc.
4.3	If alternatives are described, have their main environmental impacts been compared clearly and objectively with those of the proposed project?	Y	C/I	With the exception of those discussed in point 4.2 above.
4.4	Has a prediction of the likely future environmental conditions in the absence of the project been developed (no go option)?	Y	A	The implications of the no-go option are mentioned in qualitative terms (p 29). A short summary of the findings of the Golder SEA wrt the no-go option would have been useful.
4.5	Does the EIA assess various “within-project” alternatives (e.g. design, location)	Y	A-I	In most cases, within-project alternatives are well described. See earlier comments about water cooling.

		Relevant? Yes/No	Judgement (C/A/I)	Comments
DESCRIPTION OF THE ENVIRONMENT				
5.1	Have the areas expected to be significantly affected by the various aspects of the project been indicated with the aid of suitable maps?	Y	A	Rather use topographical maps and make sure that maps can be read in black and white copies.
5.2	Have the land uses on the project site(s) and in the surrounding areas been described and their use and non-use values adequately assessed?	N	-	The expansion project will take place within an already disturbed environment and mining license area.
5.3	Have the *biophysical* components of the environment likely to be affected by the project been identified and described sufficiently for the prediction of impacts?			This information is found in the Scoping report and specialist studies. Reviewers who may only have access to the SEIA report do not see this info.
	5.3.1 Climate (wind, precipitation, temperature, evaporation etc	Y	C	
	5.3.2 Geology (rock type, structure, geochemistry etc)	Y	C	
	5.3.3 Soils (agricultural and rehabilitation potential)	N	-	
	5.3.4 Topography (slopes, sight lines)	Y	C	
	5.3.5 Surface hydrology (flood lines, runoff, flows, supply, users, wetlands, dams, lakes)	Y	C	
	5.3.6 Groundwater (aquifers, yields, permeability, users, gradients etc)	Y	C	
	5.3.7 Hydrochemistry (organic, inorganic, physical)	Y	C	
	5.3.8 Air quality (ambient and seasonal)	Y	C	
	5.3.9 Flora (vegetation types, diversity, endemic, endangered, alien and invasive spp)	Y	C	Some mis-spelling of species names. The use of the term '*critical conservation <u>value</u>*' is unusual – the word *status* is more common in this context.
	5.3.10 Terrestrial fauna (populations, diversity, endemic, endangered, alien and invasive spp)	Y	C	
	5.3.11 Aquatic ecology (populations, diversity, endemic, endangered, alien and invasive spp)	Y	I	Previous studies (mid 1980s) on the aquatic ecology of the area were never completed and therefore the database on which the biodiversity studies were based is incomplete. However it will not affect decisions about this project.
5.4	Have the *social* components of the environment likely to be affected by the project been identified and described sufficiently for the prediction of impacts?			This information is found in the Scoping report and specialist studies. Reviewers who may only have access to the SEIA report do not see this info.
	5.4.1 Social structure of local community	Y	C	
	5.4.2 Demographics	Y	C	

		Relevant? Yes/No	Judgement (C/A/I)	Comments
	5.4.3 Skills	Y	?	
	5.4.4 Employment	Y	I	Needs greater clarification/more details re skills
	5.4.5 Community facilities and services	Y	C	
	5.4.6 Amenities	Y	I	Not much mention about amenities
	5.4.7 Settlement patterns	Y	A	
	5.4.8 Aesthetics (visual, noise, odour, sense of place, air quality, quality of life etc)	Y	C	We feel that the visual assessment is perhaps 'over the top' in relation to its impact and importance. This is of course debatable but our reservations in this regard are really of no consequence in terms of the quality of the report and the decision making process
5.5	Have the *cultural* components of the environment likely to be affected by the project been identified and described sufficiently for the prediction of impacts?			
	5.5.1 Sites of spiritual and/or religious significance	N	-	
	5.5.2 Sites of cultural significance	N	-	
	5.5.3 Sites of historical significance	N	-	
	5.5.4 Archaeological sites	Y	A	
5.6	Have the *economic* components of the environment likely to be affected by the project been identified and described sufficiently for the prediction of impacts?			
	5.6.1 Local, regional and national economic indicators	Y	C	
	5.6.2 Multiplier effect	Y	C	
	5.6.3 Forward and backward linkages	Y	A	
	5.6.4 Local spending	Y	C	
	5.6.5 Sectoral strengthening	Y	I	Need more on impact of more uranium mines.
	5.6.6 Import and export potential	Y	I	Cumulative effect of several uranium mines on imports/exports – to be looked at in the SEA.
	5.6.7 Tax base and revenue generation	Y	A	
	5.6.8 Resource economics	Y	?	Need clear argument about use of freshwater for cooling in the acid plant and the cost-benefit of the use of such water
	5.6.9 Cost-benefit analysis	Y	?	
5.7	Have the authors of the EA Report adequately consulted the latest literature and/or unpublished reports and/or data relevant to the study and cited their sources?	Y	A	Should have consulted relevant planning documents (see comment on point 3.5)
5.8	Have the specialist studies been peer reviewed?	Y	?	Not sure. It is assumed that they were reviewed internally by the Team Leader and there are no specific

		Relevant? Yes/No	Judgement (C/A/I)	Comments
				concerns about their quality
DESCRIPTION OF IMPACTS				
Impact Identification				
6.1	Have direct and indirect/ secondary effects of constructing, operating and, where relevant, after use or decommissioning of the project been clearly explained (including both positive and negative effects)?	Y	A	Need to explain that the decommissioning of the Phase 1 components will be included in an update of the overall mine closure plan.
6.2	Have the above types of impacts been investigated in so far as they affect the following:			The impacts on each environmental aspect were evaluated per project component. It would be useful to present a summary of the combined impacts of the project e.g. on energy, water resources, air quality, noise etc
	6.2.1 Air quality	Y	A	What about the impacts of SO2 emissions in relation to fog?
	6.2.2 Surface Water	Y	C	
	6.2.3 Ground water	Y	C	
	6.2.4 Soils	N	-	
	6.2.5 Noise	Y	I	The specialist noise report was missing, but given the location and setting of the proposed expansion, the omission of this report will not affect decision-making
	6.2.6 Landscape	Y	C	
	6.2.7 Vegetation	Y	C	
	6.2.8 Terrestrial Ecology and biodiversity	Y	C	
	6.2.9 Aquatic ecology	Y	I	Lack of baseline data, but this omission does not affect the conclusions
	6.2.10 Historic and cultural heritage	Y	C	
	6.2.11 Land use	N	-	Existing mine
	6.2.12 People and communities	Y	I	Not clear in the end who will be most affected and how
	6.2.13 Sense of place	Y	C	
	6.2.14 Transportation and traffic	Y	I	This component is lacking from the report.
	6.2.15 A neighbouring country (transboundary impacts)	N	?	Nampower/Eskom power issue?
	6.2.16 Local, regional and national economic indicators	Y	C	
6.3	Is the investigation of each type of impact appropriate to its importance for the decision, avoiding unnecessary information and concentrating mainly on the 5 key issues?	Y	A	The visual assessment may be excessive in relation to the impacts and their importance. Otherwise the study does focus on: socio-economics, water pollution, air

		Relevant? Yes/No	Judgement (C/A/I)	Comments
				pollution, biodiversity and use of natural resources (water and energy), although the latter could have had more focus.
6.4	Are cumulative impacts considered?	Y	?	The issue of cumulative effects is highly relevant and pertinent to this study – not just because of the number of planned and new uranium mines, but also the added impacts of tourism in the region and industrial development in Walvis Bay. While it is recognised that an SEA of the impacts should be done by a third party, the consequences of some of these cumulative effects could have been discussed in the SEIA in more detail. This issue is relevant to all of the EIAs being done by the other mining companies and it featured prominently (as it should have) in many of the public meetings. The report notes that Rössing 'will collaborate with government to build new schools……' (pg xix). This is no doubt required, but the opportunity of cooperating with other mining companies should not be missed. We know from many previous discussions with Rössing that this is their intention, but the point could be stressed in the report.
6.5	Has consideration been given to impacts which might arise from non-standard operating conditions, (i.e. equipment failure or unusual environmental conditions such as flooding), accidents and emergencies? (i.e. risk assessment)	Y	C	Assume these aspects are covered in Rössing's existing contingency plans
Magnitude of Impacts				
6.6	Are impacts described in terms of the nature and magnitude of the change occurring and the nature (location, number, value, sensitivity) of the affected receptors?	Y	C	
6.7	Has the timescale over which the effects will occur been predicted such that it is clear whether impacts are short, medium or long term, temporary or permanent, reversible or irreversible?	Y	C	
6.8	Where possible, have predictions of impacts been expressed	Y	A	Some more quantification of impacts would help in

		Relevant? Yes/No	Judgement (C/A/I)	Comments
	in quantitative terms? Otherwise, have qualitative descriptions been defined?			places, especially in the air quality sections.
6.9	Where quantitative predictions have been provided is the level of uncertainty attached to the results described?	Y	C	
Data and Methods				
6.10	Have the methods to predict the nature, size and scale of impacts been described and are they appropriate to the importance of each projected impact?	Y	C	Described in the specialists' reports
6.11	Have the impacts of the environment on the construction and operation of the project been considered?	Y	C	
Evaluation of Impact Significance				
6.12	Does the information include a clear indication of which impacts may be significant and which may not?	Y	C	
6.13	Has the significance of effects been discussed taking account of appropriate national and international standards or norms, where these are available?	Y	C	
6.14	Where there are no generally accepted standards or criteria for the evaluation of significance, is a clear distinction made between fact, assumption and professional judgement?	Y	C	
6.15	Have the magnitude, location and duration of the impact been discussed in the context of the value, sensitivity and rarity of the resource or environment?	Y	C	
MITIGATION				
Description of mitigation measures (in EIA)				
7.1	Has the mitigation of negative impacts been considered and, where feasible, have specific measures been proposed to address each impact?	Y	I	The SEMP contains recommendations and proposals for environmental management systems rather than specific measures. Of the measures that have been suggested: o Some proposed measures appear to be beyond the scope of Rössing's responsibilities e.g. the economic diversification of Arandis (p xix). o Some proposed measures are perhaps unrealistic e.g. paving the road surfaces to minimise the impacts on air quality at the SK4 pit (p xix).

		Relevant? Yes/No	Judgement (C/A/I)	Comments
				o Some proposed measures are not mitigation measures at all e.g. improving understanding of species life histories (p xx).
7.2	Where mitigating measures are proposed, has the significance of any impact remaining after mitigation been described?	Y	C	
7.3	Where appropriate, do mitigation methods considered include modification of project design, construction and operation, the replacement of facilities/ resources, and the creation of new resources?	Y	A/I	Need more information on e.g. scrubbers at the Acid Plant
7.4	Is it clear to what extent the mitigation methods are likely to be effective?	Y	C/A	Most are well known impacts on the mine and there is a history of reasonably successful mitigation. The mitigation measures regarding job seekers, housing issues and transport need more clarity.
7.5	Has the EA report clearly explained what the costs of mitigation are likely to be, and compared these to the benefits (including the costs of non-mitigation)?	Y	I	Not explicitly. The cost benefit of dry cooling vs wet cooling at the Acid Plant needs to be clarified.
Commitment to Mitigation				
7.6	Have details of how the mitigation will be implemented and function over the time span for which they are necessary, been presented i.e. in an Environmental Management Plan?	Y	A	The system of control has been set out but an actual implementation plan is missing (specific time frame).
Monitoring Proposals				
7.7	Has the EA proposed practical monitoring arrangements to check the environmental impacts resulting from the implementation of the project and their conformity with the predictions made?	Y	I	Very little mention is made of monitoring e.g. stack emissions at the Acid Plant etc.
7.8	Has the EA proposed Limits of Acceptable Change that the developer can use to track impacts and trigger management intervention?	Y	A/I	Yes wrt water quality and borehole pumping
7.9	Does the scale of any proposed monitoring arrangements correspond to the potential scale and significance of deviations from expected impacts?	Y	I	Need more information on the proposed monitoring system and how it will be incorporated into the existing system.
Environmental Effects of Mitigation				
7.10	Have any adverse environmental effects of mitigation measures been investigated and described?	Y	I	No, e.g. impact on carbon emissions if the workforce is housed in Swakopmund.

		Relevant? Yes/No	Judgement (C/A/I)	Comments
7.11	Has the potential for conflict between the benefits of mitigating measures and their adverse impacts been considered?	Y	I	This could be made clearer in the issue of housing and cooling systems at the Acid Plant.
8.	**NON-TECHNICAL SUMMARY**			
8.1	Is there a non-technical summary that will easily be understood by a lay-person?	Y	A	Need to elaborate on the phasing of the project – why it was necessary, overall timeframe for development, sequencing – will activities act in parallel or sequentially?
8.2	Does the summary contain a brief but concise description of the project and the environment, an account of the main issues and mitigation measures to be undertaken, and a description of any remaining or residual impacts?	Y	C	
8.3	Does the summary include a brief explanation of the overall approach to the assessment?	Y	A	Yes, but with cognisance of the comment made in point 8.1 above.
8.4	Does the summary provide an indication of the confidence which can be placed in the results?	Y	C	
8.5	Does the summary indicate whether the project is or is not environmentally acceptable	Y	I	There is no clear message in the executive summary that this project will be environmentally acceptable. A judgment statement by the consultants is required.
9.	**GENERAL APPROACH**			
Organisation of the information				
9.1	Is the information logically arranged in sections?	Y	I	See comments above – essential components of the SEIA are located in separate volumes (scoping report SEIA and the Specialist studies), which makes it difficult at times to comprehend the nature of the impacts, especially if the reviewer does not have all the other documents
9.2	Is the location of the information identified in an index or table of contents?	Y	C	
9.3	When information from external sources has been introduced, has a full reference to the source been included?	Y	C	Some inconsistencies between the text references and bibliography.
9.4	Does the report or appendices contain the Terms of Reference for the EA?	Y	A	Only for the specialist studies. The ToR for the lead consultants are not included in the main report, however the consultant's brief is included in the scoping report.

		Relevant? Yes/No	Judgement (C/A/I)	Comments
9.5	Are the credentials of the report authors and specialists presented, with a clear indication of their respective contributions?	Y	C	The project team and their respective credentials are included in the Scoping report.
Presentation of the information				
9.6	Has information and analysis been offered to support all conclusions drawn?	Y	C/A	Enough to make an informed decision about Phase 1 but lingering questions as to the cumulative effects of Phase 2.
9.7	Has information and analysis been presented so as to be comprehensible to the non-specialist, using maps, tables and graphical material as appropriate?	Y	A	The report needs to include a summary table of the combined impacts of the Phase 1 components.
9.8	Are the maps at an appropriate scale, show co-ordinates, north sign, contours, drainage, settlement, landmarks, administrative boundaries etc in relation to the proposed project site?	Y	I	Most of the figures do not have any coordinates, north arrows or scale bars. Ensure that the colours used can be differentiated in black and white. Need a better regional map showing other mines, Trekkopje construction camp site, roads, pipelines, site of desalination plant, etc (Fig 1 is poor)
9.9	Has superfluous information (i.e. information not needed for the decision) been avoided?	Y	A	Maybe overkill on the visual impact assessment?
9.10	Have prominence and emphasis been given to severe adverse impacts, to substantial environmental benefits, and to controversial issues?	Y	A/I	Prominent problems are indicated, but the level of significance assigned to them is questionable e.g. impact on water, power, accommodation, traffic. Controversial issues (coming out of public participation) are also not highlighted.
9.11	Is the information objective?	Y	A	There is no evidence that the consultants were biased for or against the project in any way, and none have a vested interest in the outcome of the study (i.e. the decision by government to authorise the project or not).
9.12	Are all the specialist studies and appendices present?	Y	I	The Risk Assessment report and the noise impact study are missing. The minutes from the latest public meeting need to be added and addressed.

General Comments

- More emphasis is required on water, energy and radiation impacts – what are the combined impacts of all the Phase 1 and Phase 2 components? This needs to be revisited especially in view of the current and long-term future shortage of supply from Eskom. (pp 63-64) and cumulative effects of Phase 2 on radiation exposure and water use.

- The phasing of the approach and the decision to split the EIA into two phases has not been well explained and leaves doubt about the overall impact of the total project.
- The arguments for housing workers in Swakopmund could be better motivated.
- The motivation to use wet cooling technology rather than dry cooling has not been adequately explained.
- Waste disposal, especially during construction, has not been adequately addressed.
- We do not agree with the findings on p 63 regarding traffic impacts – the road may have sufficient capacity now but what about safety issues when all the new developments in the region are taken into account? The road surface already shows signs of deterioration. What about an increase in traffic from workers housed in Swakopmund?
- Need more clarity on p 25 regarding the advantages of the ore sorting plant e.g. how will the new plant "reduce infrastructure and the volume of vehicular traffic on the mine"? Why will it become economical to process 'waste ore' with the new plant (second bullet on p 25)? Need some quantification re acid needed, predicted lower power and water inputs etc. This section is rather muddled.
- P 25 s 2.1.3a) 1st para –check directions should read south-west and east.
- Whole document: the term "insofar" must include the word "as" after it to make grammatical sense.
- P52 s 5.2.1a and b: muddled and confusing.
- P 54 Fig 14: need an explanatory note regarding the employment ranks.
- P59 s 5.2.6: the whole question of controlling the influx of job seekers could be improved. The authors contend that there are no possible mitigation measures – this is not true. There are several actions that can be taken to minimise the inflow of job seekers e.g. awareness campaigns, recruiting policies, job advertising etc. We agree though that the current unemployment situation makes this something of an uphill battle.
- We are not sure why the specialist air quality study did not use existing Rössing air quality models?

Southern African Institute for Environmental Assessment (Reg.No.T117/2002)
P.O.Box 6322, Ausspannplatz,
Windhoek, Namibia
Tel: +264 61 220579 Fax: +264 61 259183
Email : peter.tarr@saiea.com Website: **www.saiea.com**

SAIEA

ENVIRONMENTAL MANAGEMENT PLAN REVIEW TEMPLATE FOR PROJECTS

Reviewing an Environmental Management Plan requires years of practical, hands-on experience to know what works and does not work, as well as to understand the realities of a construction site. However, not everyone has this level of experience and so this review form provides a structure that helps the reviewer to assess the EMPs various components in a systematic way. The reviewer must try to maintain a sense of perspective as to what is practically possible and appropriate in all circumstances. Ultimately, SAIEA needs to advise the client on whether the EMP makes sense as a whole and if the implementation of the EMP will result in the impacts actually being minimised "on the ground". Does the information provided in the EMP give the decision-maker confidence that the impacts will be managed properly? That is the question that your review must answer.

This review form is divided into the following sections:

1 Preamble
2 Environmental Management Plan - layout
3 Environmental Management Plan - general
4. Environmental Management Plan – specific plans and strategies
5. Monitoring programme
6. General

Instructions to reviewers:

1. For each question, consider first whether the information is relevant to the project. If not, mark it "no" and go to the next question.
2. If the information is relevant, read that section of the EMP and establish whether the information provided is:
   - **Complete or comprehensive (C)**: all information required for decision-making is available. No additional information is required even though more information might exist.
   - **Acceptable or adequate (A)**: the information presented is incomplete, but the omissions do not prevent the decision-making process from proceeding
   - **Inadequate (I)**: the information presented contains major omissions. Additional information is necessary before the decision-making process can proceed.

3 If you feel that additional questions need to be asked (i.e. in addition to those that already appear on the form) feel free to add more yourself. Similarly, feel free to write as much as you like in the comments section.

4 If possible, please complete the form on your PC and email it back to SAIEA. If circumstances prevent this, a hard copy can be faxed, mailed or sent by courier to SAIEA.

5 Please ensure that you apply your highest professional judgement in completing this form.

6 The SAIEA will not alter your evaluation, but reserves the right to differ from your judgement and to inform the client accordingly.

7 Be sure to have read the Terms of Reference for the EMP study before you read the EMP (to ensure that you understand the brief given to the EA consultants by the client)

Name of the project	Final Draft: Social and Environmental Impact Assessment for Proposed expansion project for Rössing Uranium Mine
Country where the project is to be located	Namibia
Name of company which compiled the EA report	Ninham Shand
Date that the EA report was completed	February 2008
Name of reviewer	B Walmsley with input from review workshop delegates
Address of reviewer	PO Box 380, Noordhoek, RSA 7979
Date of review	February 2008

Summary appraisal of the EMP report **(to be completed only after the detailed assessment has been done)**

	Judgement (C/A/I)	Comments
1. Is the report a stand alone document?	A	This document is in draft form and the SEMP will only be finalised once the SEIA has been approved. It is therefore sufficient to provide the authorities with a level of confidence that all environmental impacts will be addressed. Detailed management plans will follow.
2. Is the report structured in logical sections	C	
3. Linkages with the EA report – have all the key issues been addressed?	C	The issues identified in the EIA have been addressed.
4. Are there specific management plans and actions?	A	Appendix A provides detailed management plans for construction but these need to be finalised in the final SEMP.
5. Are the management actions practical, measurable, and auditable?	A	Appendix A provides indicators and targets but many of these need to be further specified in the final SEMP.
6. Are the monitoring plans properly formulated?	A	The new project components will be embedded into the existing Rössing EMS which includes detailed monitoring programmes.
7. Are clear targets, standards and goals provided?	A	Broad statements of intent are provided and Appendix A demonstrates how these will be translated into management actions
8. General layout and user-friendliness	A	The aim of this document is to assure the MET:DEA that all the impacts identified in the EIA will be comprehensively addressed in the final SEMP. To this end, it succeeds in successfully outlining the management framework for environmental management on the mine and the required control measures that will be put into place.

Please grade the overall report as follows: (tick or shade the box of your choice)

☐ **Excellent:** The EMP contains everything required for decision-making on the project. There are no gaps.

■ **Good*:*** The EMP contains most of the information required as far as it is relevant in the particular circumstances of the project; any gaps are relatively minor.

☐ **Satisfactory*:*** The information presented is not complete; there are significant omissions but in the context of the proposed project, these are not so great as to prevent a decision being made on whether the project should be allowed to proceed.

☐ **Inadequate:** Some of the information has been provided, but there are major omissions; in the context of the proposed project these must be addressed before a decision on whether the project should be allowed to proceed can be taken.

☐ **Poor:** The information required has not been provided or is far from complete and, in the context of the proposed project, the omissions must be addressed before a decision on whether the project should be allowed to proceed can be taken.

REVIEW CRITERIA FOR CONSTRUCTION ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

Ref.	Environmental management requirement	Relevant? Yes/No	Judgement (C/A/I)	Comments
1	**Preamble**			
1.1	Is there an introduction setting out: ▪ aims of the EMP ▪ the structure of the EMP; ▪ useful contacts; ▪ applicable legislation, permit requirements, international obligations; ▪ glossary of terms; ▪ list of abbreviations; ▪ environmental and project background information?	Yes	 A C I C I C C	 Not included in this draft –will appear in final EMP Glossary of Terms not in document
1.2	Is there a Table of Contents?	Yes	C	
1.3	Is the scope of the EMP clearly defined?	Yes	C	
1.4	Have the applicable standards, guidelines, limits of acceptable change been identified?	Yes	I	No mention of limits of acceptable change in document. Expect these to be listed in the final EMP.
1.5	Have the issues and concerns of the I&APs been included in the formulation of the EMP?	Yes	C	The SEIA and in turn the SEMP have been informed by the comments and issues raised by the I&APs during several rounds of public participation.
1.6	Has the EMP been sent to the I&APs for comment?	Yes	C	The I&APs were sent the draft SEIA and SEMP for comment in January and follow-up meetings were held to collate their comments on these documents. An issues trail forms part of the SEIA. The final SEIA and SEMP will be sent to MET:DEA for review and at the same time the I&APs will be informed of this fact. The final reports will be placed on the Rössing website and in regional libraries. The final SEMP will be reviewed by the Stakeholder

Ref.	Environmental management requirement	Relevant? Yes/No	Judgement (C/A/I)	Comments
				Representative Group which will be set up at the commencement of the project.
1.7	Does the EMP contain the HSE Policy of the developer?	Yes	C	
1.8	Does the EMP contain an organisational structure which clearly identifies the roles and responsibilities of the personnel involved in the construction of the project and which shows the reporting mechanisms for environmental management during construction?	Yes	C	
1.9	In particular, does the EMP set out the responsibilities for the Environmental Control Officer, including for example the need to sign off work procedures, the need to close out rehabilitated areas before final payment etc	Yes	C	
1.10	Has the procedure for including the EMP in the contractors tender documents been set out?	Yes	C	
1.11	Has the system for environmental adjudication of the environmental components of the tenders been set out?	Yes	C	
1.12	Does the EMP form part of a larger environmental management system e.g. ISO14001, NOSA etc?	Yes	C	The SEMP will form part of Rössing's existing ISO 14001.
2	**Environmental Management Plan – layout**			
2.1	For each impact identified in the EIA, the EMP must provide the following: a) a management objective; b) the management action; c) the target, standard or guideline to be achieved;	Yes	C	

Ref.	Environmental management requirement	Relevant? Yes/No	Judgement (C/A/I)	Comments
	d) the indicator of achievement; e) the responsible person; f) the frequency of such action (if repeated) or the date for completion (in the case of a one-off action).			
2.2	Separate EMPs must be formulated for: ▪ The construction phase; ▪ The commissioning phase; ▪ The operational phase; ▪ The decommissioning and closure phase.	 Y Y Y Y	 C A A A	 Details to be included in the final SEMP. Details to be included in the final SEMP. Project components to be included in a revised closure plan for the mine.
2.3	The EMP should have separate sections for discrete components of the project such as powerlines, workshops, construction camp, borrow pits, access roads, river crossings etc.	Yes	A	These aspects will be covered by the Project Environmental Specifications?
3	**Environmental management plan – general**			
3.1	Is there a Code of Conduct and Induction Programme for all contractors and visitors to site?	Yes	C	
3.2	Is there an environmental awareness and training programme?	Yes	C	
3.3	Is there a specified EMP compliance auditing programme, including site checklists?	Yes	A	Audit checklists will need to be developed for inclusion in the final SEMP.
3.4	Is there provision for periodic review and update for projects with a construction period of over 6 months?	Yes	C	
3.5	Is there a plan to develop detailed standard operational procedures?	Yes	C	
3.6	Is there a set timetable for EMP reporting,	Yes	C	

Ref.	Environmental management requirement	Relevant? Yes/No	Judgement (C/A/I)	Comments
	document distribution and document control?			
3.7	Are the incentives and penalties clearly set out?	Yes	C	
3.8	Is there an EMP for site establishment and programming, including the siting and establishment of camps, laydown areas, access roads, fuel depots, concrete batch plants, fencing and security etc?	Y	-	These aspects will be covered in the PESs.
3.9	Are the issues relating to civil works addressed (i.e. bulk earthworks, foundations, drainage systems etc)?	Yes	-	These aspects will be covered in the PESs.
3.10	Are there management plans for workshops, vehicle and equipment maintenance, including field servicing and repairs?	Yes	-	These aspects will be covered in the PESs.
3.11	Is there a management plan for construction personnel (i.e. employment procedures, housing, transportation, recreation facilities etc)?	Yes	-	These aspects will be covered in the PESs.
3.12	Is there a management plan for the closure of all construction sites, including camps, waste disposal sites, access roads, temporary water supply infrastructure etc?	Yes	C	
4	**Environmental management plan - Specific plans and strategies**			
4.1	Are there detailed plans or strategies in place to address the following: a) vegetation clearance; b) topsoil management; c) spoil management;	 Y Y Y	 A A C	 Mentioned in text but needs to be included in Appendix A, especially plant rescue requirements.

Ref.	Environmental management requirement	Relevant? Yes/No	Judgement (C/A/I)	Comments
	d) erosion control and slope stabilisation;	Y	C	
	e) rehabilitation of disturbed areas;	Y	C	
	f) species protection;	Y	A	Mentioned in text, but needs to be added to Appendix A
	g) noise management;	Y	C	
	h) air quality, particularly dust, gas and odour;	Y	C	
	i) water quality;	Y	C	
	j) stormwater control and runoff;	Y	C	
	k) effluent management;	Y	C	
	l) hazardous waste management (including transportation, storage, handling and disposal);	Y	C	
	m) non-hazardous solid waste management (including transportation, storage, handling and disposal);	Y	C	
	n) non-hazardous liquid waste management (including transportation, storage, handling and disposal);	Y	C	
	o) sanitation;	Y	C	
	p) land management;	Y	C	
	q) archaeological, heritage and cultural resources;	Y	A	Mentioned in text, but needs to be added to Appendix A
	r) visual impact management;	Y	C	
	s) traffic management;	Y	C	
	t) tracks and access roads;	Y	C	
	u) disruption of essential services and public conveniences;	Y	C	
	v) risk management, including emergency plans and on-site remediation;	Y	C	
	w) public consultation and disclosure plan;	Y	C	
	x) communications and complaints procedures;	Y	C	
	y) vibration and blasting management	Y	C	
	z) recruitment of labour;	Y	A	
	aa) work hour plan;	N	-	
	bb) borrow pits;	Y	I	Where will building sand be extracted from?

Ref.	Environmental management requirement	Relevant? Yes/No	Judgement (C/A/I)	Comments
	cc) and any other aspects identified in the EIA requiring management.			
4.2	Is there a resettlement plan?	N	-	
4.3	Is there a compensation plan for loss of residences, amenity, agricultural land, property, and livelihood options?	N	-	
4.4	Is there an HIV/AIDS awareness programme in place?	Y	C	
4.5	Is there a health and safety awareness programme in place amongst the local community?	Y	A	Yes on the mine and in Arandis through the Rössing Foundation although this is not written up in the EMP
4.6	Are there emergency procedures in place for disasters such as spills, fires, explosions, floods, accidents, dam failures etc?	Y	C	
5	**Monitoring Programme**			
5.1	Have monitoring programmes, setting out: what has to be monitored, where it has to be monitored, by whom, how often, the monitoring/sampling protocols to be followed, the collection, labelling, storage and transportation of samples, and the sampling laboratories to be used (including an indication of whether the laboratory is certified or not), been drawn up for:			Monitoring of the impacts of the new project components will become an integral part of Rössing's existing EMS where sampling methods, protocols etc are specified. Although not explicitly mentioned in this draft SEMP, these requirements are all already in place at the mine. Some aspects are not mentioned however e.g. vegetation monitoring.
	a) soil;	N	-	
	b) surface water;	Y	A	
	c) ground water;	Y	A	
	d) dust;	Y	A	
	e) gases;	Y	A	
	f) noise;	Y	A	
	g) vegetation;	Y	I	
	h) terrestrial fauna (indicator species);	Y	I	

Ref.	Environmental management requirement	Relevant? Yes/No	Judgement (C/A/I)	Comments
	i) aquatic biota; j) radiation; k) rehabilitated areas; l) presence of invasive species; m) erosion; n) visual impact; o) Local spending; p) Clinic use; q) School development; r) Crop production; s) Economic development in the villages; t) Community health monitoring; u) And any other impact identified in the EA that needs to be monitored.	N Y Y Y Y Y Y N Y N N N	- A I I A A I - I - - -	
5.2	Has a procedure been set out detailing the contents of the monitoring reports and the format required for the presentation of monitoring data?	Y	A	Will be included in the mine's overall monitoring programme as per the existing EMS.
6	**General**			
6.1	Has the EMP been clearly laid out?	Y	C	
6.2	Are diagrams, tables, maps and other illustrative materials used where appropriate?	Y	C	
6.3	Is the quality of the above-mentioned illustrative material sufficient to add value to the EMP e.g. is the map scale suitable? Are the units provided in the tables?	Y	A	Assume that detailed site plans will be included in the final SEMP.
6.4	Are references provided and correctly acknowledged?	Y	C	
6.5	Is the English and grammar of a good enough quality to be understood?	Y	C	

Ref.	Environmental management requirement	Relevant? Yes/No	Judgement (C/A/I)	Comments
6.6	Has the report been laid out logically in sections?	Y	C	
6.7	Is the EMP consistent with the EIA and with the final project design?	Y	C	
6.8	Does the EMP comply with internationally recognised standards of best practice?	Y	A	Sufficient for a draft. The management actions and layout of Appendix A are recognised as best practice.

General Comments:

RIO TINTO

Technology and Innovation
6 St James's Square
London SW1Y 4LD

Memo

Date:	28 February 2008	**Project**:	Rössing Uranium - Phase 1 Expansion
To:	Rainer Schneeweiss, Supt Sustainable Development, Rössing Uranium Ltd		
From:	Dr Geoff Ricks, Principal Advisor, Environment T&!		
Subject:	**Review of SEIA and SEMP**		

Dear Rainer,

I've read through the SEIA, SIA and the SEMP and looked at some of the other material, but because of limited time, my review is not exhaustive. My aim has been to review the documents from the perspectives of the Namibian regulators, Rio corporate expectations and good international SEIA practice. I would expect Rössing and its consultants to use my comments as they see fit and I hope they are useful.

Principal comments

Overall, the documents are of a high quality and cover the expansion in sufficient detail for all potential impacts to be addressed. Nevertheless, I feel the SEIA contains rather a high level of qualitative analysis, and there is a general lack of baseline and predictive data. In addition, a number of the subjective statements could be supported by quantitative data, even though these may not always measure the impact directly. I have noted some of these in my comments below. It is clear that the outstanding issues relate to the future of Arandis, the potential effects upon biodiversity around the proposed SK4 pit, and the commitment from Rössing in the SEMP.

The long term viability of Arandis after Rössing closes is a central premise on which much of the socio-economic mitigation is based, and there now seems to be additional support for this scenario because of other mining operations that are developing in the region. However, for such a (relatively) isolated community to succeed and become self-sufficient, it must reach a much larger critical mass in terms of population, services and alternative investment, sufficient to cushion the effects from closure of RUL. Unless the additional economic impetus from the current expansion is used to promote the expansion and diversification required, I don't quite see where else such a large injection might come from in the immediate future or in the period before 2026. Furthermore, although there is apparently a current vision for Arandis, it is not clear how the SEIA/SEMP proposals support this and/or align with its objectives.

The biodiversity aspects are important in terms of Rio's biodiversity strategy and commitment, and the local ecology must be conserved and enhanced as far as is practical. However, it is clear that the understanding of the ecological requirements of the vulnerable species and the functioning of the ecological systems that support them is far from complete. Under the circumstances transplanting the more critical plant species is a reasonable mitigation proposal, but I don't agree that further research or monitoring is a valid mitigation measure, ***unless*** it is clearly tied to a

practical aspect, such as habitat creation or enhancement, obtaining a better understanding of how to successfully move plant and animal species from impacted areas, or how to ameliorate areas that are not directly disturbed, but perhaps subject to dust deposition or a change in hydrological regime.

The SEMP is presumably based on a generic model that meets the expectations of the Namibian regulators but as it also takes account of the Rössing HSEQ system, I assume its structure and objectives are appropriate to the Rössing operation. However, almost without exception, the actions are in fact recommendations, for example: "Rössing ***should*** undertake XXXX". As a regulator I would expect to see a greater commitment in the SEMP and more statements of intent, such as: "Rössing ***will*** undertake XXX". However, whilst many of the recommendations are sound and sensible, if they are to become commitments it would be sensible for Rössing personnel to confirm they agree with current Rössing policies and strategy. In addition, some could entail significant resource or financial commitments, for example those related to training and improving the skills base in other economic sectors or expanding the RUL wellness programme to the wider community. In this respect, I suggest a further analysis of the likely costs of implementing the SEMP, both during construction and operations, is made.

Specific comments

Item	SEIA page/ section	Comment
1	p 18, 2.2.1, last bullet	Is approval of the storage handling facility at Walvis Bay likely to delay the expansion (or even be rejected)?
2	p 21, 2nd equation	How much SO_2 will be lost through the stack?
3	p 21, para 4	How certain is RUL that the Nam Water desalination plant will be on-stream to provide the water for the acid plant, and can the existing pipeline from Swakopmund carry the additional amounts? Is there a viable alternative?
4	p 21, last para	Are the side-tipping railcars the specialised railcars mentioned on p18? They will presumably be bulk-loaded, so what are the handling arrangements after tipping – FEL or similar?
5	p 21, para 1	How many days supply of S is needed (25 days at mine + ? days at port) to ensure no breaks in supply? Can we be more precise about the storage area – "*possibly* walls on 3 sides"?
6	p 22, para 2	Begs rather a lot of questions – what "powdered raw materials", what "handling procedures", and how will liquid/gaseous feeds actually be managed? I suggest either be more specific or omit the paragraph.
7	p 22, 2.1.1	Suggest a description of the acid storage facility is included in this section.
8	p 22, 2.1.2 para 3	I suggest "occupational hazards" should be "occupational *health* hazards". 3rd sentence "Occupational *risks"* are low because of minimal operator presence – the hazards are the same. Last sentence – what does the ore sorter contribute – hazard or risk?
9	p 22, 2.1.2 a)	I find this section a bit confusing as it mixes historic activity with current proposals. Could the latter be dealt with separately and a simple flow sheet from RoM ore to waste dump included?
10	p 22, last para	1st sentence - presumably reduction in silica content of ore feed is a good thing – let's say so. 2nd sentence – average *uranium* grade would increase
11	p 24, b)	Both paragraphs say essentially the same thing. Do we need the conveyor number details?
12	p 24, c)	1st bullet – this is the first mention of truck scanning – should it have been described in section a) as part of the context? The "obvious advantage" of reducing traffic movements is not clear and needs a bit more explanation. 2nd – 4th bullets – these also need further explanation. I think I'd say that because the ore sorter selects the ore with the most uranium the following

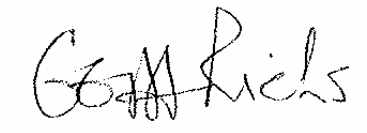
Item	SEIA page/ section	Comment
		economic and environmental benefits occur – and then list them in that order rather than mixing them up.
13	p 25, 2.1.3 a)	I think this could be made a bit more concise and precise.
14	p 26, 2.1.3 b)	Why don't we start by saying that we will be using the same mining techniques as the SJ ore-body (I assume we are)? This would at least avoid any misunderstandings that the mining method for SK4 was something special or unusual.
15	p 27, c) 2nd para	Instead of saying the visual effects "will need to be considered" I suggest we say the visual effects are considered in section XXX and give the reference.
16	p 29, 2nd para	Is this paragraph needed?
17	p 29 – 31, 2.2.2 a), and b)	We are not really dealing with conventional SEIA alternatives because the site locations are restricted and the technologies used are relatively conventional and presumably best available technology (BAT). However, I think more could have been made of the options for materials handling, the choice of the acid plant, for example vis-à-vis efficiency of S conversion or general performance in terms of emissions etc, perhaps using a simple table based on the findings from the SNC-Lavalin options study. Justification for the ore sorter, and details of the options examined are presumably in the feasibility study.
18	p 36, list of bullets	I think we should add temporary employment to the list.
19	p 38, 2.3.4	Add *operational* to the section heading.
20	p 38, b)	Could we point out that the ore sorter will reduce the volume of tailings, even though there is a concomitant increase in waste rock disposal?
21	p 42, 3.2	3rd bullet – this didn't print correctly on my printer, but I don't know if you can fix this in the document.
22	p 43	I think it would be a good idea to indicate attendance at each of the public meetings (unless there is a good reason not to) and also provide an indication of the total number of IAPs. This will provide some context for the interest from the general public and show the level of interest from local communities.
23	p 52-53, 5.2.1 and 5.2.2	An increase in 700 jobs should result in a significant increase in the level of economic activity. Can this be estimated, at least to a general order of magnitude, for example based on the likely total salaries for the 700 in 2009 and a typical economic multiplier for the region (other mines have used figures varying from 1-3). The question of how this will affect Arandis or Swakopmund is a bit more difficult to assess, unless some comparative economic activity data is available from the socio-economic baseline study. However, even without the baseline data, it will give the regulators some idea of what could be expected. Training is also a key component for the ongoing success of RUL and its employees, but is it possible to give some idea of current schemes and programmes of technical training and how these might need to be supplemented? Is there any possibility that the Namibian Government could require mining companies provide formal numeracy and literacy classes and further technical training for all their employees, as there is in South Africa?
24	p 55, 5.2.3	The discussion would be helped by the presentation of some quantitative data about the dispersion and predicted ambient levels of the pollutants mentioned and the likely exposure of local people to these. Data could be extracted from the air quality and water studies or cross-referenced to the relevant environmental sections of the SEIA. Data from the existing operations would also be quite helpful.

Item	SEIA page/ section	Comment
25	p 56-57 5.2.4	It would be helpful if specific conclusions are drawn from table 4 that can be developed and reflect the RUL actions. As Swakopmund and Walvis Bay are large conurbations (compared with Arandis) it could be argued that any effects are bound to be less extreme. Until Arandis is able to establish a critical mass of people, economic activity and alternative investment sources to those from RUL, it will never be capable of developing into self-sustaining community that can survive RUL closure. This begs the question that is it realistic to expect Arandis to survive once RUL has closed?
26	p 60-61	Is it possible to estimate the likely numbers of school-age children from 700 new workers, based on the number and ages of children in the families of the current workforce? This would start to define the characteristics of the problem that RUL faces. How likely is it that RUL will face difficulties with recruitment because of the lack of places in local schools? If this is an issue it suggests that RUL should take a more pro-active role with the Government than is suggested. If the Government doesn't deliver new schools what happens then?
27	p 67, para 4	Might be good to include more specific reference to the HAZOP findings and Rio plans/procedures for evacuation/isolation etc in the case of a fire on site.
28	p 71, Fig 16	As the stack is probably no more than 5m in diameter, how likely is to be visible to the naked eye from the B2 road (especially from a moving car)?
29	p 73, 5.3.5	I would have thought that ambient noise is not an issue as the nearest receptors (in Arandis) are so far away (4-5km) that any increases in noise levels in the plant would not be discernible, even at night. Some predictive numbers and existing noise levels to demonstrate this would be useful. The reference to Occupational Noise standards in Namibia should also refer to the Rio Occupational Health standards for noise protection and use of ear defenders/PPE.
30	p 77, b) Mitigation	RUL needs to carefully consider if the statements about paving roads to reduce dust in the SEIA and the SEMP constitute a statement of intent and a firm commitment. The cost of constructing and paving the 35m wide road will be high ($1-2 million/km?), and the benefits may not justify this expense.
31	p 77-78, 5.4.2	Are there any actual measurements of ambient dust and radon concentrations in the air around the existing operation? This section seems to be somewhat theoretical and data of current or historic concentrations would assist the arguments, one way or the other.
32	p 82, 5.4.5	Again reference to Rio Occupational Health standards for noise protection should be made.
33	p 93 5.5.5	Will mining occur at night? If not, why reference the rural night-time noise limit? Some estimates of noise attenuation and predicted noise levels in Arandis at the start of mining and once the operation is within the pit, together with actual noise levels in Arandis would be helpful. Blasting seems to be a major concern, but there will be more noise over a longer period from hauling the ore.
34	p 96 a)	Is it possible to include a plan of all sampling locations?
35	p 97, Table 6	Not clear what the priorities in the table – critical, major, essential, medium, significant or minor - represent. Can a footnote be added to the table?
36	p98, b)	para 2. This identifies 44 high priority species – how do they relate to Table 6? Are the 7 species in the rocky hillside critical or high priority and what is the difference? para 3. I'm not sure that classifying the impact as regional can be sustained on the evidence presented about the distribution of the species in question.

Item	SEIA page/ section	Comment
		The impact is certainly local, insofar as habitat will be destroyed and other areas disturbed sufficiently to affect these animals, but it is not clear how these (or other species) in the wider Erongo region could or will be affected. Obviously total numbers will be reduced, but will this adversely affect breeding pools or food networks over such a wide area? Can we be a bit more specific – are the specialists able to provide an informed opinion?
37	p 99, Mitigation	Transplanting the important plant species is a sensible mitigation option, but can the specialists indicate the extent of the eastern hills biotope, say within a 5km radius of the SK4 pit so that RUL can assess the best areas to relocate the plants? It would also be useful to indicate if transplanting will cause any ecological imbalance in the receiving areas. Monitoring and research is not an acceptable mitigation measure unless it relates to specific objectives that are – see Principal Comments above.
38	p100, Dust accumulation	The inference from the limited soil crust activity that has been observed is that this is caused by dust deposition now and in the past, although this is not absolutely clear from the information presented. Presumably the dust deposited has come, at least in part, from RUL activity, together with ambient dust generated during particular climatic conditions. The important question now is how the additional dust from the SK4 operation could add to this and will it further adversely affect the soil crust, either because of an increase in total deposition or from the specific chemistry of the SK4 dust particles (in comparison with 'natural' dust). To help decide this, are there any historic measurements of dust deposition and dust chemistry collected by RUL that are relevant, or is there any evidence from other similar sites in the country?
39	p 106, section 5.7	Cumulative impacts are always difficult to estimate because of the difficulties in fully understanding the mechanism and dynamics of effects from other sources. The discussion about wider cumulative impacts is fine, but I would have thought that one important aspect to consider is the cumulative effects from the expansion project on the effects already created by the existing operation. These cumulative effects/impacts would primarily be an increase in intensity or an increase in the spatial extent – I don't see any fundamentally different types of impact occurring. As a regulator, I would want to understand this aspect better, but it has not been dealt with in any depth in this discussion.
p 111 /112	Table 8	Can we add a summary sentence or short paragraph that sums up the residual impacts and the effectiveness of the mitigation in reducing the severity of the majority of impacts? The same summary could be included in the Executive Summary.

I don't have any specific comments on the SEMP or the SIA documents, but if you or Rössing need any clarification of the above please don't hesitate to contact me.

Best regards



Dr Geoff Ricks,
Principal Advisor Environment