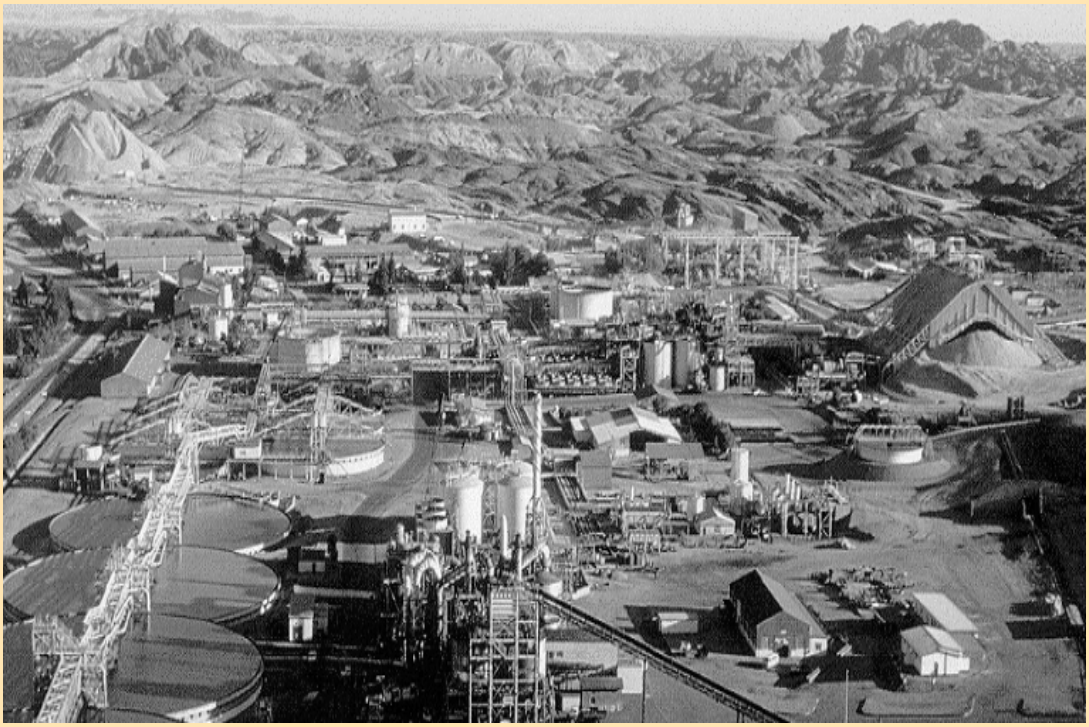
SCOPING REPORT

Report No: 4492/ 402239

SOCIAL AND ENVIRONMENTAL IMPACT ASSESSMENT: PROPOSED EXPANSION PROJECT FOR RÖSSING URANIUM MINE IN NAMIBIA: PHASE 1 ~ Acid Plant, Ore Sorter & SK4 Pit

NOVEMBER 2007



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Report No: [4492/402239]

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PROJECT DETAILS

TITLE	Social and Environmental Impact Assessment: Proposed Expansion Project for Rössing Uranium Mine in Namibia: Phase 1 ~ Acid Plant, Ore Sorter and SK4 Pit
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ACRONYMS

µSv/a	µ = a metric prefix meaning 10^{-6} (one millionth); Sv = Sievert (an SI unit used for measuring the effective (or "equivalent") dose of radiation received by a human or some other living organism.) per a = an international symbol for year
ARD	Acid rock drainage
As	Arsenic
cm	Centimetre
CSIR	South African Council for Scientific & Industrial Research
DEA	Directorate of Environmental Affairs (MET)
DRFN	Desert Research Foundation of Namibia
EAP	Environment Assessment Policy of 1994
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
F	Fluorine
FPR	Final Product Recovery
GDP	Gross Domestic Product
Grindrod Limited	Lessee to Namport for the Bulk Terminal facility in the Port of Walvis Bay
H_2S	Hydrogen Sulphide
H_2SO_4	Sulphuric Acid
ha	Hectares
HCl	Hydrochloric Acid
Hg	Mercury
HIA	Heritage Impact Assessment
HIV/AIDS	Human Immune Virus / Acquired Immune Deficiency Syndrome
I&APs	Interested and Affected Parties
IAEA	International Atomic Energy Agency
ICRP	International Council for Radiological Protection
ISO 14 001 EMS	International Standards Organisation 14001 Environmental Management System
IUCN	The World Conservation Union
kg.t-1	One kilogramme per tonne
kg/t	Kilograms per tonne
km	Kilometres
km/h	Kilometres per hour
kt/a	Kilotonnes per annum
kV	Kilovolts
kWh	Kilo Watt hour
m	Metres
m^3	Cubic metres
m^3/day	Cubic metres per day
m^3/h	Cubic metres per hour
mamsl	Metres above mean sea level

MET	Ministry of Environment and Tourism (national environmental authority)
MET:DEA	Ministry of Environment and Tourism's Directorate of Environmental Affairs
mg	Milligrams
mg.Nm-3	Milligrams per normal cubic meter
mm	Millimetres
Mm^3	Million cubic metres
MME	Ministry of Mines and Energy
mSv/a	Millisieverts per annum
Mt	A metric unit of mass or weight equal to one million metric tons
MW	Megawatt
N$	Namibian Dollar
Namport	Namibian Ports Authority
Nampower	Namibian Power Utility (electricity generation and supply)
Nm^3	Normal Cubic Meter (a unit of mass for gases equal to the mass of 1 cubic meter at a pressure of 1 atmosphere and at a standard temperature, often 0 °C or 20 °C
NOx	Nitrogen Oxides
O_2	Oxygen
PID	Public Information Document
ppm	Parts per million
PPP	Public Participation Process
PRU	Physiographic Rating Units
RUL	Rössing Uranium Limited
SAIEA	Southern African Institute for Environmental Assessment
SAPP	Southern African Power Pool
Se	Selenium
SEIA	Social and Environmental Impact Assessment
SEIR	Social and Environmental Impact Report
SEMP	Social and Environmental Management Plan
SO_2	Sulphur Dioxide
SO_3	Sulphur Trioxide
t	Tonnes
ToR	Terms of Reference
tpd	Tonnes per day
U_3O_8	Uranium Oxide
US$	American Dollar
V_2O_5	Vanadium Pentoxide

EXECUTIVE SUMMARY

BACKGROUND AND INTRODUCTION

Rössing Uranium Limited (RUL) has operated an open pit uranium mine in the Erongo Region of Namibia since 1976. As a result of an increase in uranium prices on the international market in recent years, RUL is able to consider the possible financial benefit from an expansion of its operations. The anticipated closure date of the Rössing uranium mine is consequently being re-evaluated in terms of overall feasibility, i.e. including social and environmental criteria.

The maximum extent of the envisaged expansion would entail the opening of two new pits, with concomitant new disposal areas for waste rock, new or expanded processing plants, additional tailings dam capacity, and an increase in staff numbers and facilities. In terms of the Namibian Constitution and related environmental legislation, in particular the Environmental Assessment Policy and the Minerals Act, the proposed expansion activity would require authorisation from the responsible authorities before it can be undertaken. A Social and Environmental Impact Assessment (SEIA) has thus been commissioned by RUL for their proposed expansion project.

The present Scoping stage will be followed by the SEIA Report stage, which will culminate in a comprehensive document, the Social and Environmental Impact Report.

This Scoping Report comprises the following:

- A contextualisation of the policy, legislative and methodological frameworks within which the SEIA needs to be undertaken;
- A description of the proposed activities that form the subject of the SEIA process;
- A detailed description of the affected environment;
- A description of the possible social and environmental impacts that have been identified to date;
- A detailed description of the public participation process that underpins the current SEIA; and
- An identification of alternatives, a description of aspects recommended for further study during the subsequent SEIA Report stage, and a recommended way forward to the next stage of the process.

PROJECT DESCRIPTION

It is foreseen that the expansion project will comprise two phases. The subject of the present Scoping Report is part of Phase 1 of the SEIA and addresses the following components:

- The establishment of an on-site sulphur burning sulphuric acid production plant with associated sulphur storage and transportation between Walvis Bay and the Rössing mine by rail;

- The establishment of a radiometric ore sorter plant with associated reject rock disposal facilities;
- An open pit development known as SK4, within the larger area designated as SK;

The remaining expansion project components will be dealt with as Phase 2 of the SEIA and will be subjected to a separate process and different programme. Interested and Affected Parties (I&APs) registered for the present Phase 1 of the SEIA will be kept informed once the Phase 2 process is launched.

THE PUBLIC PARTICIPATION PROCESS

Engagement with I&APs forms an integral component of the SEIA process. I&APs will have an opportunity at various stages throughout the SEIA process to gain more knowledge about the proposed project and to provide input into the process.

Stakeholders and I&APs have had several opportunities to participate in the Scoping stage of the present SEIA process and the useful inputs received are acknowledged. The following are the most noteworthy of the issues raised by I&APs to date, as derived from records of stakeholders' inputs:

- Employment opportunities;
- Workplace health and safety concerns, including air and water pollution and noise;
- Housing implications;
- Services such as schools, medical care and water availability;
- Effects on the regional and local economy, including tourism;
- Negative social impacts from newcomers seeking work;
- Possible human and environmental threats from transporting, storing and processing sulphur and sulphuric acid, in and between Walvis Bay and the mine site;
- Possible dust and noise threats to humans and the environment from the ore sorter plant and from the SK4 mining area, including waste rock management;
- Biodiversity implications, particularly in the SK4 mining area;
- Supply, storage, application, runoff and reuse of water, particularly in the SK4 mining area;
- Regional implications of bulk water supply;
- Visual impacts of the acid plant, ore sorter or SK4 mining activities; and
- Energy use.

The objectives of public participation will be maintained throughout this SEIA process. These are to provide information to the public, identify key issues and concerns at an early stage, respond to the issues and concerns raised, provide a review opportunity, and document the process properly,

The proposed project was advertised between 14 and 20 August 2007 in national, regional and local newspapers and on RUL's website, in order to make as many people as possible aware of the project and associated SEIA process. This was done to elicit comment and register I&APs from as broad a spectrum of the public as possible. Once an I&AP has been registered, they will be kept informed of progress throughout the SEIA process.

A Public Information Document (PID) was widely distributed during the initial public participation process and was also available on the website. In addition to the advertising and PID, key stakeholder meetings were held with a wide array of interest groups and organisations. All the issues and comments from these meetings have been noted in response sheets and responded to.

Feedback from three open house and public meetings held in mid-August 2007 have been incorporated into the response sheets and taken into account when finalising the Scoping Report. The Scoping Report will be made available and registered I&APs will be notified of such availability by letter and via media advertising.

During the SEIA stage that will follow the present Scoping stage, public participation and engagement will comprise the following:

- engage with I&APs who were not able to attend the Scoping stage participation process,
- present the findings of the draft SEIA Report,
- register any additional I&APs,
- note and respond to questions and/ or issues of concern, and
- investigate issues at greater depth where the need for this has been indicated.

All I&APs will be informed of the availability of the draft SEIA Report, the period for review and the venues where the report will be available.

PROJECT LEVEL ALTERNATIVES

The following alternatives have been identified during the Scoping stage of the SEIA process, to be taken forward to the next stage for detailed assessment:

- Acid plant and related handling, storage and transport of sulphur feedstock:
  - Design of handling and storage facility in Port of Walvis Bay
  - Design of rail wagons required for sulphur transport
  - Stack height of acid plant
- Radiometric ore sorter plant:
  - Vertical or horizontal arrangement of pre-screening units
  - Suitable disposal site for reject rock
- SK4 ore body:
  - Haul road design and alignment
  - Waste disposal
  - Water management

These aspects of the listed SEIA project components will be subjected to the consideration and evaluation of alternatives in the assessment stage of the process. The aspects that do not have alternatives will nevertheless also need to be assessed. This will be done by means of determining that acceptable levels of mitigation are available, or by confirming that the best available environmental design or practice is being applied.

IDENTIFIED IMPACTS

Apart from the screening of alternatives, the present scoping has identified several potential impacts that are proposed to be assessed in the next stage. Each of these impacts or issues will be the subject of a specialist study. The following areas of specialisation have been identified for detailed assessment in the next stage:

- Socio-economic impacts;
- Air quality study;
- Quantitative risk assessment;
- Visual impact assessment
- Radioactivity and public dose assessment;
- Biodiversity;
- Archaeology (i.e. heritage);
- Water resource management;
- Noise and vibration study; and
- Mineral waste and tailings management.

Specifically, the Scoping Report has determined the scope of work and level of detail of each of the above investigations. The proposed scope of work for the specialist studies are provided and the mitigation measures that will be proposed will inform construction and operational phase Social and Environmental Management Plans.

CONCLUSION AND WAY FORWARD

This Scoping Report has been informed by the issues and concerns raised by the public participation process to date, as well as issues raised by authorities, the proponent (RUL) and by the environmental team. It has presented the context and rationale for the project, described the project components and screened the suite of possible alternatives and environmental impacts.

With the Scoping Report now in the public domain, and having been submitted to the Ministry of Environment and Tourism's Directorate of Environmental Affairs for their consideration, the process can move into the SEIA stage.

9 November 2007

1 INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Rössing Uranium Limited (RUL) has operated an open pit uranium mine in the Erongo Region of Namibia since 1976. Figure 1 provides a locality map for the mine. Although of considerable extent, the Rössing ore body is of a low grade and consequently large volumes of rock have to be mined and processed to extract the powdered uranium concentrate that is the final product.

As a result of an increase in uranium prices on the international market in recent years, RUL is able to consider the possible financial benefit from an expansion of its operations. The previous mine plan predicted an operational period ending in the year 2016. According to this plan, a sustainability assessment was undertaken and approved in 2005. RUL is now looking at a 2026 mine plan and consequently, the associated environmental and social issues will be reviewed.

The maximum extent of the envisaged expansion would entail, in summary, the opening of two new pits, with concomitant new disposal areas for waste rock, new or expanded processing plants, additional tailings dam capacity, and an increase in staff numbers and facilities.

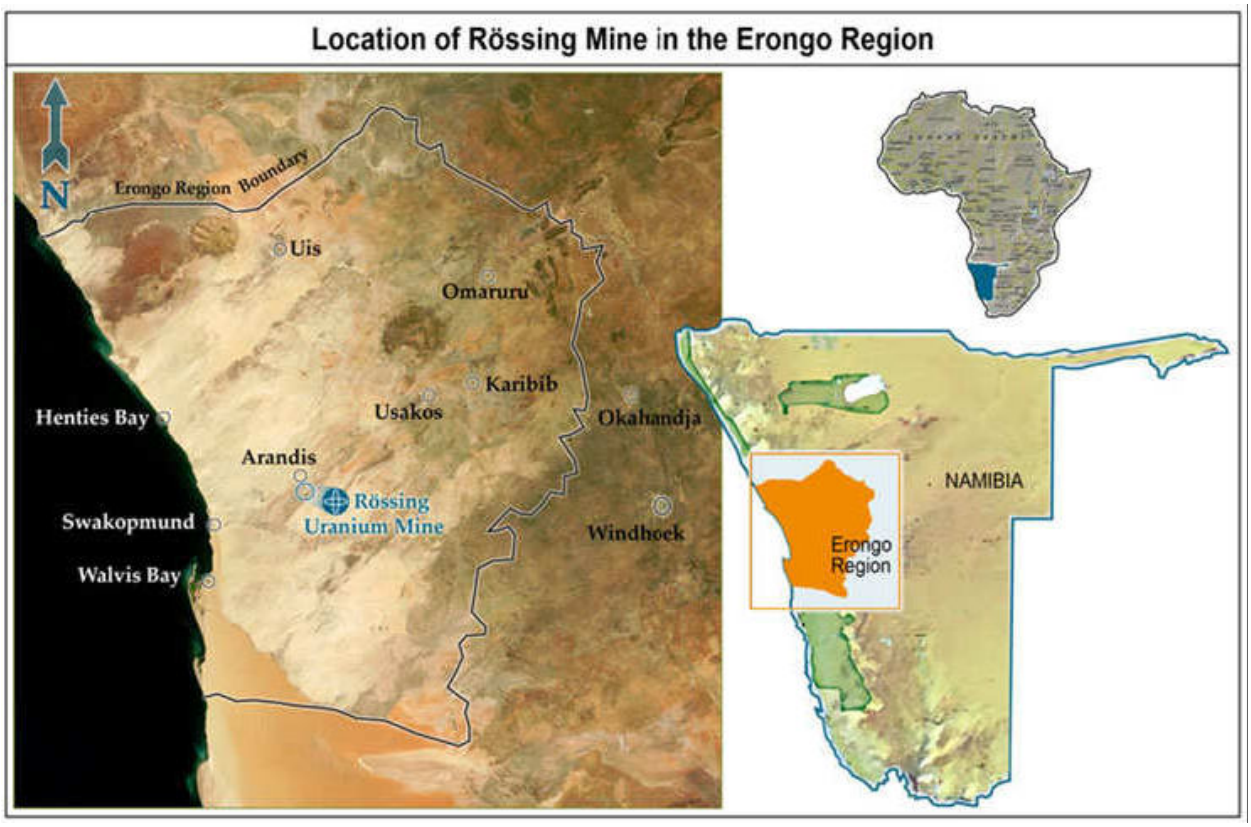


Figure 1: Locality map (source RUL)

In terms of the Namibian Constitution (GRN 1990) and related environmental legislation, in particular the Environmental Assessment Policy (MET 1995) and the Minerals Act (No. 33 of 1992), the proposed expansion activity would require authorisation from the responsible authorities before it can be undertaken. Insofar the environmental acceptability of RUL's proposed expansion project is concerned, the Ministry of Environment and Tourism's Directorate of Environmental Affairs (MET:DEA) would need to issue a clearance for such expansion.

A Social and Environmental Impact Assessment (SEIA) has thus been commissioned by RUL for their proposed expansion project, as required by the Environmental Assessment Policy (MET 1995) but also informed by the principles of Namibia's Environmental Assessment and Management Act, as well as the internal standards and guidelines prescribed by Rio Tinto, RUL's parent company. MET:DEA's clearance would be based on the outcomes of the SEIA and this report serves to document the Scoping stage of the SEIA process. Once MET:DEA has issued a clearance for the project, the responsible sector ministry, i.e. the Ministry of Mines and Energy (MME), will be able to consider awarding the necessary mining licence to RUL.

It is important to note that only three specific components of RUL's expansion project are the subject of the present Scoping Report, *viz*. a **sulphuric acid plant** and associated storage and transport, a radiometric **ore sorter plant** and the mining of an ore body known as **SK4**. These components are referred to as Phase 1 of RUL's expansion project. The remaining expansion project components, as described in Section 1.5 below and referred to as Phase 2, will be dealt with in a separate process that is subject to a different programme. I&APs registered for the present Phase 1 of the SEIA will be kept informed once the Phase 2 process is launched.

The SEIA process and its sequence of supportive documentation, as envisaged for the specified components of RUL's expansion project, are illustrated in Figure 2 below.

This Scoping Report comprises the following:

- A contextualisation of the policy, legislative and methodological frameworks within which the SEIA needs to be undertaken, i.e. an overview of the legal requirements which have necessitated the assessment, as well as a review of other current/ pending legal requirements that have a bearing on the activity, as well as the obligations associated with the various protocols/ conventions to which RUL subscribes.
- A description of the proposed activities that form the subject of the SEIA process, i.e. details of the processes envisaged, which also considers alternative project actions.
- A detailed description of the affected environment and an overview of the findings of previous and current prefeasibility and planning studies, assessments that have been undertaken in the past and other specialist studies.
- A description of the possible social and environmental impacts that have been identified to date, i.e. during the present Scoping stage, and the means whereby such impacts will be subjected to methodological evaluation during the subsequent SEIA Report stage, insofar their significance, mitigation potential and possible acceptance are concerned.
- A detailed description of the public participation process that underpins the current SEIA.

- An identification of alternatives, a description of aspects recommended for further study during the subsequent SEIA Report stage, and a recommended way forward to the next stage of the process.

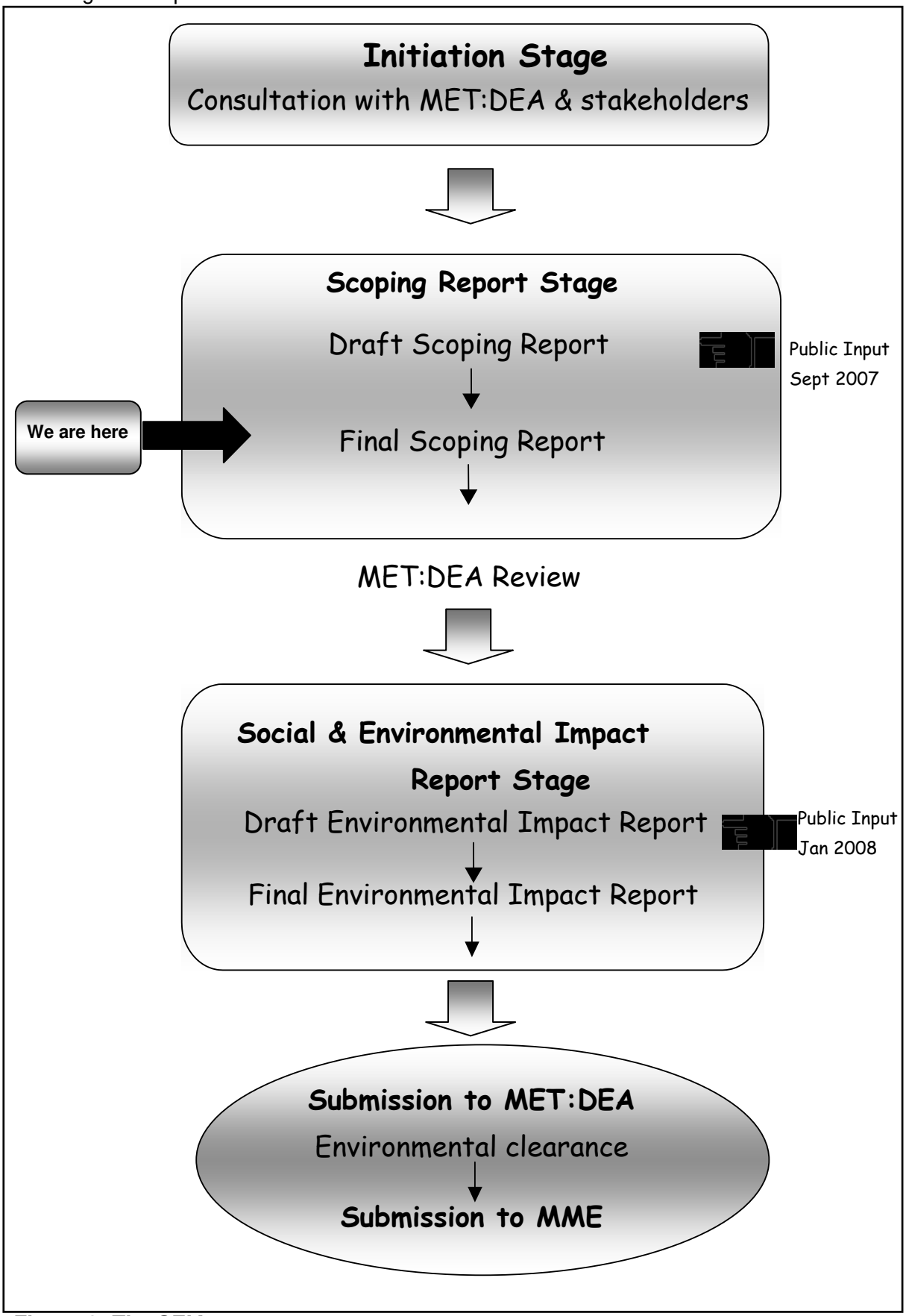


Figure 2: The SEIA process

As mentioned, the present Scoping stage will be followed by the SEIA Report stage, which will culminate in a comprehensive document, the Social and Environmental Impact Report (SEIR). A Social and Environmental Management Plan (SEMP), as described in Sections 6.1 and 6.2 below, will be included in the SEIR, to provide a comprehensive amount of information for MET:DEA and MME to base their consideration of the proposed developments on.

1.2 POLICY FRAMEWORK

As a significant contributor to the Namibian economy[1], RUL's role in local and regional economic development necessitates demonstrable adherence to sound environmental practices. The decision to pursue possible expansion of their operations thus needed to be underpinned by informed strategic planning. To this end, the following hierarchy of policy, planning and procedural documentation (Figure 3) reflects the point of departure for the proposed expansion project:

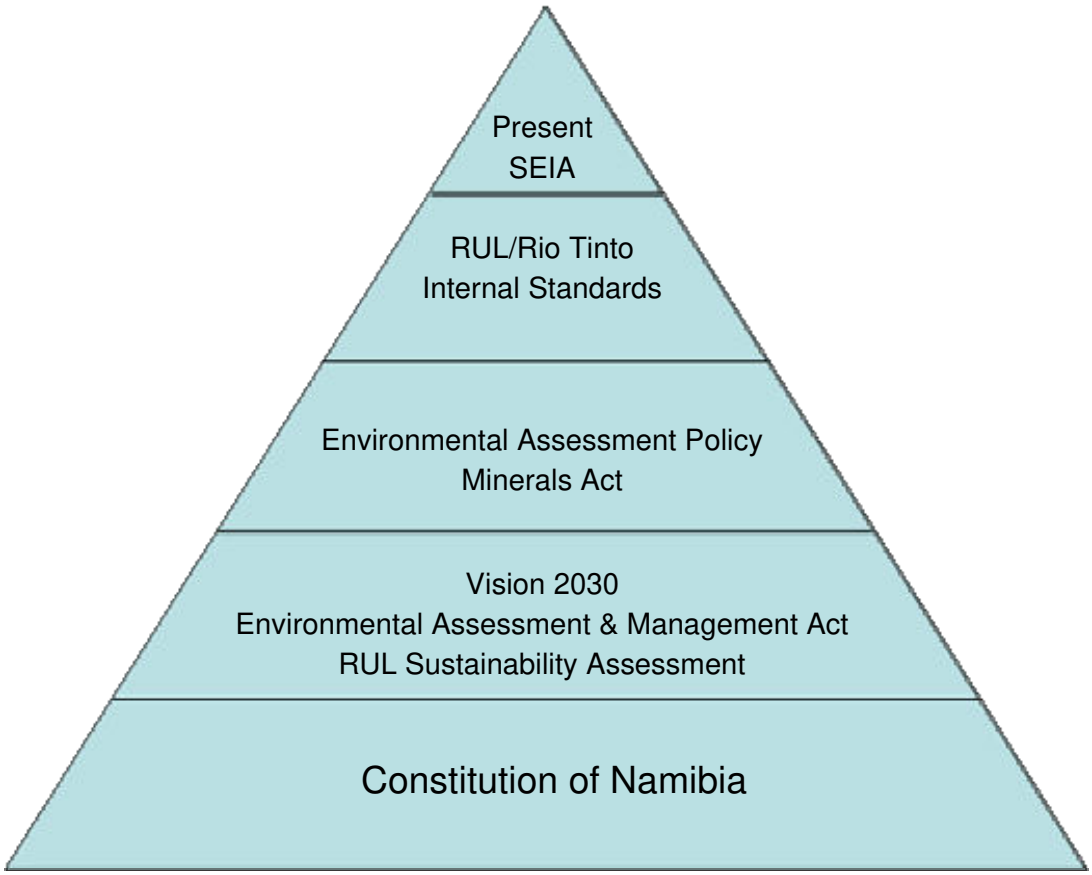


Figure 3: Hierarchy of policy and planning documents

The strategic policy and planning documents reflected in Figure 3 above are now briefly described. Regulated procedural requirements are dealt with in more detail in Section 1.3 below, together with other standards, conventions and pending legislation.

[1] In 2001 RUL contributed 2.5% of Namibia's Gross Domestic Product (GDP) and 10% of the country's export earnings (Sustainability Assessment 2004).

1.2.1 The Constitution of the Republic of Namibia

There are two clauses contained in the Namibian Constitution that are of particular relevance to sound environmental management practice, *viz*. articles 91(c) and 95(l). In summary, these refer to:

- guarding against over-utilisation of biological natural resources;
- limiting over-exploitation of non-renewable resources;
- ensuring ecosystem functionality;
- protecting Namibia's sense of place and character;
- maintaining biological diversity; and
- pursuing sustainable natural resource use.

The State is thus committed to actively promoting and maintaining the environmental welfare of Namibians by formulating and institutionalising policies that can realise the above-mentioned sustainable development objectives. As an important role-player in the beneficiation of Namibia's non-renewable mineral resources, RUL has demonstrated its alignment with these constitutional principles.

1.2.2 Vision 2030

The principles that underpin Vision 2030[2], a policy framework for Namibia's long-term national development, comprise the following:

- good governance;
- partnership;
- capacity enhancement;
- comparative advantage;
- sustainable development;
- economic growth;
- national sovereignty and human integrity;
- environment; and
- peace and security.

In pursuing the further development of the uranium resources available to it, RUL is in a position to contribute significantly to the realisation of the Vision 2030 principles.

1.2.3 Environmental Assessment and Management Act

In giving effect to articles 91(c) and 95(l) of the Constitution of Namibia, general principles for sound management of the environment and natural resources in an integrated manner have been formulated. This has resulted in an Environmental Assessment and Management Act

[2] Derived from Namibia's Green Plan drafted by MET in 1992 and followed by the sequence of National Development Plans.

being approved by the Namibian Parliament in October 2007[3]. Part 1 of the Environmental Assessment and Management Act describes the various rights and obligations that pertain to citizens and the Government alike, including an environment that does not pose threats to human health, proper protection of the environment, broadened *locus standi* on the part of individuals and communities, and reasonable access to information regarding the state of the environment.

Part 2 of the Act sets out 13 principles of environmental management, as follows:

- Renewable resources shall be utilised on a sustainable basis for the benefit of current and future generations of Namibians.
- Community involvement in natural resource management and sharing in the benefits arising therefrom shall be promoted and facilitated.
- Public participation in decision-making affecting the environment shall be promoted.
- Fair and equitable access to natural resources shall be promoted.
- Equitable access to sufficient water of acceptable quality and adequate sanitation shall be promoted and the water needs of ecological systems shall be fulfilled to ensure the sustainability of such systems.
- The precautionary principle and the principle of preventative action shall be applied.
- There shall be prior environmental assessment of projects and proposals which may significantly affect the environment or use of natural resources.
- Sustainable development shall be promoted in land-use planning.
- Namibia's movable and immovable cultural and natural heritage, including its biodiversity, shall be protected and respected for the benefit of current and future generations.
- Generators of waste and polluting substances shall adopt the best practicable environmental option to reduce such generation at source.
- The polluter pays principle shall be applied.
- Reduction, reuse and recycling of waste shall be promoted.
- There shall be no importation of waste into Namibia.

As reflected in the policy statement described in Section 1.3.3 below, there is a clear commitment to pursuing these principles of environmental management on the part of RUL as the proponent of the expansion project.

1.2.4 RUL Sustainability Assessment

In determining the viability of extending the life of the Rössing uranium mine, RUL has undertaken a detailed sustainability assessment (RUL, 2004). This sustainability assessment is in support of the engineering and financial feasibility studies that were the primary informants in considering such an extension of the life of the mine.

[3] Although approved by Parliament, the Act has yet to be signed into law by the President.

It is important to note that a sustainability assessment considers impacts that may result from a proposed development at a broader level than the site-specific impacts. The aims of the 2004 sustainability assessment were thus to:

- Identify any aspects of the proposed expansion project that could present fatal flaws that could be contrary to any development at all;
- Identify the opinions of all stakeholders and interested and affected parties, insofar any real concerns that emerged could influence the future of the mine;
- Evaluate the risks and benefits of extending the life of the mine to either 2016 or 2026, compared to early closure in 2007; and
- Suggest possible mitigatory measures to minimise potentially negative impacts, as well as means of enhancing the positive impacts that may result from extending the life of the mine.

Developing a measure of sustainability, in terms of quantifying the net social and environmental[4] benefit or decrement of the proposed expansion project, thus allowed RUL to consider the next step in the development process, *viz*. whether the project could be implemented within acceptable environmental parameters. The sustainability assessment is consequently a vital strategic informant in the pursuance of the present SEIA.

1.3 LEGAL REQUIREMENTS, STANDARDS AND CONVENTIONS

In order to protect the environment and ensure that RUL's proposed expansion project is undertaken in an environmentally responsible manner, there are two significant pieces of environmental legislation that focus this assessment, *viz*. Namibia's Environmental Assessment Policy and the Minerals Act. These are reflected below, followed by reference to other legislation, standards and conventions that may prove to be relevant.

1.3.1 Namibia's Environmental Assessment Policy of 1994

Appendix B of Namibia's Environmental Assessment Policy contains a schedule of activities that may have significant detrimental effects on the environment and which require authorisation from MET:DEA. The nature of RUL's proposed expansion project includes activities listed in this schedule. The primary triggers[5] are, *inter alia*:

"10~ Transportation of hazardous substances and radioactive waste
11~ Mining, mineral extraction and mineral beneficiation
12~ Power generation facilities with an output of 1MW or more
14~ Storage facilities for chemical products
15~ Industrial installation for bulk storage of fuels
36~ Water intensive industries
39~ Effluent plants

[4] Note that the term "environment" in this sense is understood to refer to the total environment, i.e. to encompass both biophysical as well as socio-economic aspects.
[5] Given the complex nature of the proposed expansion project, other activities may also serve as triggers. However, the comprehensive SEIA as envisaged will address all of the identified impacts.

46~ Chemical production industries
50~ Waste disposal sites"

Accordingly, the proposed expansion project requires authorisation from MET:DEA, and will be based on the findings of the present SEIA process. The envisaged SEIA process will accord with the requirements of such processes as described in Appendix A of the Environmental Assessment Policy.

1.3.2 Namibia's Minerals Act of 1992

A provision of the Minerals Act, specifically Section 48 (2) (b) (i) of the Act, is that *"environmental impact studies"* may be called for by the Minister of Mines and Energy when mineral licences - or their renewal or transfer - are applied for.

RUL are presently operating under a mining licence issued by MME and this will remain unaffected for the current mining operation. However, as the responsible sector ministry, MME will consider awarding the necessary mining license for RUL's expansion project, once MET:DEA has issued environmental clearances. Copies of this Scoping Report, as well as the subsequent SEIA Report, will thus be submitted to the Ministry for their decision-making regarding mining licences for the expanded mining operation.

1.3.3 RUL/Rio Tinto's Internal Standards

Rio Tinto, RUL's parent company, operates a comprehensive Environmental Management System (EMS) that accords with international standards of best practice. An array of environmental standards are thus in place and all Rio Tinto businesses, such as RUL, are committed to maintaining such international standards. Rio Tinto's policy statement titled *The Way We Work* provides the overarching environmental touchstone, while matters of planning, implementation and operation, checking and corrective action, and management review, are embodied in the ISO 14 001 EMS that each business is obliged to maintain. Certification per the ISO 14 001 EMS standard was obtained by RUL in 2000. Recertification was obtained in 2004 and 2007.

Specifically as it relates to the proposed expansion project, the planning component of RUL's EMS requires that the project is treated as a new activity and is thus subjected to "…*previous identification of (its) environmental aspects and impact assessment*…" and that the assessment of the project is measured against related environmental performance indicators. This may be interpreted as an explicit intention to undertake the present SEIA in accordance with international best practice.

1.3.4 Other legislation and conventions

In addition to the Environmental Assessment Policy, the Minerals Act and RUL's internal standards described above, the following additional pieces of existing or pending legislation and conventions may have some bearing on the proposed expansion project:

- The socio-economic environment~

    - National Heritage Act (2004)
    - Primary Health Care Policy (1990)
    - National Code on HIV/AIDS and Employment (1996)
    - Marriage Equality Act (2002)
    - Combating of Rape Act (2002)
    - National Employment Policy (1997)
    - Decentralisation Policy (1998)
    - Pending Minerals Safety Bill
    - Pending Atomic Energy Board and Radiation Protection Authority Bill
    - International Atomic Energy Agency Non-proliferation Treaty (1970)

- The biophysical environment~

    - Water Act (1956) and cf. pending Water Bill
    - Atmospheric Pollution Prevention Ordinance (1976) and cf. pending Pollution Control and Waste Management Bill
    - Draft Minerals Policy (2002)
    - Ramsar Convention (1975)
    - Convention on Biological Diversity (2000)
    - Convention to Combat Desertification (1997)
    - United Nations Framework Convention on Climate Change (1992)

The extent to which these pieces of legislation and conventions may be relevant to the undertaking of the present SEIA will become clear as the process unfolds. Other government departments that may need to provide comment on the SEIA, such as the Department of Water Affairs of the Ministry of Agriculture, Water and Rural Development, will be provided with copies of this Scoping Report and the subsequent SEIA Report.

1.4 THE BRIEF

Rössing Uranium Limited has appointed Ninham Shand Consulting Services as the independent lead consultant to assess the environmental impacts of their proposed expansion project. Importantly, the appointment is also to ensure that RUL as the proponent complies with the legislated requirements of environmental assessment processes as mentioned in Section 1.3.1 above. As per the legislated Environmental Assessment Policy and international best practice, the lead environmental consultant would be responsible for ensuring that the following are undertaken:

- Consultation with the responsible authorities and stakeholders early in the process, to confirm that the envisaged approach and methodology are appropriate and that the proposed development has been correctly screened to determine the acceptable level of assessment to be undertaken.

- Compilation of a Scoping Report that contextualises policy and legislation relative to the proposed development, describes the proposed activities, describes the affected environment, describes the possible environmental impacts, reports on the public participation process, and identifies aspects that require further or specialist study during the subsequent assessment stage.
- Submission of the Scoping Report to MET:DEA for their review and acceptance prior to embarking on the SEIA Report stage.
- Compilation of a SEIA Report that provides, in addition to the information contained in the Scoping Report, a detailed description of the potential impacts associated with the proposed development, the findings of the specialist studies, an evaluation of the significance of the potential impacts, and recommendations regarding mitigation and a way forward.
- Submission of the SEIA Report to MET:DEA for their clearance before MME consider issuing a mining licence.

A public participation process is being undertaken throughout this study, to ensure that interested and affected parties (I&APs) are given an opportunity to participate and to allow them to be certain that issues of importance to them are addressed. This is discussed in more detail in Chapter 6 of this report.

1.5 STUDY APPROACH AND METHODOLOGY

To initiate the SEIA process, early consultation with the Head of the Environmental Impact Assessment Unit at MET:DEA, Dr F Sikabongo, took place in a meeting held on 28 August 2007. A copy of the letter of confirmation of the proceedings of the meeting is attached as Annexure B. This serves as the necessary registration and screening of the SEIA in question, and confirms MET:DEA's acceptance of the envisaged approach.

As mentioned in Section 1.1 above, three specific components comprise Phase 1 of RUL's expansion project and are the subject of the present Scoping Report, *viz*.:

- a **sulphuric acid plant** and associated storage and transport;
- a radiometric **ore sorter plant;** and
- the mining of an ore body known as **SK4**.

These are described in detail in Section 2 below, but it is important to recognise that the remaining expansion project components will be dealt with as Phase 2 of the SEIA, and be subjected to a separate process and to a different programme. The reason for separating these components is that their engineering design has not yet progressed far enough to allow for the assessment stage of the SEIA to be undertaken. However, sufficient preliminary information is available at this time to allow for scoping. This will ensure that social and environmental issues are identified early enough in the SEIA process to meaningfully influence the engineering design. For information, the remaining expansion project components that will be addressed during the Phase 2 SEIA comprise the following:

- an open pit development of the remainder of the SK ore body;
- an open pit development of the ore body in the area designated as SH;
- the development of a heap leaching facility;
- the establishment of a vacuum belt filter plant within the existing plant area;
- the development of alternate processing facilities with their associated processing plant infrastructure;
- new rock waste disposal facilities in undisturbed areas; and
- new tailings disposal facilities in undisturbed areas.

To meet RUL's timeframes in terms of the sequencing of approvals and phasing of assessment activities for Phase 1, *viz*. the SEIA for the acid plant, ore sorter plant and mining area SK4 by January 2008, the following work programme is envisaged:

Activity	Aug	Sept	Oct	Nov	Dec	Jan	Feb
Project inception							
Public meetings for Scoping							
Authority & stakeholder consultation							
Draft Scoping Report							
Finalise & submit Scoping Report							
Specialist site visit							
Specialist reports							
Draft SEI Report (SEIR)							
Review & public meetings for SEIR							
Finalise & submit SEIR							

However, it is recognised that such a programme could be affected by the vagaries of the environmental assessment process, in particular the public consultation process, consultation with RUL's engineering design team, authorities and stakeholders, and the receipt of specialist input.

A standardised and internationally recognised methodology[6] will be applied to assess the significance of the potential environmental impacts of RUL's expansion project, outlined as follows:

For each impact, the EXTENT (spatial scale), MAGNITUDE (size or degree scale) and DURATION (time scale) will be described. These criteria are used to ascertain the SIGNIFICANCE of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The mitigation described in the SEIA Report will represent the full range of plausible and pragmatic measures but does not necessarily imply that they should or will all be implemented. The decision as to which combination of alternatives and mitigation measures to apply for will lie with RUL as the proponent, and their acceptance and approval ultimately with MET:DEA and MME. The SEIA Report will explicitly describe RUL's commitments in this regard. The tables on the following pages show the scale used to assess these variables, and defines each of the rating categories.

[6] As described, *inter alia*, in the South African Department of Environmental Affairs and Tourism's Integrated Environmental Management Information Series (CSIR, 2002).

Assessment criteria for the evaluation of impacts

CRITERIA	CATEGORY	DESCRIPTION
Extent or spatial influence of impact	**Regional**	Beyond a 20 km radius of the impact site
	Local	Within a 20 km radius of the centre of the impact site
	Site specific	On site or within 100 m of the impact site
Magnitude of impact (at the indicated spatial scale)	**High**	Natural and/ or social functions and/ or processes are *severely* altered
	Medium	Natural and/ or social functions and/ or processes are *notably* altered
	Low	Natural and/ or social functions and/ or processes are *slightly* altered
	Very Low	Natural and/ or social functions and/ or processes are *negligibly* altered
	Zero	Natural and/ or social functions and/ or processes remain *unaltered*
Duration of impact	**Construction period**	Up to 7 years
	Medium Term	Up to 10 years after construction
	Long Term	More than 10 years after construction

The SIGNIFICANCE of an impact is derived by taking into account the temporal and spatial scales and magnitude. The means of arriving at the different significance ratings is explained in the following table, developed by Ninham Shand as a means of minimising subjectivity in such evaluations, i.e. to allow for replicability in the determination of significance.

Definition of significance ratings

SIGNIFICANCE RATINGS	LEVEL OF CRITERIA REQUIRED
High	• High magnitude with a regional extent and long term duration • High magnitude with either a regional extent and medium term duration or a local extent and long term duration • Medium magnitude with a regional extent and long term duration
Medium	• High magnitude with a local extent and medium term duration • High magnitude with a regional extent and construction period or a site specific extent and long term duration • High magnitude with either a local extent and construction period duration or a site specific extent and medium term duration • Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Low magnitude with a regional extent and long term duration
Low	• High magnitude with a site specific extent and construction period duration • Medium magnitude with a site specific extent and construction period duration • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Very low magnitude with a regional extent and long term duration
Very low	• Low magnitude with a site specific extent and construction period duration • Very low magnitude with any combination of extent and duration except regional and long term
Neutral	• Zero magnitude with any combination of extent and duration

Once the significance of an impact has been determined, the PROBABILITY of this impact occurring as well as the CONFIDENCE in the assessment of the impact would be determined using the rating systems outlined in the following two tables. It is important to note that the

significance of an impact should always be considered in concert with the probability of that impact occurring.

Definition of probability ratings

PROBABILITY RATINGS	CRITERIA
Definite	Estimated greater than 95% chance of the impact occurring.
Probable	Estimated 5 to 95% chance of the impact occurring.
Unlikely	Estimated less than 5% chance of the impact occurring.

Definition of confidence ratings

CONFIDENCE RATINGS	CRITERIA
Certain	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.
Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.

Lastly, the REVERSIBILITY of the impact is estimated using the rating system outlined in the following table.

Definition of reversibility ratings

REVERSIBILITY RATINGS	CRITERIA
Irreversible	The activity will lead to an impact that is permanent.
Reversible	The impact is reversible, within a period of 10 years.

1.6 ASSUMPTIONS AND LIMITATIONS

The SEIA process that this Scoping Report is in support of is limited to the specific elements of the Phase 1 expansion project detailed in Section 2 and will be undertaken in terms of Namibia's Environmental Assessment Policy and internationally recognised best practice in environmental assessment. In developing the approach to this project, Ninham Shand took cognisance of RUL's deliberations regarding their Life of Mine Expansion Options Analysis and the earlier Sustainability Assessment.

Specific assumptions that have been made are:

- Regarding the assessment of relevant project-level alternatives, it is assumed that, where appropriate, two or three discrete, detailed and well-defined alternatives for particular project components will be attended to. Section 4 below deals with alternatives in more detail.

- Regarding the technical and specialist information required during the SEIA Report stage, it is assumed that such information will be based on the latest available data, is as accurate as possible and is made available timeously.

- Due to the complexity of the present SEIA in terms of the variety of different components being addressed and the sequencing of related engineering design, there may be cases where the available information is incomplete or not available timeously. Where such information gaps are inimical to the assessment, they will be clearly identified. However, where the subject matter is well understood and not critical to the assessment, provision will be made for their inclusion in the decision-making process in the Social and Environmental Management Plan (SEMP) that will accompany the SEIA Report.

- It is recognised that Grindrod Limited, the lessee of the site in the Port of Walvis Bay where a Grindrod subsidiary, API[7], erected and have operated for the last twelve years a bulk handling terminal, will be undertaking an environmental assessment for their proposed elemental sulphur handling and storage facility in the harbour. As the landlord of the Grindrod bulk handling terminal, Namport will have a role to play in this assessment. The present SEIA will nevertheless include this facility in its scope, to accord with best practice insofar assurance of acceptable environmental and health and safety standards on the part of RUL's commercial suppliers is concerned. There is an agreement in place to co-ordinate the two assessment processes and the findings from the present SEIA that relate to the sulphur handling and storage facility in the harbour will be made available to the environmental assessment practitioner that undertakes the task for Grindrod Limited.

- While external review will be carried out by the Southern African Institute for Environmental Assessment, Ninham Shand will also undertake internal review throughout the process. This will be carried out by a recognised expert with particular knowledge of the Rössing site and operations (see Section 1.7 below). In this way, assurance of a world-quality product can be given. Summaries of the two reviews of a draft version of the present Scoping Report are provided in Section 7.

1.7 THE PROJECT TEAM

The composition of the professional team that Ninham Shand has assembled to undertake the SEIA in question, and their respective areas of responsibility, is as follows:

[7] African Portland Industrial Holdings.

Organisation	Area of responsibility Field of expertise	Team member(s)
Ninham Shand (Lead Consultant)	: Project Management : SEIA co-ordination : SEIA process	Brett Lawson (Project Manager) is a certified Environmental Assessment Practitioner, bound by a code of conduct, with considerable environmental management experience. Mr Lawson is also registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions. Patrick Killick (Environmental Practitioner) has an MPhil degree in environmental management and specific experience in the supervision, management and monitoring of construction-related environmental impacts associated with large engineering works, as well as recent experience in environmental assessment practice. Genie De Waal (Technical Assistant) has a National Diploma in Business Computing and 13 years experience in office & project management in an engineering & environmental environment.
The Council for Scientific & Industrial Research (CSIR)	: Technical environmental mining expertise : Internal Review	Brent Johnson of the CSIR will provide technical environmental expertise related to the mining sector. He has a BSc (Hons) degree in Environmental Science and his specific fields of expertise relate to environmental and sustainability assessment and management within the mining and energy sectors. Dr Peter Ashton will undertake an internal review of the SEIA process to ensure that it accords with local and international best practice. He holds a PhD degree and has considerable experience in a wide range of fields, including the assessment of impacts of mining and development projects on aquatic ecosystems. Dr Ashton has undertaken several environmental assessment and water quality studies for RUL since the early nineties.
Airshed Planning Professionals	: Air quality impact assessment	Reneé Thomas is currently completing her Masters degree and has six years experience in the field of air pollution impact assessment and air quality management. She has undertaken numerous air pollution impact studies and has provided extensive guidance to both industry and government on air quality management practices.
RisCom	: Quantitative Risk Assessment	Michael Oberholzer is a registered Professional Engineer and holds a BSc (Chemical Engineering) degree. He has over 20 years experience with Dow chemicals and Sentrachem in all aspects of project implementation. Since leaving Dow, he has completed a number of Risk Assessments studies and Process Hazard Analysis in various industries including offshore assignments in the oil and gas industries, as well as in the chemical, petrochemical, agrochemicals and mining industries.
Visual Resource Management Africa (VRMA)	: Visual impact assessment	Stephen Stead has a BA (Hons) in Human Geography and Geographic Information and has 12 years of experience in the field of GIS mapping and Modelling. Over the last 5 years he has completed approximately 40 Visual Impact Studies throughout South Africa using the well-documented visual impact analysis methodology developed by the Bureau of Land Management in the USA. He has also undertaken numerous studies to identify land use, vegetation and vegetation sensitivity from aerial and satellite imagery.

Other defined tasks or areas of specialisation that have been commissioned or contracted directly by RUL but whose input into the SEIA process will be co-ordinated and relied upon by Ninham Shand, are:

Organisation	Area of responsibility / Field of expertise	Team member(s)
Marie Hoadley (Independent Consultant)	: Public consultation and facilitation : Social impact assessment	Marie Hoadley has a BA degree and is an experienced social impact assessor, having worked on mining projects across Southern Africa. She specialises in working with marginalised mining communities in rural and peri-urban settings and has worked with both artisanal miners and multi-national mining companies. Prior to starting her consulting practice, she worked as a research associate at the School of Mining Engineering, University of the Witwatersrand.
The Southern African Institute for Environmental Assessment (SAIEA)	: Independent external review	Dr Peter Tarr holds a PhD in Environmental Management and has been involved in conservation and environmental management in southern Africa for the past 20 years. He was primarily responsible for developing Namibia's Environmental Assessment Policy. In 2001, he established the SADC regions' first non-profit organisation dedicated to the use of Environmental Assessment (EA) as a front-line tool for promoting sustainable development, SAIEA, and became its founder and Director. SAIEA has overseen over 50 EA processes and studies covering a wide variety of sectors.
The Nuclear Energy Corporation of South Africa (NECSA)	: Radioactivity and public dose assessment	Professor De Beer of NECSA will be undertaking the radioactivity and public dose study. Apart from several ancillary functions, the main functions of NECSA are to undertake and promote research and development in the field of nuclear energy and radiation sciences and technology; to process source material, special nuclear material and restricted material; and to co-ordinate with other organisations in matters falling within these spheres.

Organisation	Area of responsibility / Field of expertise	Team member(s)
Environmental Evaluation Associates of Namibia (EEAN) Pty Ltd (consulting arm of the Desert Research Foundation of Namibia (DRFN))	: Biodiversity study	John Pallett has biodiversity experience from his work as mammal curator at the State Museum and more general experience in EIAs conducted through EEAN since 1992. He will be project managing the study. Dr John Irish was involved in the mid 1980s RUL EIA work. He now heads Namibia's Biodiversity Database project, and is well familiarised with biodiversity distributional information and computerised spatial recording of endemics. He will provide specialist input into identification of collected species. Dr Joh Henschel is Executive Director of Gobabeb Training and Research Centre, a centre for ecological expertise in the Namib. His research record includes specialisation on arachnids in the Namib. He is also involved in the training programmes of Namibian students who undertake practical work at Gobabeb and its field sites. He will provide specialist input into identification of collected species. Dr Mary Seely is an internationally recognised expert on the Namib Desert and environmental issues in Namibia and arid regions. She brings an understanding of the bigger picture behind specialised studies such as this project, to assist in review and quality assurance of the project deliverables. Veronica Siteteka is based at Gobabeb as a Junior Research Assistant and has recently undertaken GIS training in The Netherlands with particular focus on EIAs. She will compile all the GIS-based information.
Quarternary Research Services	: Archaeology (i.e. heritage)	Dr John Kinahan has more than 25 years of professional experience as an archaeologist, with special emphasis on palaeo-environmental research. He has collaborated with numerous international research programmes. Dr Kinahan, in partnership with Jill Kinahan, has carried out more than 75 contract surveys and excavations in Namibia, Botswana, Tanzania, Mozambique, Angola and Ethiopia. Recently, they compiled the application by Namibia for the listing of Twyfelfontein rock art site under the World Heritage Convention.
Rössing Uranium Ltd	: Water resource management	Sandra Müller is a highly experienced geohydrologist on the staff of RUL whose professional experience and abilities are well recognized amongst peers. She has been responsible for the monitoring of water management on the mine for many years.

Organisation	Area of responsibility / Field of expertise	Team member(s)
Namibian Vibration Consultants (NVC)	: Noise and vibration study	Mr Erwin Smith has specialist vibration experience, particularly in the human vibration area. He will be project managing the study. Mr John Hassall has over thirty years experience in the acoustic and vibration field. His areas of expertise include EIAs, environmental and industrial noise surveys, noise control measures, building services noise and vibration control, hearing damage protection measures, and machine condition monitoring and diagnosis using vibration analysis. Mr Demos Dracoulides has experience in noise and air pollution dispersion survey and modelling, in particular in the aviation and solid waste management areas. He will assist in the noise monitoring and develop the modelling programme to predict the extent of noise and vibrations generated by the proposed development.
Rio Tinto Technology and Innovation	: Mineral waste and tailings management	The Rio Tinto Excellence in Mineral Waste Management Program has been developed to help operations and projects reduce the environmental, health, financial and reputational risks posed by mineral wastes such as tailings, waste rock and open pits. The program is intended to provide expert technical analysis and guidance outside of the formal corporate assurance framework.

1.8 REPORT STRUCTURE

This report is structured as follows:

Chapter One	*Provides the introduction, policy and legislative requirements, and approach and methodology for the study*
Chapter Two	*Describes the project components*
Chapter Three	*Describes the public participation process*
Chapter Four	*Describes the selection and screening of alternatives*
Chapter Five	*Describes the study area*
Chapter Six	*Discusses the identified impacts*
Chapter Seven	*Concludes the report and describes the way forward*

2 PROJECT DESCRIPTION

2.1 PROPOSED ACTIVITIES

The entire extent of the expansion project proposed by RUL comprises, in summary, the opening of two new pits, with concomitant new disposal areas for waste rock, new or expanded processing plants, additional tailings dam capacity, and an increase in staff numbers and facilities. Clearly, such a wide-ranging expansion project comprises numerous components.

However, as mentioned in Sections 1.1 and 1.5 above, only the sulphur-burning **sulphuric acid plant** and associated storage and transport, the radiometric **ore sorter plant** and associated reject rock disposal, and the development of the **SK4 pit** are being addressed in the present Scoping Report. These components are referred to as Phase 1 of RUL's expansion project. The remaining expansion project components, as described in Section 1.5 above and referred to as Phase 2, will be dealt with in a separate process that is subject to a different programme. I&APs registered for the present Phase 1 of the SEIA will be kept informed once the Phase 2 process is launched.

Each of the three components of Phase 1 of RUL's expansion project, i.e. the subject of the present SEIA, is now dealt with in more detail.

2.2 ON-SITE SULPHUR BURNING SULPHURIC ACID PRODUCTION PLANT

2.2.1 Context – as provided in the Scope of Work

RUL's metallurgical process uses sulphuric acid leaching to extract the uranium from the ore. An onsite pyrite burning acid plant was commissioned in 1976 to supply acid required on site but was mothballed in 2000 when prices of imported acid fell below production cost. Prior to mothballing, the plant was converted to burn sulphur imported through Walvis Bay and railed to the mine. This was necessary due to the termination of the pyrite supply from the Otjihase Mine. Public concerns were raised when sulphur spillage next to the railway line was found. Some concerned members of the public raised the question whether the material was the uranium oxide "yellow cake" produced by the mine.

Since 2000, the entire mine's acid requirements have been imported via Walvis Bay harbour. An environmental impact assessment for the importation, transportation and storage of acid was conducted by the South African Council for Scientific and Industrial Research (CSIR) in 2000. Current economic evaluations show that value can be gained by establishing a new sulphur burning acid plant at the mine site and continue importing additional acid if required. Figure 4 provides a graphic representation of the acid production time line at RUL since 1976.

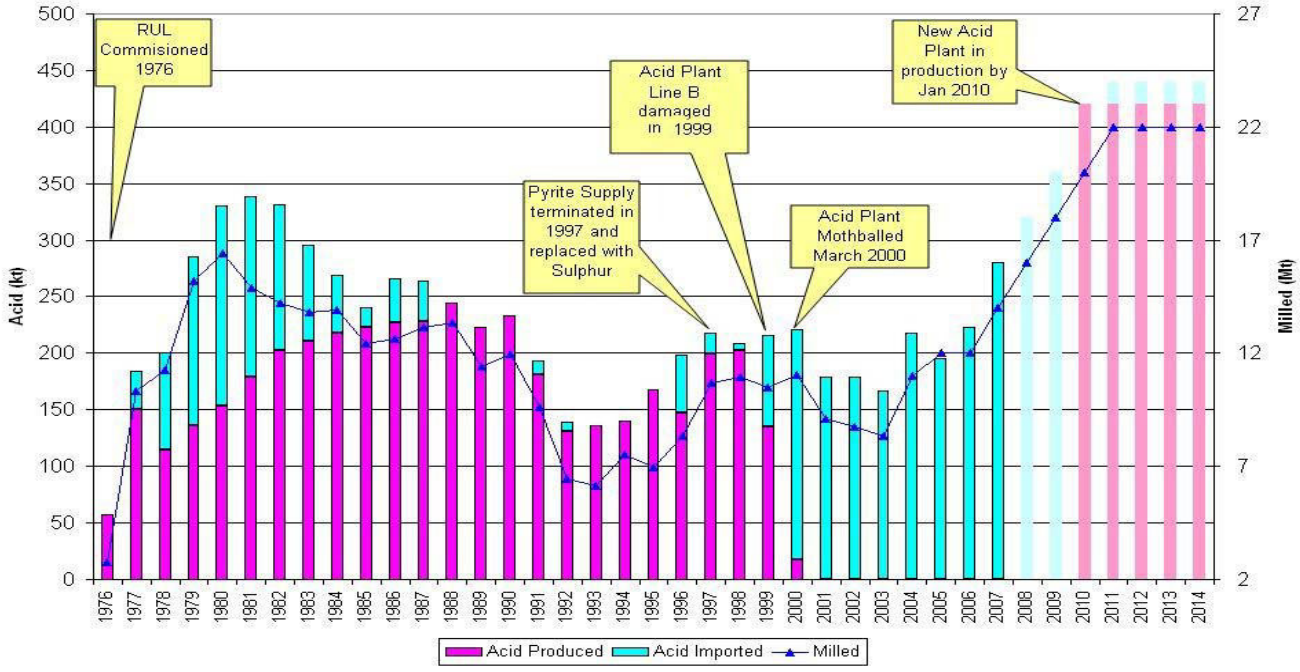


Figure 4: RUL's acid production since 1976 (source RUL)

The following items comprise this project component:

- A sulphur burning acid plant to be built at the Rössing mine site;
- The onsite acid storage facilities will be upgraded and utilised to store acid imported and produced;
- The importation of acid through Walvis Bay harbour will continue but at a reduced rate, and the acid offloading and rail loading facilities as well as the tank farm at the harbour will be maintained and transport of acid by rail to the Rössing mine site will continue as required;
- Rail transport by Transnamib through Walvis Bay and Swakopmund will continue;
- The acid offloading facilities at Rössing mine will be upgraded;
- The waste heat from the new acid plant will be converted to produce electricity to be fed into the local grid or utilised on site in the leaching process;
- A preliminary site selection exercise has been conducted and the new plant will be positioned near the existing offloading and storage facilities; and
- Elemental sulphur is planned for importation by ship to Walvis Bay harbour and for transportation by rail to the Rössing mine site. A bulk sulphur storage and handling facility will be built at Walvis Bay Harbour as well as at Rössing mine. There will be a need for specialised rail cars for the transport of sulphur.

2.2.2 The proposed sulphuric acid production process at RUL

Figure 5 provides a diagrammatic illustration of the sulphuric acid plant proposed for RUL. Operational specifics of this plant are provided later in this section. In essence, the sulphuric acid that is proposed for production at RUL will be converted from elemental sulphur feedstock shipped to Walvis Bay harbour. Grindrod Limited, the lessee from Namport and operator of the

bulk handling terminal in the Port of Walvis Bay will undertake the activities related to offloading and storing of the sulphur. Similarly, Namport will be the agent responsible for the control of the vessels entering the harbour and their berthing. Appropriate environmental responsibilities vest with this agent with respect to harbour and berthing related matters. RUL is committed to ensuring that its activities, as well as those of its suppliers and other parties that form part of the chain of custody, conduct their business activities in an environmentally responsible manner. To this end, technical and environmental information arising from the present SEIA will be shared with these parties.

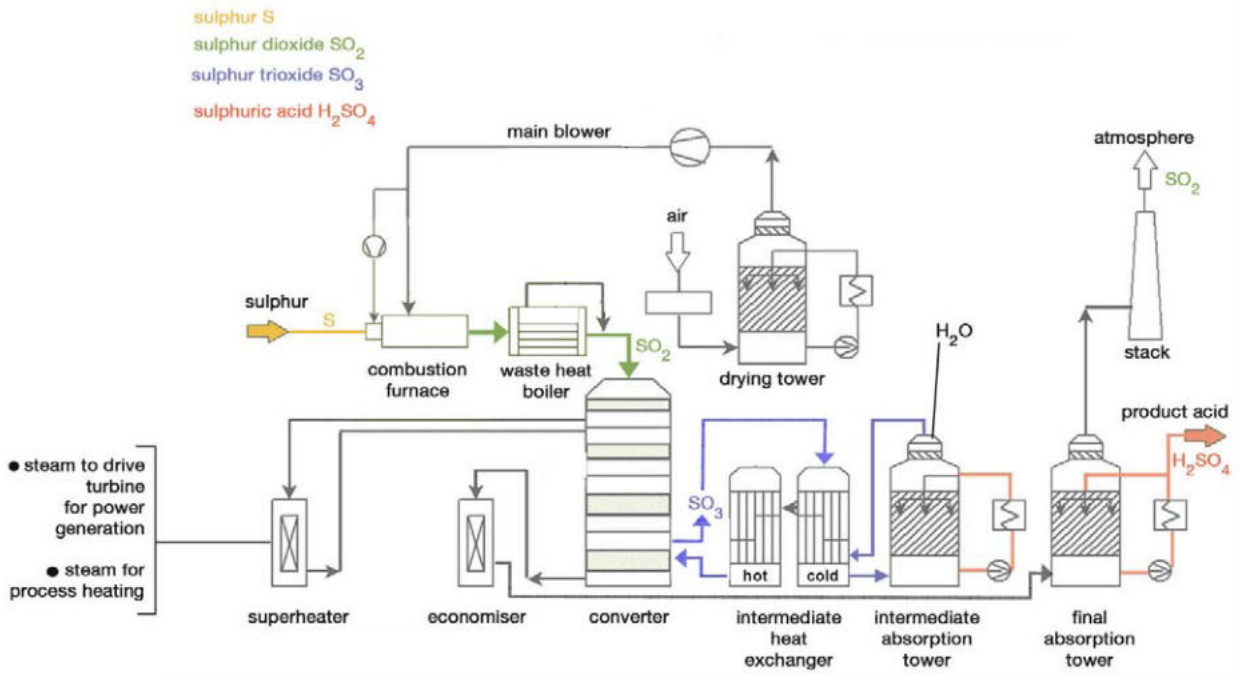


Figure 5: Diagrammatic illustration of the proposed sulphuric acid plant and related chemical flows (source: Modified from RUL Public Participation Material, 2007)

The double contact, double absorption process is proposed for RUL and is generally favoured as the most stable and with the highest (most efficient) yields of product. This correlates well with a preferred environmental option as this efficient (and more stable) combustion is associated with more manageable, predictable and measurable atmospheric outputs – the principle environmental concern associated with acid plants. This is described below, beginning with a generic description of the contact process and then considering the specifics of the double contact acid production process.

The contact process involves the catalytic oxidation of sulphur dioxide, SO_2, to sulphur trioxide, SO_3. The main chemical steps are summarised in the box to follow.

Before combustion, sulphur must be melted by heating to 135°C. Combustion is carried out in sulphur combustion units at between 900°C and 1800°C. The combustion unit consists of a combustion chamber followed by a process gas cooler. The SO_2 content of the combustion gases is generally around 18% by volume and the O_2 content is low (but higher than 3%). The key steps that follow combustion are #2 to #6 in the following box.

1. Solid sulphur, S(s), is burned in air to form sulphur dioxide gas, SO_2
   $S(s) + O_2(g) \text{ -----> } SO_2(g)$
2. The gases are mixed with more air then cleaned by electrostatic precipitation to remove any particulate matter
3. The mixture of sulfur dioxide and air is heated to 450°C and subjected to a pressure of 101.3 - 202.6 kPa (1 -2 atmospheres) in the presence of a vanadium catalyst (vanadium (V) oxide) to produce sulphur trioxide, $SO_3(g)$, with a yield of 98 %
   $2SO_2(g) + O_2(g) \text{ -----> } 2SO_3(g)$
4. Any unreacted gases from the above reaction are recycled back into the above reaction
5. Sulphur trioxide, $SO_3(g)$ is dissolved in 98 % (18M) sulphuric acid, H_2SO_4, to produce disulphuric acid or pyrosulfuric acid, also known as fuming sulphuric acid , $H_2S_2O_7$.
   $SO_3(g) + H_2SO_4 \text{ ------> } H_2S_2O_7$
   This is done because when water is added directly to sulphur trioxide to produce sulfuric acid
   $SO_3(g) + H_2O(l) \text{ -----> } H_2SO_4(l)$
   the reaction is slow and tends to form a mist in which the particles refuse to coalesce
6. Water is added to the disulfuric acid, $H_2S_2O_7$, to produce sulphuric acid, H_2SO_4
   $H_2S_2O_7(l) + H_2O(l) \text{ -----> } 2H_2SO_4(l)$

A primary conversion efficiency of 80%-93% is obtained in the double contact process, depending on the arrangement of the contact beds and the contact time in the primary contact stage of a converter preceding the intermediate absorber. The gases are cooled to approximately 190°C in a heat exchanger and the SO_3 already formed is absorbed in sulphuric acid with a concentration of 98.5-99.5%wt in the intermediate absorber.

The absorption of SO_3 produces a considerable shift in the reaction equilibrium towards the formation of SO_3, resulting in considerably higher overall conversion efficiencies when the residual gas is passed through one or two secondary contact beds. The SO_3 formed in the secondary stage is absorbed in the final absorber.

Feed gases containing 9-12% of SO_2 are generally used for this process. The conversion efficiency is about 99.6% as a daily average, based on sulphur burning.

The sulphuric acid that will be used in the process will be produced on site by burning sulphur in a double contact, double absorption acid plant. This plant will be constructed using best international practice and will contain the required concrete bunding and sealed barriers to prevent any spill movement. The acid plant will produce 1 200 tpd sulphuric acid at approximately 98.5% efficiency rate. The SO_2 to SO_3 conversion efficiency is likely to be in the order of 99.7%.

The elemental sulphur will be in the form of “prills” (pellets) delivered to the site via rail and stored in an enclosed storage area containing the requisite fire detection and control equipment. This area of responsibility will form part of RUL’s ongoing operational occupational health and safety protocols and procedures. It is anticipated that the plant will be shut down initially after 18 months and thereafter every 24 months. However, weekly maintenance events of eight hours will be carried out.

The SO_2 will be cooled before passing to the sulphur converter, where SO_2 will be converted to SO_3 using four passes of vanadium pentoxide (V_2O_5) catalyst to ensure complete conversion to SO_3. After the last pass, the gas will be cooled before entering the final absorption tower, where

the SO_3 will be absorbed in a counter-current flow of 98.5% sulphuric acid. The depleted gases will then be vented to the atmosphere via a stack of as yet to be determined height.

The sulphuric acid will be stored in the two existing storage tanks ready for use in the plant.

At this stage in the design formulation, air cooling fans, probably comprising eight units, are the preferred option for cooling.

The main inputs and outputs can be summarised as follows:

- **Inputs**
  - sulphur prills imported to site from Walvis Bay;
  - water (from Namwater);
  - steam derived from the sulphur burner; and
  - V_2O_5 (consumed at approximately 15% of installed catalyst volume per year).

- **Outputs**
  - SO_2 from the drier at approximately less than 250 ppm/$Nm^{3;}$
  - <30 mg of acid mist and SO_3 per Nm^3;
  - cooling water recycled back to the cooling tower;
  - cooling tower and boiler blow down will be disposed of in the Plant Spillage Sump (<30 m^3/h);
  - sulphuric acid to be (re)used in the plant;
  - sulphur filter cake of approximately <3 000 kg/d to be recycled in the acid plant; and
  - spent V_2O_5 catalyst returned to the suppliers.

2.2.3 Sulphur handling and storage facilities in the Port of Walvis Bay

Sulphur storage facilities will be constructed at Walvis Bay harbour. The location within the harbour complex has been indicated by Namport as the area landwards of the Grindrod Limited bulk handling facility and the storage housing will be enclosed. Dry sulphur will be stockpiled in this storage area in preparation for railing to the mine. The construction and operation of additional sulphur receiving and storage facilities will be undertaken by Grindrod Limited.

Elemental sulphur (the form to be stored at the harbour and used as feedstock for the acid plant) is environmentally benign in the context of its planned storage. Provided the necessary protocols around the inhalation and handling of sulphur dust (and the sulphur pellets themselves) are observed, in addition to its secure containment *in situ*, this issue is not deemed significant enough to warrant further in-depth consideration. Special attention should, however, be paid to the minimisation of sulphur dust and the concurrent risk of sulphur explosions.

The following key construction and operational descriptive issues will be carried through to the SEIA stage:

- Clarity on the design parameters of the storage facility;
- The exact nature of bunding and sealing systems as part of the storage facilities;

- Drainage (storm water) management in and around the site;
- Internal ventilation system specifics;
- Maximum volume storage and handling quantities;
- Specific detail on the transport pathways from the storage areas to the rail cars; and
- Specific detail from the contractor on how sulphur (stored product) friability will be minimised with a view to minimising the chances of sulphur dust explosions.

2.2.4 Primary product rail transportation and intermediate and final storage

Sulphur will be transported from Walvis Bay to the mine site in railcars made from mild steel. There is an existing railway line between Walvis Bay and the mine which is well used in terms of currently transporting sulphuric acid to the mine. The anticipation and management of impacts and operational protocol along this route is well established. The transportation of elemental sulphur to the mine will be outsourced to Transnamib.

With respect to rail transportation, the following key elements will be considered and carried through to an EIA (in terms of specific operational descriptions)[8]:

- The specific design parameters of the rail cars that will be used to transport sulphur to the mine;
- The potential for modification and use of existing rails cars to accommodate elemental sulphur as required;
- Linked to the above, mechanisms to ensure complete discharge of sulphur from the rail cars to the unloading point at RUL;
- Requirements for sealing the rail cars;
- Any modification to operational responses to spills;
- Good approximations of volumes to be transported; and
- The use of wash bays at Walvis Bay insofar the requirements and considerations of elemental sulphur handling are concerned.

With respect to the storage and handling of product within the acid plant, there is negligible concern related to the storage and handling of manufactured sulphuric acid on the RUL site because of the very low vapour pressure of H_2SO_4 in normal temperature conditions and the sealed containers which will be used for storage. This forms part of RUL's ongoing and well-understood operational activities on site.

The receipt, handling and storage of any powdered raw materials will be carried out so as to minimise the emission of dust. Liquid and gaseous feeds within the plant will also be carefully contained to prevent the emission of odorous fumes or gases.

[8] This has been determined principally from scoping level discussions with Mr J Dempsey of Transnamib, reviews of existing EIAs and EMPs relevant to rail transportation, specialist opinion and a consideration of existing and best practice.

Sulphur storage and handling operations on site will be designed with a specific view to control fume emissions. Venting will be directed towards (existing) acid tanks or scrubbing systems and all installations will be built by following best engineering practice. Special consideration will be given to areas where emissions can condense and solidify in cool areas. This is fortunately of low potential in RUL's desert environment but nonetheless will be carefully guarded against to prevent over-pressurisation of storage tanks.

2.2.5 Environmental emissions

Environmental emissions of principle concern anticipated from the proposed plant are atmospheric. This specific environmental aspect (see later discussion) is deemed the most important to consider during the SEIA stage.

Other less substantive emissions and environmental outputs are discussed elsewhere in this report. With respect to addressing this issue in the SEIA stage of the study, the following are some key questions (from a process and plant description point of view) that will be specifically posited and answered in the SEIA report:

- What are the optimum design parameters for the new plant given the location preference?
- How close will real environmental outputs be to modelled outputs?
- What are the environmental impacts of stack height options?
- How will start up conditions and emissions be controlled and mitigated, specifically with respect to sensitive receptor points such as the Swakopmund – Usakos road and Arandis town?
- What are the pertinent operational emission parameters to consider with respect to RUL personnel on site?

Point and non-point sources of RUL's gaseous emissions are reflected in Table 1 below.

Source		SO_2	SO_3	NO_x	NH_3	CO	CO_2	Acid vapour	Odour
Pit area	Open pit				NP	NP	NP		
	Blasting			P	P				
Uranium extraction plant	FPR baghouse x1	P		P	P	P	P		
	FPR scrubber x2	P		P	P	P	P		
	FPR cooling towers x2								
	Leach tanks						P		
Acid plant	Absorption tower	P	P					P	P
	Plant	NP		P					
Waste	Domestic waste								P
Other	Rubber lining w/shop			P		P	P		
	Rubber burning			P		P	P		P

Definitions:
FPR = Final product recovery
P = point source
NP = non-point source

Table 1: Broad overview of the gas source inventory at RUL

2.2.6 Hazard implications of sulphur

Sulphur is a flammable substance in both the solid and liquid states. The dust is characterised by a very low ignition point of 190°C compared to other combustible dusts, and dust clouds are readily ignited by weak frictional sparks. Dusts containing 25% or more elemental sulphur may be almost as explosive as pure sulphur.

Explosive mixtures may be formed if sulphur is contaminated with chlorates, nitrates or other oxidising agents

Sulphur has excellent electrical insulation properties and under the right conditions will readily pick up static electricity which, if discharged, can result in ignition.

2.2.7 Personnel

It is envisaged that between 150 and 200 workers would be required to undertake the construction and commissioning of the acid plant. This number would drop significantly to between 30 and 40 staff members during the operation of the plant.

2.3 RADIOMETRIC ORE SORTER PLANT

2.3.1 Context – as provided in the Scope of Work

RUL has operated for over 30 years with a conventional crushing and milling circuit. The coarse ore from primary crushing is screened and crushed in three additional crushing stages prior to milling in rod mills and subsequently acid leaching.

RUL has a long history of involvement with radiometric sorting dating back to exploration test-work in 1968 and the mine currently uses truck scanners for final grade control. Studies during the 1970s concluded that radiometric sorting in the plant would only make economic sense by increasing production levels but until recently the uranium market has not been conducive to this. In the mid 1990s however, newer, more efficient sorter technology made sorting viable at constant rates of production and in 1998 RUL approved the construction of a single-sorter pilot plant.

During 2001 the pilot plant was commissioned and test-work began and ran until 2003. Due to poor market conditions and the prospect of closure during 2003/04, the ore-sorter was not operational but started up again in 2005. In mid 2005 approval was granted to tie ore sorting into the fine crushing plant as a production plant and capital was spent on the installation of a waste conveyor. During the period May to December 2006 a total of about 60 000 tonnes of ore was fed to the crusher of which a sizeable portion was rejected to waste which confirmed that ore-sorting at RUL is technically feasible.

An environmental impact assessment for a production scale ore sorting plant at Rössing was completed in March 2002. The study concluded that the occupational hazards associated with the potential production ore sorter would be very similar to those already identified for the fine crushing and pilot ore sorting plants. Occupational hazards on the production plant itself were found likely to be low as a result of minimal operator presence on the plant, especially under load. However, the production ore sorter's contribution within the whole fine crushing area would likely be more significant.

It was predicted that, as a result of ore sorting, high silica content rock types in feed ore would reduce. With a production ore-sorting plant in place, the average grade through the process would increase. A marginal increase of the annual average radiation dose attributed to dust was expected. However, the total radiation dose to employees in the processing plant was expected to remain well below the RUL standard based on International Council for Radiological Protection (ICRP) recommendations.

The ore sorting production plant was predicted to be a source of noise. However, the largest environmental impact associated with construction and operation of the ore sorter production plant would be the deposition of the reject material. In the original work, the possible sites with the least potential impact on the environment were identified as the top of the tailings dam or a site between the southern toe of the tailings dam and the fine crushing plant.

The conclusions in respect of a suitable dumping site were reviewed by in-house consultants in 2005. Considering the low waste volume which was related to the production plans prior to mine life extension, two further disposal sites were identified.

Since the extension to the life of mine and the intention to increase production capacity has been approved, the radiometric ore sorting plant is again seen as an important contributor to achieving the desired increase in throughput and uranium production.

A new pre-screening plant, replacing the existing one, drawing material from the coarse ore stockpile, will be constructed as part of the project to provide the material for sorting.

Specific size fractions will be scalped off in the pre screening plant and the remaining size fraction will be processed using the radiometric ore sorters to provide an “accept” stream and a “reject” stream. The accept stream contains ore above the selected uranium grade and conversely the reject stream contains waste. The existing 500 t coarse ore bin will be reconfigured (or replaced) to increase its live capacity and to feed the secondary crushers. The proposed plant is to be positioned within the current operations of the Rössing mine on the west side of the reclaim conveyor from the coarse ore stockpile. See Figure 6. Geotechnical data will confirm this as a suitable location from a stability perspective.

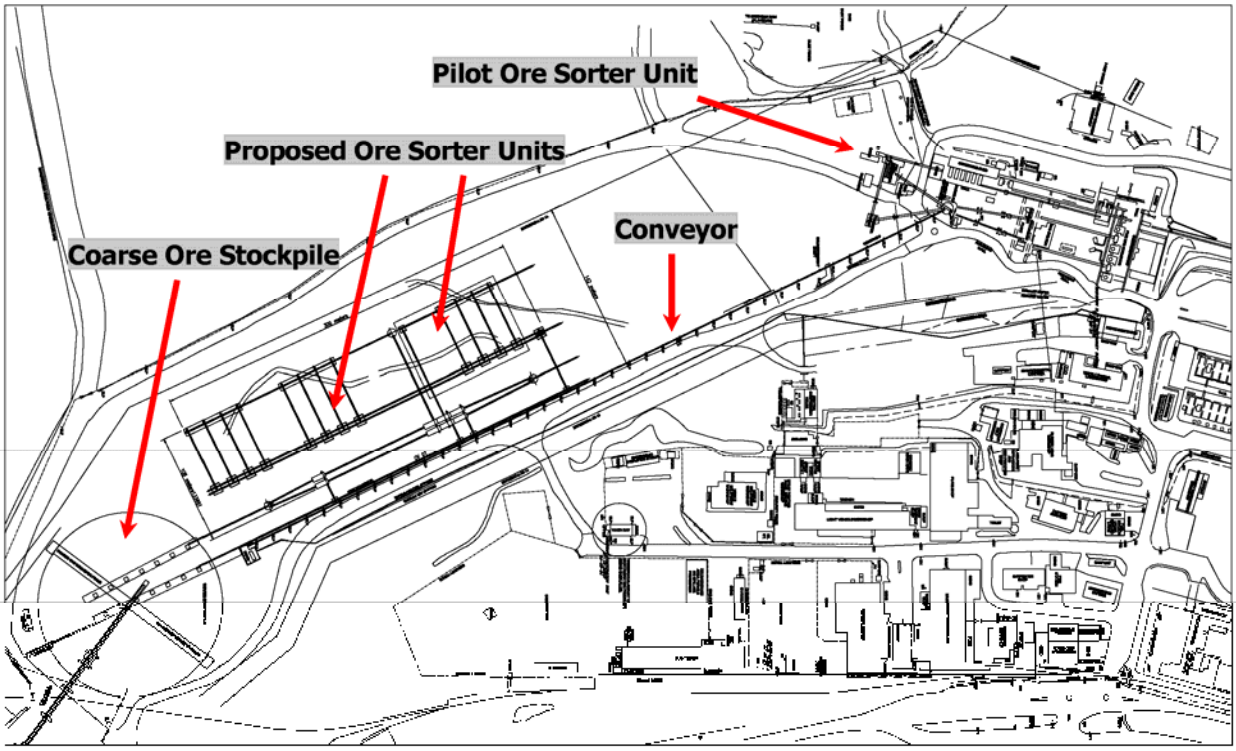


Figure 6: Location and layout of proposed ore sorter units (source Bateman Africa)

The engineering work for the project would entail construction of systems for ore reclaiming from the coarse ore stockpile, the pre screening plant, the production ore sorting plant, waste handling, and rejection of material to the nominated waste storage area and tie-in for all equipment into the current operation. It would include provision of various facilities, including maintenance, warehouse, control room, compressed air, on site utility distribution (water, electricity etc) and identification of lay down areas required for construction.

Findings of previous environmental assessments have indicated that there will be no major adverse impacts from the construction and operation of a radiometric ore sorter plant. The radiological hazard is expected to be well below the ICRP recommended limits. Noise levels and airborne dust emissions are expected to be maintained below the maximum permissible exposure levels for the area. However the area will be demarcated as requiring personal hearing and breathing protection as a safe guard for personnel.

2.3.2 Construction and process specifics

a) The present system of ore sorting

This section provides some detail on the operational elements of the ore sorting circuit.

- **Pre-screening plant**: Due to the presence of a significant amount of fine size material in the plant feed, a pre-screening section was added to the fine crushing plant in 1998. The purpose of this pre-screening plant is to screen and divert fine material away from the crushing circuit and to discharge this material directly to the fine ore stockpile for processing.
- **Fine crushing plant**: Coarse ore is withdrawn from the coarse ore stockpile by vibrating pan feeders, feeding onto a coarse ore reclaim conveyor. This conveyor discharges to a 1000 t surge bin ahead of the secondary crushers. The ore is further processed through secondary, tertiary and quaternary stages of crushing and screening and then delivered via a conveyor belt to the fine ore stockpile.

There are typically three levels of grade control presently applied at the Rössing mine, as follows:

- Analyses of blast hole data, whereby each blast is separated into a series of composites of similar characteristics, essentially based on a combination of ore grade and calc. index.
- The second level of control is derived from the scheduling process whereby mine planning ensures a balanced feed (of ore grade and calc. index) to the plant from the available blast composites.
- Radiometric truck scanners assess the average grade of a truckload of material to determine whether the load should be designated as ore, low grade ore or waste.

Implicit weaknesses in the above grade control process include the following:

- There are inherent limitations to which the geology and mine planning staff can identify ore grade and calc. index in a 15 m bench which has been blasted and which has therefore undergone internal mixing and significant lateral movement.
- The estimation of rock type is assessed on a visual basis for the composite as a whole, substantially on the basis of an inspection of the surface of the blasted muck pile. There are no sample values or scanner checks to improve accuracy.
- The truck scanner only scans about 5% of the crusher feed, being the surface 30 cm of each truck load.

b) The proposed system of radiometric ore sorting

The concept for production radiometric ore sorting is to install between eight and ten sorter units after the pre-screening plant and ahead of the fine crushing plant. The ore sorters will remove individual rocks below a set U_3O_8 grade from the feed stream using radiometric detection and compressed air ejection, resulting in a high-grade stream and a waste stream. The high-grade stream will be returned to the pre-screening plant coarse ore stream via conveyor, and the waste stream will be conveyed from the ore sorting machine to a yet to be determined waste rock disposal site.

Ore will be fed onto the ore-sorting machine via vibrating feeders and vibrating screens. An existing pilot plant is present on site. Note that the production sorting plant will be located some distance to the southwest of the pilot plant and that the pilot plant unit will be incorporated into the new production sorting plant. The machine's design combines a mechanical feed with a rock radiation measuring device and an optical rock profiling system. The rocks will be sorted on an "accept" and "reject" basis dependent upon the radiation content. The accept rock will be loaded onto the Accept Conveyor CV-11 and the reject rock onto the Reject Conveyor CV-12. Compressors will be installed to provide compressed air for the air blast chambers of the ore-sorting machine. In addition, a dust extraction system will be installed to control dust at all transfer points as well as the ore sorting machine and blast chamber.

The ore sorting production plant would be interfaced with the site process control and be operated remotely resulting in low labour requirements.

c) Environmental and economical advantages of the ore sorting plant

The following summarises the economic and environmental advantages of an ore sorting plant versus more conventional methods of increasing processing volume:

- An ore sorting process is a logical extension to the truck scanning process, allowing for an increased proportion of mill feed to be scanned. This has obvious advantages in terms of reducing infrastructure and the volume of vehicular traffic on the mine. This has known positive effects in terms of *inter alia* reduced dust and exhaust emissions.
- High grade ore with a high calc. index, low grade ore and even waste ore may become economical to process with the installation of an ore sorting plant. This would result in major cost benefits during clean-up operations upon decommissioning. Effected savings could be focused on rehabilitation.
- Although sorting may not reduce the acid consumption per tonne of ore leached, acid used per unit of U_3O_8 produced will be reduced as less tonnes of ore will need to be leached. This has directly beneficial impacts in terms of tailings produced and acid volumes utilised.
- Sorting does show a major cost benefit in the form of savings from variable costs as a result of less tonnes of ore being processed. Such savings also result from a reduction in the use of both fresh water and power consumption. Given the volume of water use and RUL's location in an arid environment, as well as the operation's draw on the power grid, these reductions would be welcome from a sustainability perspective.

Figure 7 summarises the key advantages of the proposed process.

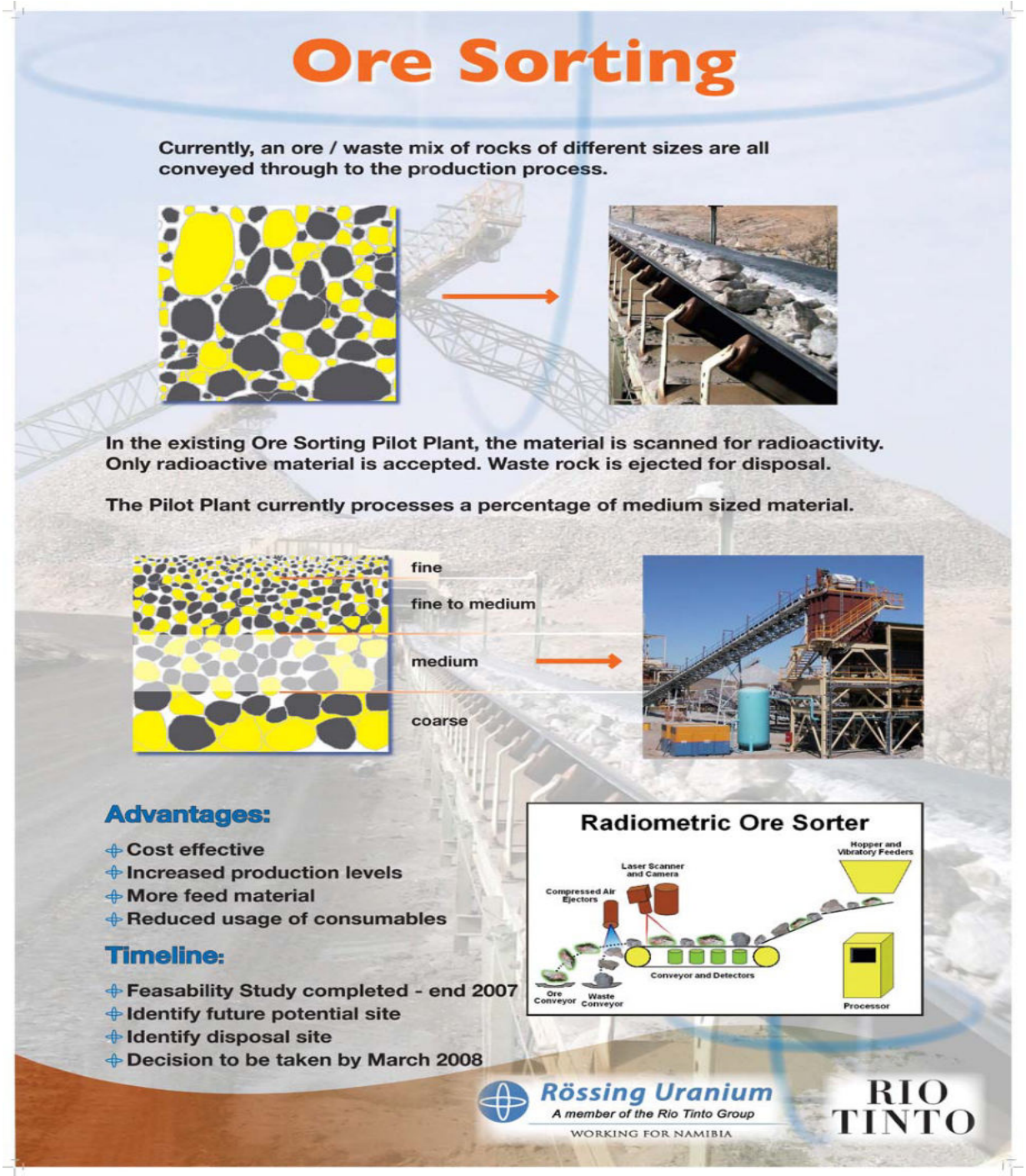


Figure 7: Sustainability advantages of extending the radiometric ore sorter plant (source; RUL public participation information)

2.3.3 Personnel

Projections of personnel requirements into the future indicate that approximately 50 additional staff members would be required for the operation of the ore sorter plant. Figures for the number of workers required to undertake the construction and commissioning of the ore sorter plant will become available as the engineering design reaches completion.

2.4 OPEN PIT IN AREA SK4

This section is compiled from a synthesis of the following reference material:

- Draft Environmental Management Plan: Extension of Mining Activities into SK4. Rössing Uranium Limited. 2007 (unpublished).
- Sustainability Assessment for the Life Extension of the Rössing Uranium Mine. 2004.
- 2006 Report to Stakeholders ~ Social, Economic, Environmental. Rössing Uranium/Rio Tinto. 2007.

2.4.1 Context

During earlier geological exploration undertaken in RUL's mining license area, two other areas of potentially viable ore besides the active SJ pit were identified. These are referred to as the SH and SK anomalies[9] and are located within three kilometers to the west and northwest of the SJ pit respectively. See Figure 8.

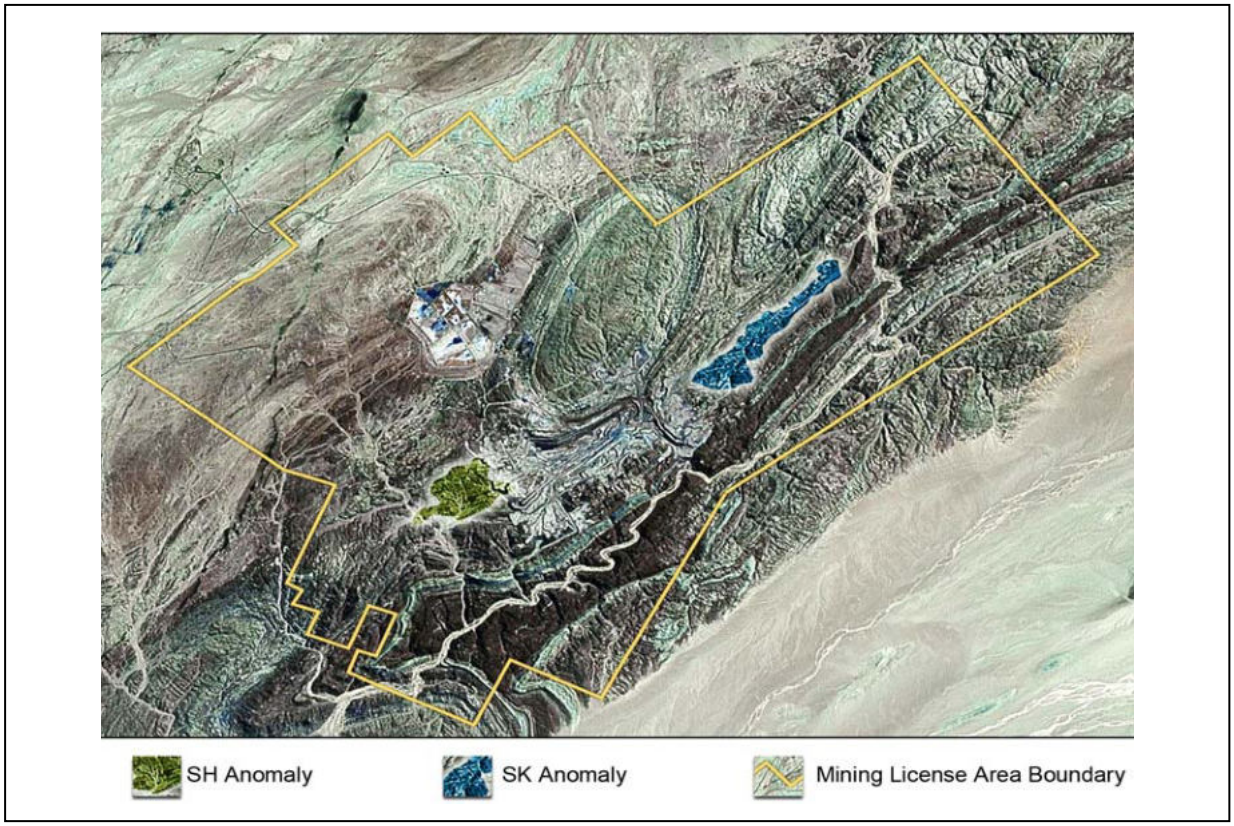


Figure 8: Location of SH and SK anomalies (source RUL)

[9] Both the SH and SK anomalies are proposed for eventual mining and an SEIA to seek environmental approval for their exploitation will follow as Phase 2 of RUL's expansion project. See Section 2.1 above in this regard.

The SK anomaly is of particular importance since it contains a smaller area of ore grades that are significantly higher than the active SJ pit. Besides the economic motivation presented by the increase in uranium prices on the international market in recent years, exploitation of this area within the SK anomaly, known as SK4, would supplement the lower grade ore currently processed by RUL.

Since the exploitation of SK4 may be seen as an augmentation rather than an expansion of existing operations, RUL initially adopted the approach that an amendment to the EMP already in place would satisfy the social and environmental obligations necessitated by mining SK4. Although this approach was acceptable to the responsible authorities, and a draft EMP for the extension of mining activities into the SK4 area was prepared (Rössing Uranium Limited, 2007), RUL has subsequently decided to subject the proposed development to comprehensive environmental assessment. This was motivated by their recognition that certain biological elements in the SK area are not well understood to allow for environmental decision-making, *viz*. the conservation status of the invertebrate fauna extant in the area. Adopting this approach is in accordance with RUL's adherence to the precautionary principle in environmental management.

As a consequence of RUL's adopting the precautionary principle, the proposed mining of the SK4 ore body is being subjected to comprehensive environmental assessment by being included as one of the components of the present SEIA for Phase 1 of the expansion project.

2.4.2 Method and extent of mining

The pioneering work required to allow access to the SK4 site would comprise drilling, some minor blasting and the use of heavy earth moving plant. Once suitable road access has been created, excavation will be undertaken to provide a drilling platform.

The drilling platform will then allow the initial excavation of two 15 m deep benches and access by loading equipment. The typical open-cast mining sequence of drilling, blasting, loading and haulage will be applied. Various heavy equipment will be put to use on the site, including an excavator and dump trucks, supported by a bulldozer and front-end loader. A water cart for dust suppression and a diesel bowser for refuelling will also be available.

It is envisaged that the SK4 pit will eventually comprise about 10 benches, in an excavation of 600 m in length, 300 m in width and 150 m in depth. The life of the SK4 ore body mine is anticipated to be approximately three years.

2.4.3 Haulage, processing and waste

A single haulage road of some 35 m in width is envisaged, accessing the SK4 pit in the northwest corner. This dedicated haulage road will continue to the existing primary crusher which is situated 3,5 kms to the northwest of the SK4 pit. Figure 9 provides a nominal indication of the route of the haul road and it should be noted that the infilling of a drainage line will be necessary to accommodate the road alignment. Although this infilling will result in an intrusion

into the landscape, its low elevation and the already transformed nature of the surrounding biophysical environment will be such that the impact of this section of the haul road will not be significant. The material from the SK4 pit will then continue in the ore stream, to be processed in the normal fashion through the existing metallurgical plant.

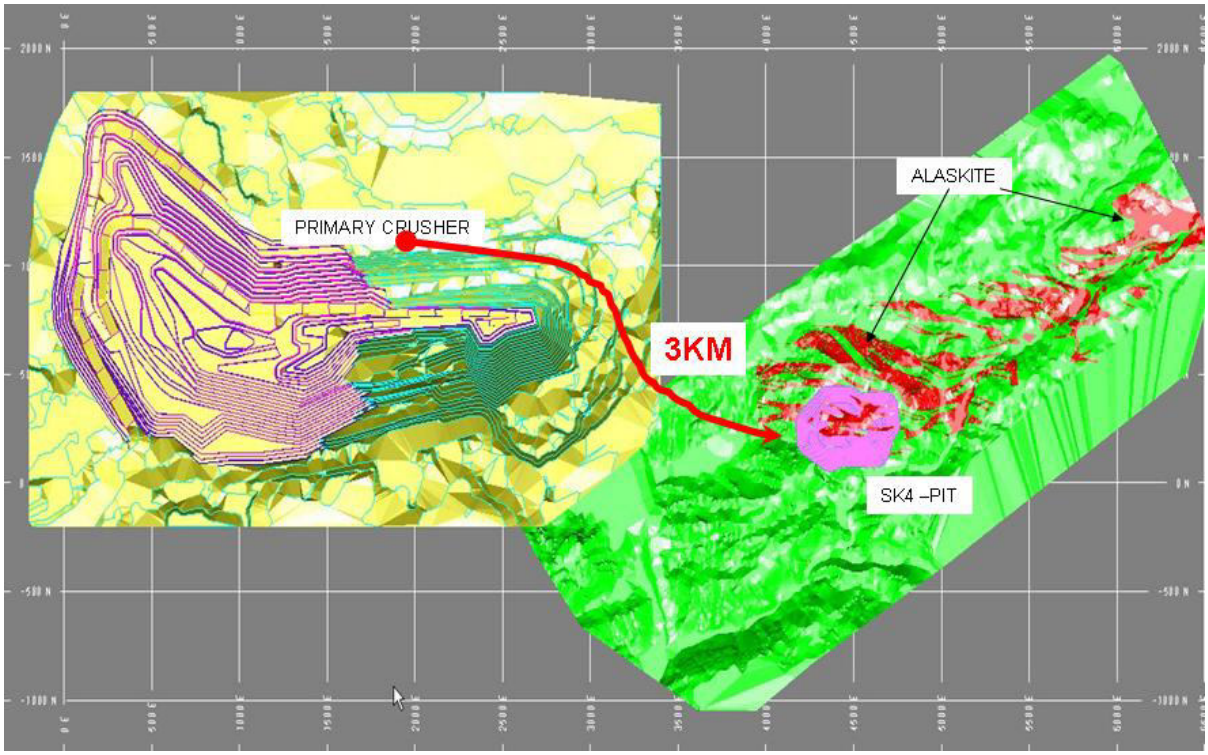


Figure 9: Nominal alignment of the SK4 haul road (source: RUL)

The waste rock (±20 Mt) derived from the SK4 pit will be accommodated within existing waste dump sites and an area designated as *Waste 7* has been earmarked for this purpose. Although this waste dump site offers sufficient capacity to hold the waste ore from the SK4 pit, the longer term implications of visual intrusion on elevated horizontal lines in the landscape will be considered.

2.4.4 Infrastructure

Water will be required for drilling activities and dust suppression in the SK4 pit. The current rate of water usage for these purposes for the entire mine operation is ±700 m^3/day. This figure is likely to double with the exploitation of the SK4 ore body and expansion of the mining activities in the active SJ pit.

Groundwater is presently abstracted from the Khan River for use in dust suppression and this source provides in the order of 600 m^3/day. A waste transfer pond in the waste rock disposal area designated *Waste 4* will provide the necessary water for SK4. This pond is fed by water from the Khan River source and it is intended to increase its volume by supplementation from plant runoff from Boulder Gorge and treated effluent from the waste water treatment works. The

supply of water to the SK4 pit is thus an integrated element of the management of water for the entire mining, processing and waste disposal operation[10].

Together with water being provided for the SK4 mining activity, electricity will also be brought to the site. The principle of optimising linear infrastructure within existing or planned utility corridors will be applied, meaning that the dedicated haulage road would in all likelihood also provide the route for electricity and water supply.

2.4.5 Personnel

The development and exploitation of the SK4 ore body would require a workforce of 190 personnel. Most of these would be employed in the drilling and blasting activities, and in the loading and hauling operations.

If the present mining contractor undertakes the development and exploitation of SK4, 150 personnel would be relocated from their present deployment in the SJ pit to the SK4 site. Consequently, 40 additional personnel would need to be employed. However, if RUL decides to undertake the mining themselves, the required personnel would be sourced from within the organisation or permanent skilled personnel would be employed.

It should be noted that the present personnel complement in the active SJ pit is in the order of 200 people. The additional requirement for the SK4 pit is therefore a relatively substantial proportion of the mining workforce. This is explained by the fact that the mining activities at the SK4 site will be accomplished by means of smaller plant and equipment, which require more operators to reach the same levels of output.

When compared to the entire RUL workforce of ± 1100 permanent employees[11], however, the increment in personnel numbers that would result from the proposed development and exploitation of the SK4 ore body is not substantial.

[10] With reference to groundwater quality, the intention is to include the SK area in the existing groundwater flow model that is applied by RUL (Aquaterra, 2005). This will require an extension of the application, insofar the physical area that is covered by the model is concerned.

[11] 939 in 2006 (Rössing Uranium Limited, 2007), although this figure doubles when contract and temporary employees are included.

3 PUBLIC PARTICIPATION PROCESS

3.1 INTRODUCTION AND SYNOPSIS OF ISSUES

Engagement with the public and stakeholders interested in or affected by development proposals forms an integral component of the environmental assessment process. Thus, I&APs will have an opportunity at various stages throughout the SEIA process to gain more knowledge about the proposed project, to provide input and to voice any issues of concern.

Stakeholders and I&APs have had several opportunities to participate in the Scoping stage of the present SEIA process and the useful inputs received are acknowledged. The following are the most noteworthy of the issues raised by I&APs to date, as derived from the stakeholder feedback forms provided in Annexure H of this report:

- Employment opportunities;
- Workplace health and safety concerns, including air and water pollution and noise;
- Housing implications;
- Services such as schools, medical care and water availability;
- Effects on the regional and local economy, including tourism;
- Negative social impacts from newcomers seeking work;
- Possible human and environmental threats from transporting, storing and processing sulphur and sulphuric acid, in and between Walvis Bay and the mine site;
- Possible dust and noise threats to humans and the environment from the ore sorter plant and from the SK4 mining area, including waste rock management;
- Biodiversity implications, particularly in the SK4 mining area;
- Supply, storage, application, runoff and reuse of water, particularly in the SK4 mining area;
- Regional implications of bulk water supply;
- Visual impacts of the acid plant, ore sorter or SK4 mining activities; and
- Energy use.

The objectives of public participation will be maintained throughout this SEIA process. These are to provide information to the public, identify key issues and concerns at an early stage, respond to the issues and concerns raised, provide a review opportunity, and document the process properly,

3.2 IDENTIFICATION OF STAKEHOLDERS

The following stakeholder groups were identified as the key ones to be consulted during the assessment process:

- Central government ~ Ministries of:
  - Mines and Energy

  - Health and Social Services
  - Labour and Social Welfare
  - Environment and Tourism
  - Agriculture, Water and Regional Development
  - Regional and Local Government and Housing
  - Education
- Regional and local government:
  - Erongo Regional Council
  - Swakopmund Town Council
  - Walvis Bay Town Council
  - Arandis Town Council
- The !Oe#Gan Traditional Authority,
- other uranium mines in the Erongo Region,
- Rössing Uranium Limited,
- The Rössing Foundation,
- the media,
- Namport,
- Namwater,
- Nampower,
- Transnamib,
- farmers, both small-scale and commercial,
- other economic sectors which may be affected by mineral exploitation, e.g. tourism,
- community groups and social institutions in Swakopmund, Walvis Bay and Arandis,
- service providers, and
- organised labour.

3.3 INITIATING THE PROCESS (SCOPING STAGE)

The proposed project was advertised in national, regional and local newspapers, as reflected in Table 2 below. Annexure C provides an example of one of these advertisements. The advertisements also announced the commencement of the SEIA process, provided information about the public participation meetings and invited registration as I&APs. The aim was to raise wide public awareness of the project.

Newspaper	No of placements	Placement Dates	Page	Heading
Namib Times	2	14,17 August 2007	3	Public Meetings
Republikein	2	15,17 August 2007	3	Public Meetings
Republikein	1	20 August 2007	3	Public Meetings
Namibian	2	15,20 August 2007	5	Public Meetings
Namibian	1	17 August 2007	5	Public Meetings
All.Zeitung	2	15,17 August 2007	3	Public Meetings
All.Zeitung	1	20 August 2007	3	Public Meetings
New Era	2	15,17 August 2007	5	Public Meetings
New Era	1	20 August 2007	5	Public Meetings
Economist	1	17 August 2007	5	Public Meetings
Informante	1	16 August 2007	5	Public Meetings
Southern Times	1	18 August 2007	3	Public Meetings
Observer	1	18 August 2007	3	Public Meetings
Plus Weekly	1	17 August 2007		Public Meetings

Table 2: Schedule of newspaper advertisements

Notices of the public participations meetings were posted in public places in Swakopmund, Walvis Bay and Arandis. Annexure D provides an example of one of these notices.

A Public Information Document (PID) was forwarded to I&APs, made available at the public participation meetings and was provided on request. Annexure E provides a copy of the PID. This PID aimed to inform I&APs about the proposed development by RUL and to promote participation by stakeholders in the SEIA process.

A comment sheet was provided at the public participation meetings, inviting comments on issues that stakeholders saw as critical for inclusion in the SEIA.

Three public participation meetings were held during the initiation of the SEIA process, as follows:

- Alte Brücke, Swakopmund : 20 August 2007
- Pelican Bay Hotel, Walvis Bay : 21 August 2007
- Arandis Town Hall, Arandis : 22 August 2007

The public participation meeting in Swakopmund was preceded by a presentation of the project to the media. All three meetings were conducted in an open-day format, which gave the public an opportunity to view posters of the project, and to raise questions with the specialists who were in attendance. Attendance registers for these meetings were compiled and all attendees whose names and contact details are legible have been included in the list of registered I&APs (Annexure I). The original attendance lists are available on request.

As far as focus group and key informant meetings are concerned, a full list of these, together with minutes from the meetings, are provided in Annexure F and Annexure G respectively.

Regarding stakeholder feedback and ongoing involvement, a record of stakeholder comments, whether these were questions or concerns, has been compiled in a form which records the comment, the name of the commentator, the form the comment took and the response thereto. This is a comprehensive list of comments made at all the meetings held during the public participation process, as well as comments submitted in writing. The stakeholder feedback forms are provided as two sheets in Annexure H of this report.

All I&APs who have registered themselves since the initiation of this project are listed in Annexure I.

Stakeholder awareness has been maintained through reports on progress wherever feasible, responses to written queries, and information dissemination where relevant. In all respects, there has been a productive two-way dialogue between the SEIA team and stakeholders.

For ease of reference, all correspondence to date is summarised in Table 3 on Page 40.

3.4 PUBLIC PARTICIPATION WAY FORWARD

During the SEIA stage that will follow the present Scoping stage, public participation and engagement will comprise the following:

- engage with I&APs who were not included in the Scoping stage participation process,
- present the findings of the draft SEIA Report,
- register any additional I&APs,
- note and respond to questions and/ or issues of concern, and
- investigate issues at greater depth where the need for this has been indicated.

All I&APs will be informed of the availability of the draft SEIA Report, the period for review and the venues where the report will be available.

The draft SEIA, including the specialist studies, will be presented to the public at public participation meetings in Arandis, Swakopmund and Walvis Bay during January 2008. At the same time, copies of the draft SEIA Report will be lodged for public viewing at the libraries in Swakopmund and Walvis Bay, and at the Arandis Town Council offices. The report will also be placed on RUL's website.

All I&APs will be informed of the results of the public review of the draft SEIA Report.

Table 3: Summary of correspondence and documentation to date

Project Activity	Dates	Notices	Letters	Documents	Meetings
Project Preparation	14 June 2007			Minutes of meeting	Multistakeholder Risk Identification Workshop, Swakopmund.
Project Initiation	August 2007				Meetings with authorities.
Initiation of Public Participation		Newspaper adverts. Awaiting information. Notices in public places in Arandis, Swakopmund and Walvis Bay	Notification of project & invitation to stakeholders' meeting.	PID	Meeting with media.
	20-22 August			Stakeholder Issues Sheet (1)	Public Participation meetings in Swakopmund, Walvis Bay and Arandis.
	23 August – 22 September			Minutes of meetings. Stakeholder Issues Sheet (2)	Key informant and focus group meetings.
Notification of Scoping Report	26 October 2007	Notification of release of Scoping Report in print media.	Letters to I&APs notifying them of release of Scoping Report.	Scoping Report.	

4 IDENTIFICATION OF ALTERNATIVES

4.1 CONTEXT

The identification and consideration of alternatives is recognised as required practice in environmental assessment procedures globally. Regulatory requirements in Namibia accord with this requirement, as reflected in the Environmental Assessment Policy, *viz*. as a step in the earliest proposal development stage[12].

Alternatives are typically considered at various stages in the formulation of proposed developmental policies, plans and projects. With reference to policies and plans, these are usually addressed at the higher level of national and regional strategy and forward-planning. As far as RUL's proposed expansion project is concerned, and as the name implies, project-level alternatives are assessed specifically at the project level. It is these alternatives that are put forward and described in this Scoping Report. Part of the Scoping process is to screen out those alternatives that will not be considered in the SEIA Report stage. Unless there is valid and logical justification to screen them out, all feasible alternatives should be considered in the SEIA Report stage.

During the next stage in the process, i.e. the SEIA Report stage, each of the selected alternatives will be assessed in terms of their potential impacts on the socio-economic and biophysical environment. The formulation of mitigation measures to reduce the significance of negative impacts is a key part of the assessment process. In deriving mitigation measures, process modifications to the preferred alternatives may be made.

At the end of the SEIA process, RUL would be able consider the assessment of the alternatives described in this section, together with any mitigation measures that are proposed, to select preferred options to submit to MET:DEA for their clearance.

4.2 STRATEGIC ALTERNATIVES

As contextualised in the previous section, strategic alternatives refer to those alternatives that were considered at a higher level than this project-level SEIA. In this case, and as described in Section 1.2 above, the Constitution of the Republic of Namibia, Vision 2030, the Environmental Assessment and Management Act and RUL's Sustainabilty Assessment provide the overarching policy and planning framework within which RUL's strategic decisions have been made. The present SEIA is thus part of the re-evaluation of the life of the Rössing uranium mine, beyond the present target date of 2016, in terms of overall feasibility, i.e. including social and environmental criteria.

While there is also a requirement in terms of environmental best practice to examine the "no go" alternative, this option would amount to the Rössing uranium mine closing in 2016. With the

[12] See Section 3 of Appendix A of the policy.

current opportunity of deriving strategic, economic and social benefit from prolonging the life of the mine, not taking up this potential opportunity is considered to be an unreasonable alternative. As a result, the "no go" alternative is not being evaluated at the same level of comparative detail that the project alternatives reflected in this report are. Rather, the status quo forms the baseline against which potential positive and negative environmental impacts of RUL's proposed expansion project are assessed.

4.3 PROJECT-LEVEL ALTERNATIVES

Each of the three components of Phase 1 of RUL's expansion project, i.e. a sulphuric acid plant and associated storage and transport, a radiometric ore sorter plant and the mining of the SK4 ore body, are now described in terms of the project-level alternatives available for assessment[13]. A summary of these alternatives is provided at the end of this section.

4.3.1 Sulphuric acid plant and associated handling, storage and transport

a) Site

A site for the proposed acid burning plant on the mine has been identified, *viz*. within an area presently used as the salvage yard[14]. See Figure 10. A decommissioned[15] acid plant is in existence in the same general area but its intended dismantling and removal will later be subjected to the required occupational health and safety prescriptions, which may include the decontamination of polluted substrate. Although the timing of the removal of the redundant acid plant forecloses on utilising the same site for the proposed new acid plant, the severely changed nature of the area, within the transformed, brownfield mine processing precinct, means that there is no lost opportunity from an environmental perspective. Nevertheless, the exact location and orientation of the proposed acid plant within the greater salvage yard area will be subjected to technical and economic optimisation insofar the effects of air quality, human risk, engineering cost and infrastructure integration are concerned. Due to practical considerations related to existing infrastructure, no array of alternatives that would bring significant environmental benefit is thus available. Adherence to best practice will be satisfactory in the siting of the proposed acid plant on the mine.

The manufacture of sulphuric acid requires elemental sulphur feedstock and this would have to be imported via the Port of Walvis Bay and transported to and stored at the proposed acid burning plant on the Rössing mine. A separate environmental assessment process is being undertaken by Grindrod Limited, the lessees from Namport of the bulk handling facility in the port[16], for their proposed sulphur handling and storage infrastructure. RUL has nevertheless

[13] Note that the remaining expansion project components will be dealt with in a separate process that is subject to a different programme, as described in Sections 1.1, 1.5 and 2.1 above.
[14] Note that the site will need to include space for the handling and storage of sulphur feedstock.
[15] March 2000.
[16] Note that Namport, the Namibian port authority, remain in ultimate charge of contractors' and lessees' activities within harbour precincts they are responsible for. Both the Grindrod Limited and RUL development proposals within the Port of Walvis Bay will thus have to be acceptable to Namport.

included the assessment of sulphur handling and storage in the port in the SEIA for Phase 1 of their expansion project, to accord with best practice insofar assurance of acceptable environmental standards on the part of commercial suppliers is concerned. This will include an examination of the site within the Port of Walvis Bay that Grindrod Limited envisage for the sulphur handling and storage facility, although such examination will be in response to a site indicated by Namport - and subject to their own environmental assessment process - and will not extend to the consideration of alternative sites.

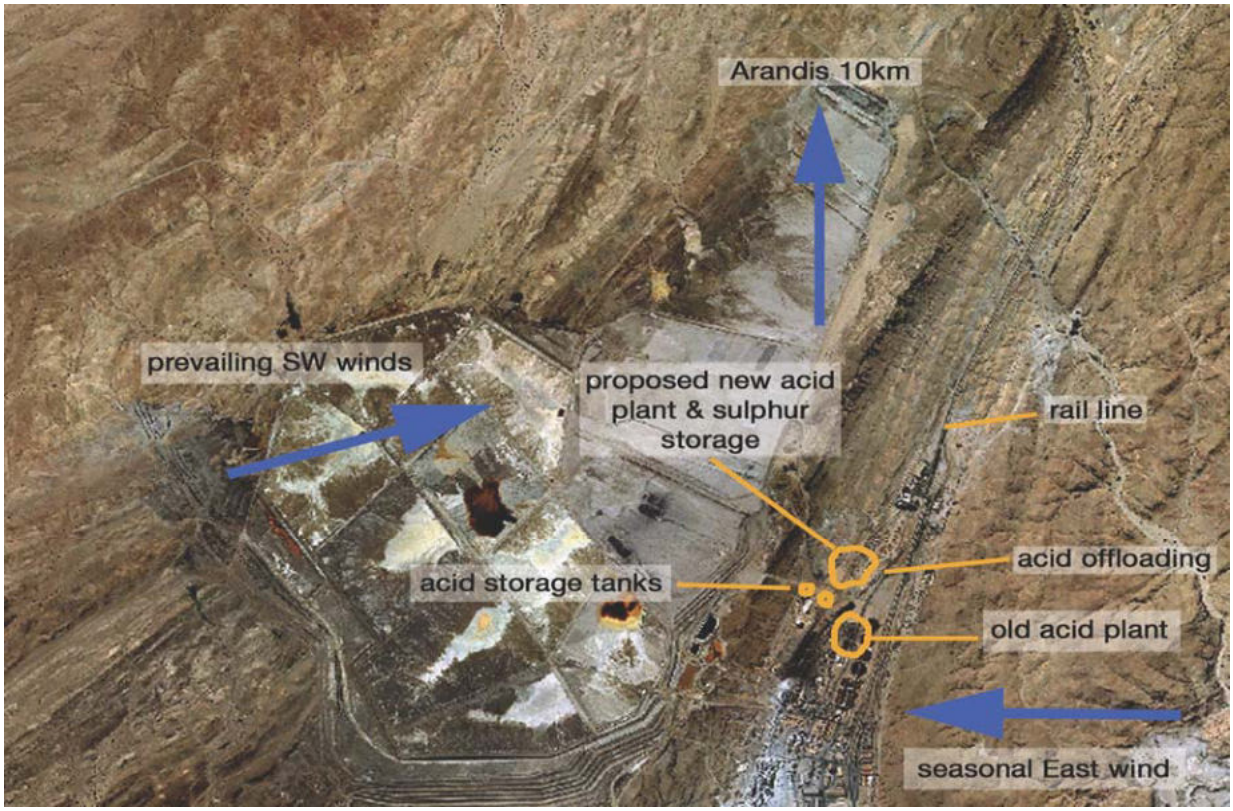


Figure 10: Overlain on an aerial photograph, the proposed location of the new RUL acid plant relative to the old acid plant and other related sulphuric acid producing infrastructure (source: RUL public participation material, 2007)

b) Handling, storage and transport

It is understood that RUL's responsibility for managing the elemental sulphur feedstock for their acid plant will commence at the point at which it is loaded onto railway wagons at their facility in the Port of Walvis Bay, for transport to the mine. However, its handling and storage in the harbour will be undertaken by Grindrod Limited, as indicated in the previous section. It is being included in the present SEIA for the sake of completeness of reporting and integration of related activities for environmental decision-making. Based on the assumption that such handling and storage will primarily accord with globally recognised best practice, and that the activities would occur within an industrial precinct, it is unlikely that an array of alternatives will need to be examined in this regard. By the same token, the handling and storage of sulphur in proximity to the acid plant on the mine would also not present site or technological alternatives, provided that appropriate engineering design and operational best practice are applied.

The transportation of the sulphur by rail to an offloading and storage facility in the vicinity of the acid burning plant on the mine will require purpose-designed rail wagons. Clarity regarding the means of loading, as well as whether side-tipping or bottom-opening emptying of the wagons will be utilised, has yet to emerge. While this is largely an engineering design issue, it may present alternatives that could be gainfully subjected to environmental assessment.

With reference to the storage of sulphuric acid produced by the proposed acid plant, prior to its application in the metallurgical process for the leaching of the pulped ore, this will occur in two existing tanks of 15 000 t each, designed for the purpose.

c) Technological alternatives

A recent outcome of the various feasibility studies undertaken or commissioned by RUL regarding the optimum and most appropriate technology to apply in the proposed acid burning plant is the order of magnitude study carried out by SNC-Lavalin Fenco (2007). Five different options were considered in this study, namely:

- Option 1: Base case double-contact double absorption system with electricity generation from waste heat and a production rate of 250 kt/a.
- Option 2: Base case but doubled in output to 500 kt/a.
- Option 3: Base case but waste heat used for desalinisation[17].
- Option 4: Base case but waste heat used as process heat in leaching plant.
- Option 5: A dual-feedstock system, i.e. either pyrite or sulphur can be used to manufacture sulphuric acid.

At this time, the preferred option from a technological point of view is an acid plant per Option 1, located on site and producing 1 200 t/d, as described earlier in this section. However, the options will be subjected to review, to confirm that biophysical and socio-economic issues would not necessitate a revision of the technological preference.

A related technological issue is whether air or water cooling should be applied in the acid burning plant. Although the heat resulting from the exothermic nature of acid production will be utilised for electricity generation, cooling will nevertheless be necessary.

As far as the optimal emission stack height of the acid plant is concerned, this will be largely informed by the outcomes of the air dispersion modelling described in Section 6 below. Stack height alternatives of 50 m and 75 m are to be examined and the overriding criterion in this case is that risk to human health is avoided.

[17] Note that this option would require the plant either being located on the coast or such that seawater could be supplied to it in bulk.

4.3.2 Radiometric ore sorter plant and associated reject rock disposal

a) Site

A site for the proposed radiometric ore sorter plant has been identified in the area west of the conveyor running between the existing coarse ore stockpile and the series of crushers and screens where the present pilot ore sorter plant is located. See Figure 6. Since the area is within a largely transformed space between the mining operations and the processing plant, and contains various linear utilities, the technical and engineering criteria that informed the choice of site are unlikely to be influenced by environmental concerns.

Nevertheless, the exact location and orientation of the proposed ore sorter plant will be subjected to environmental review insofar the effects of air quality, human risk, noise and visual impacts are concerned.

b) Technology and design

The technology employed to radiometrically select higher grade ore from the ore stream is sophisticated. Given that such technologies represent leading-edge science and that research is continually being undertaken to advance the technology, their application is such that a variety of alternative technologies is not available.

An element of the plant design, however, may present alternatives. This is related to the arrangement of the pre-screening units, which may be positioned vertically, i.e. stacked one above the other, or horizontally, i.e. in series at the same level. Issues of engineering cost are relevant but concerns about visual intrusion of the vertical arrangement and the physical space required for the horizontal arrangement, may require these to be assessed as alternatives from an environmental perspective.

The nature of the transportation, screening and sorting of ore results in considerable noise and dust impacts. The compressed air pneumatics that separate the accept and reject rock streams, and the discharge points of conveyors, are two particular cases in point of sources of noise and dust respectively. Although these impacts will be subjected to mitigation as far as is technologically and economically feasible, the primary criterion will be the meeting of applicable occupational and public health and safety standards. The mitigatory measures may include enclosing the plant or certain components of it, as well as noise attenuation and fugitive dust capture. These proposed measures would be subjected to environmental review rather than treated as alternatives, since they are a means of achieving acceptable levels of mitigation.

c) Reject rock disposal sites

RUL has in the past undertaken various studies to identify possible sites for the disposal of the reject rock from the proposed radiometric sorting process. The most recent of these studies

(Rio Tinto Technical Services, 2005) addressed seven possible locations, illustrated in Figure 11 below, as follows:

- Location A ~ The tailings dam;
- Location B ~ Below the southern toe of the tailings dam;
- Location C ~ The valley and areas adjacent to the grit-blasting yard;
- Location D ~ The mine waste dump designated *Waste 5*;
- Location E ~ The upper area of Dome Gorge;
- Location F ~ Northwest of the salvage yard on the slopes of the Berning Range; and
- Location G ~ South of the Seepage Dam access road.

However, certain of these locations are inherently flawed or have significant constraints. This is due to their impacting on the management of the tailings dam and its seepage (Locations A and B), limiting the exploitation of ore (areas within Locations D and G), foreclosing on possible sites for heap leaching (Location E), or posing infrastructural and visual impacts (Location F).

An engineering cost study is underway to determine the most beneficial means of transporting the reject rock, i.e. whether by truck or conveyor. Initial indications are that trucking may be preferable within a distance of 3 km.

The possibility of utilising existing, designated waste rock disposal areas is also being kept as an option.

Figure 11: Location of the initial reject rock disposal sites (source: RUL)

4.3.3 Mining of the SK4 ore body

Given that the development and exploitation of the SK4 ore body would essentially comprise an extension of present mining activities within RUL's allocated mining licence area, the availability of alternatives is limited. The envisaged method of mining, as described *inter alia* in Section 2.4.2 above, accords with current and approved practice on the Rössing mine and, as such, may be regarded as acceptable practice. There are certainly no feasible alternatives available insofar geographical location and mining methodology are concerned. The ore derived from SK4 would be subjected to the current metallurgical beneficiation process[18] applied on the mine, further limiting the availability of alternatives during the exploitation of the ore body.

Environmental controls required during the exploitation of the SK4 ore body would be based on mitigation measures and operational management practices currently in place on the mine. These comprise the occupational health and safety issues of noise, dust and radiation management and monitoring, and the socio-economic and biophysical issues of hydrology, heritage, biodiversity, visual and human resources impact management.

Based on the above, and with reference to the project description provided for SK4 earlier in Section 2.4, it appears that there are only three areas that may require the assessment of alternatives. These are the final formulation of the design and geometry of the haul road alignment, the ability of current waste disposal sites to accommodate the envisaged waste rock, and the means by which water for dust suppression and drilling are sourced and their runoff managed.

It should be noted that the engineering design refinement and finalisation of elements of the SK4 mining operation have yet to occur. The SEIA stage of the process that follows the present Scoping stage will provide an opportunity to incorporate new and/or additional information.

4.3.4 Other project level alternatives

The previous three sections have dealt with the acid plant, ore sorter and SK4 mining in particular. However, there are several potential environmental impacts that cut across the entire Phase 1 SEIA. These mainly relate to socio-economic issues that are common to the specific components of the expansion project. These are now briefly described insofar possible alternatives may be available.

Housing for additional permanent employees and temporary construction workers would be required. The options available for formal housing are unlikely to present an array of alternatives. The temporary construction camp/s may benefit from the consideration of possible mitigatory measures in terms of location and service provision.

The availability and adequacy of social services such as schools and medical care, to accommodate the increase in the numbers of employees, need to be examined. A related issue is the ability of existing infrastructure services such as domestic water supply, waste

[18] As opposed to the ore eventually derived from the SH ore body, which would require a different metallurgical beneficiation process, to be dealt with in detail in Phase 2 of RUL's expansion project SEIA.

management, electricity supply and transport services to accommodate the increased demand. The degree to which the provision of these services can be examined in the present SEIA process is dependent on regional resource availability and planning. This will require attention to off-site and cumulative impacts and will be addressed as part of the socio-economic specialist study.

Also important in the regional context is the fact that several uranium mining developments are presently underway in the Erongo Region. Managing the social, infrastructure and resource issues mentioned above would benefit by a strategic or sectoral approach to their assessment. While the present SEIA will address cumulative and sectoral impacts as far as possible at the project level, RUL would require co-operation from national, regional and local authorities, interested stakeholders, and the other uranium mining companies, if a properly integrated approach is to be brought about.

Due to the difficulty of addressing cumulative and sectoral impacts, the present SEIA process will be undertaken in an adaptable manner, to allow for new or additional information to be incorporated as the process unfolds.

4.3.5 Summary of available alternatives

The following table provides a summary of the project-level alternatives that have been identified during the present Scoping stage, for further assessment during the SEIA Report stage of this assessment process.

Project component	Aspect
Acid plant & related handling, storage & transport of sulphur feedstock	Design of handling & storage facility in Port of Walvis Bay
	Design of rail wagons required for sulphur transport
	Stack height of acid plant
Radiometric ore sorter plant	Vertical or horizontal arrangement of pre-screening units
	Suitable disposal site for reject rock
SK4 ore body	Haul road design and alignment
	Waste disposal
	Water management

Table 4: Project-level alternatives to be carried forward into assessment stage

These aspects of the listed Phase 1 SEIA project components will be subjected to the consideration and evaluation of alternatives in the assessment stage of the process. The aspects that do not have alternatives will nevertheless also need to be assessed. This will be done by means of determining that acceptable levels of mitigation are available, or by confirming that the best available environmental design or practice is being applied.

5 THE AFFECTED ENVIRONMENT

This chapter was compiled from a synthesis of the following reference materials:

- Rio Tinto Technical Handbook Series. 2002
- Rössing Closure Report. 2005
- Sustainability Assessment for the Life Extension of the Rössing Uranium Mine. 2004.
- 2006 Report to Stakeholders. 2007.

5.1 SOCIAL ENVIRONMENT

5.1.1 Rössing Employees

The RUL employment figure for 2007 is reported as 1076. During 2006 it was indicated that 96.6% of RUL's employees were Namibian citizens, and it is estimated that more than 4000 persons (including workers and their direct dependants) rely on Rössing Mine for their livelihood. As a result of a low labour turnover rate and the tendency for retrenchments to occur predominantly within the lower age groups, the average age of RUL worker in 2003 was 47, but this is improving as compared to the average age of 43.6 and 43.1 in 2005 and 2006 respectively.

Of the 310 RUL workers living in Arandis in 2003, 66% own their own houses, bought from the mine in 1994, whilst the remainder continue to live in company-owned housing. The Arandis-based workers tend to be the lower skill grade workers and can afford the substantially cheaper properties sold by the mine. The remaining 500 workers live in Swakopmund, where property prices are five to ten times that of the Arandis properties, and where 333 workers own their own houses and the remainder live in company-owned houses.

Changes at the Rössing mine can have a significant effect on the employment rates and thus the social environment in the Erongo Region. It has been previously estimated that, provided the mine does not close or suffer other major economic hardships, the number of workers employed by RUL would increase to an estimated 1333 by 2010 and to then remain reasonably constant for the foreseeable future. This approximation stands to increase, as in 2006 it was envisaged that the number of permanent employees at Rössing by the end of 2007 would exceed 1000.

RUL has continually contributed to the development of its workers and the surrounding communities through their corporate social responsibility framework, centred on the establishment and funding of the Rössing Foundation. The Foundation is primarily involved with education, vocational training, skills development, small and medium enterprise development, agriculture and sustainable resource management in an effort to encourage a sustainable and self supporting local economy in the future absence of the mine.

5.1.2 The Erongo Region

The Erongo Region has experienced dramatic population growth in its larger urban centres, namely Walvis Bay and Swakopmund, since Namibia's independence. In 2000, the unemployment rate for the Erongo Region stood at 32.6% and much of this is attributed to migration from other Regions. The unemployment rate has resulted in the proliferation of informal settlements in and around urban centres. The Erongo Region boasts the third highest Human Development Index ranking in Namibia, as well as having the second lowest level of household poverty and a mean per capita income almost twice the national average.

5.1.3 Social Services

The Erongo Region has a relatively high level of social service provision, despite the rapid population growth rate.

Household water

In 2004, 100% of urban households in the Region are served with improved water and in rural areas, 89% of households are within the government stipulated distance of 2.5 km from an improved water source, making the Erongo Region the second highest Region in Namibia with regard to the provision of improved water to individual households or to within acceptable distances from households.

Health services

The Erongo Region has four state and three private hospitals, one health centre, fourteen clinics and seven outreach points, placing 98% of the population within ten kilometres of a health care facility.

HIV/AIDS-related deaths are the leading cause of death across the adult age group. In 2002, HIV/AIDS prevalence varied from 25% in Walvis Bay to 16% in Swakopmund and is similar to the national infection rate of 23.3%. HIV/AIDS is a burden on Government budgets due to increasing health care costs affiliated with AIDS related deaths, the loss of productivity of the working class, increased costs associated with training of replacement personnel, increased pension costs, increased sickness benefits and death benefits amongst other costs. Namibia is prone to the economic impacts of HIV/AIDS due to the shortages of skilled and semi-skilled personnel. The affects of HIV/AIDS have been felt in the fishing, tourism and construction sectors in the Erongo Region.

On the household and community economic level, the affect of HIV/AIDS is even more dramatic, where lost incomes have reduced disposable incomes and lowered consumptive spending, as well as depleted household savings. This causes many family groups to fall into or regress further into a state of poverty. Family groups within the community not directly infected by the virus are affected by the need to care for orphaned children or in supporting neighbours financially.

Education services

As of 2004, the Erongo Region was relatively well served by education services as compared with other Namibian Regions. The Region had at that time a total of 56 schools, nine of which are secondary schools. The Erongo Region has the lowest pupil to teacher ratio in Namibia.

Other services

The Erongo Region, particularly the coastal towns of Swakopmund and Walvis Bay, is well served with transport infrastructure, police services and productive services in the agricultural, fishing and small-scale mining sectors, amongst others.

5.1.4 The Arandis Community

Arandis was established in 1976 by RUL for mine workers and their families. In its early years the town was well-equipped with modern infrastructure including schools, a health centre and sporting and recreational facilities. Municipal services, including electricity and water, have been heavily subsidised by RUL. In 1994 Arandis was proclaimed as an independent town with an elected Local Authority falling under the Ministry of Regional and Local Government and Housing. The new Town Council has experienced problems in coping with its new responsibilities arising from a weak tax base and insufficient economic activity and has thus remained reliant on central government for financial support in meeting its operational costs and service provision responsibilities.

The Town Council and other partner organisations have embarked on a vigorous campaign to seek out and encourage investment and development in the town. Arandis has been promoted as an Export Processing Zone, has tried to attract Namibian enterprises and has tried to encourage local small enterprises. Arandis is also home to the Namibian Institute of Mining and Technology, established with the support of RUL. The Town Council has considered establishing Arandis as a centre for educational excellence and plans to this end are currently being implemented. Key to this is the Rössing Foundation, established in 1978 as part of RUL's CSR (Corporate Social Responsibility) programme, and mainly focused on advancing education facilities and initiatives. Around 2004 a decision was taken to focus approximately 75% of the Foundation's core finance toward projects located in Arandis in an effort to invigorate the local economy. To this end, the Foundation is implementing a strategic plan that focuses on Arandis and the need to establish effective community institutions, support community initiatives and expand educational opportunities in the town. The Foundation has been working with the Arandis Town Council to broaden the economic base of the town, including the proposal to establish a cultural village, a small enterprise fund for seed capital and promoting the growth of small and medium enterprises in general. In addition the Foundation has strengthened the library facilities at the Town's schools and at the Foundation's offices in Arandis. Computer facilities have been provided and a key objective is to promote computer literacy and skills development. In 2006 Rössing mine contributed N$15,103,000 to the Rössing Foundation; The Rössing Foundation's activities were reviewed during April 2006. Following this review, a new reporting structure and areas of focus were introduced and became operational in

December 2006. Education became the primary focus area, while work with the Arandis Town Council was regarded as crucial to the sustainability of Arandis. Following this, a decision was taken that Rössing would assist the Arandis Town Council in selected infrastructure development projects while the Rössing Foundation would focus on capacity-building (Source: http://www.rossing.com, 2007).

Previous social assessments associated with RUL's closure and expansion investigations have indicated that, based on public opinion; there remain serious challenges with regard to ensuring the long term sustainability of the town. Many people would like to continue to live in the town if a sufficient and diversified economic basis from which to make a livelihood exists.

5.2 Economic Environment

RUL is a major contributor to the Namibian economy and is central to the local economy. Mine closure and mine extension could have significant economic impacts to both the national and local economies.

5.2.1 RUL in the Namibian economy

Since independence in 1990, Namibia's economy has stabilised and is now considered to be a mid-income level country, although the distribution of wealth is far from uniform with a 35% unemployment rate and 55% of the population living on less than US$2 per day (World Bank Development Indicators, 2001).

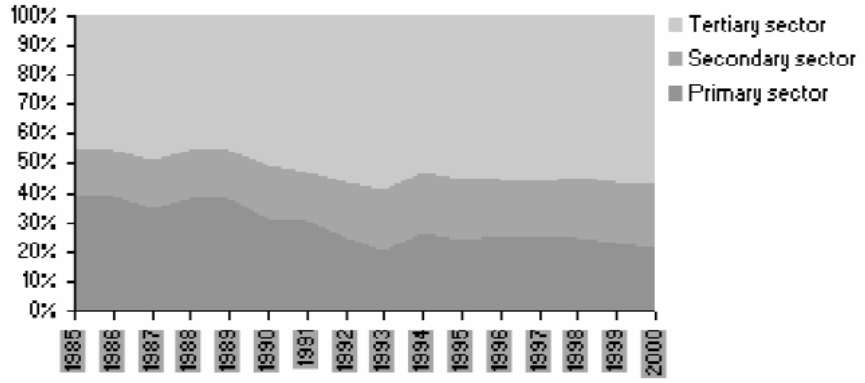


Figure 12: Sectoral Contributions to the Namibian GDP (Sustainability Assessment for the Life Extension of the Rössing Uranium Mine. 2005)

Namibia is heavily reliant on the primary sector for its Gross Domestic Product, although a slow progression toward a less mining-based economy has been occurring during the past 15 years or more. During this period, the rate of growth of the mining sector has diminished and there has been an upsurge in the services and manu-

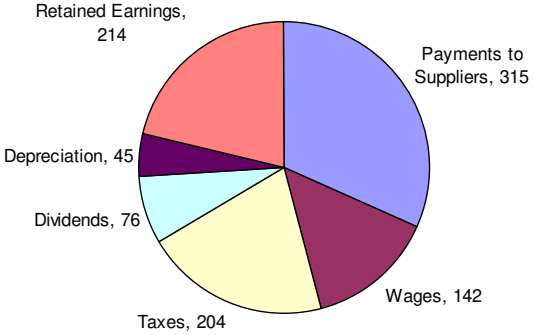


Figure 13: Rössing Mine's economic contributions in N$ millions (Sustainability Assessment for the Life Extension of the Rössing Uranium Mine. 2005)

facturing sectors. Figure 12 (previous page) depicts the sectoral contributions to the Namibian Gross Domestic Product during the period 1985 to 2000.

Figure 13 (previous page) depicts RUL's total and direct economic contributions in 2001. This only accounts for the direct contributions and does not take account of secondary and "knock-on" economic contributions arising from RUL activities. RUL, up until the end of 2006, was the only uranium producer in Namibia and thus its indirect contribution to the Namibian economy could be linked to the total uranium production in Namibia. In 1987, RUL contributed 10% to the Namibian economy and this declined to around 2.5% of Gross Domestic Product in 2001, or N$1,000 million, 68% in the form of value added and 32% in the payment of suppliers.

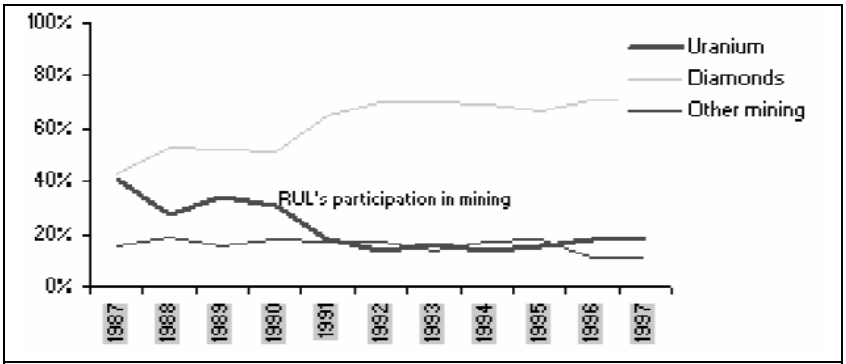


Figure 14: Rössing Mine's contributions in context with the Namibian mining sector (Sustainability Assessment for the Life Extension of the Rössing Uranium Mine. 2005)

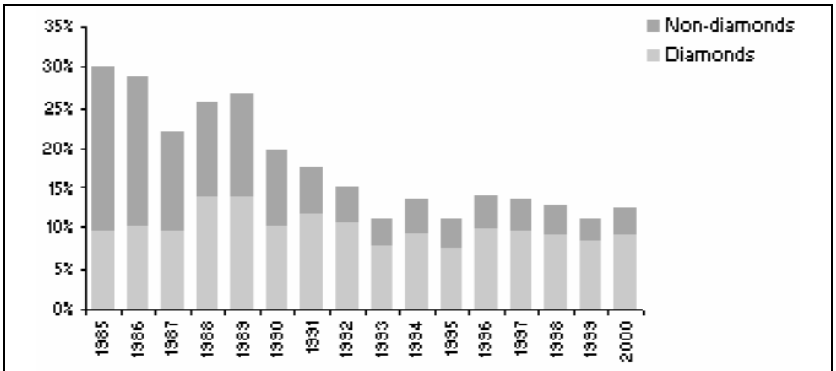


Figure 15: Namibian mining sector's contribution to the Namibian GDP(Sustainability Assessment for the Life Extension of the Rössing Uranium Mine. 2005)

In 2004, Rössing mine accounted for 10% of Namibian exports (down from 26% in 1985) and was valued at 20% of the Namibian mining sector where the total contribution of the mining sector to the Namibian economy is estimated at 13%. Rössing mine was the fifth largest global uranium producer in 2001, contributing 6% or 2,643 tonnes of U_3O_8 to the global market. Since 2001 uranium production at Rössing has increased annually to the 2006 tonnage of 3,617. Figure 14 depicts the contribution up to 1997 of RUL within the context of the Namibian mining sector whilst Figure 15 depicts the contribution up to 2000 of the mining sector to the Namibian GDP.

5.2.2 RUL in the local economy

The economic influence of the Rössing mine is far more pronounced on a local economic scale, in particular the centres of Swakopmund and Arandis. Whilst value added contributions, particularly taxes, are injected into the national economy, salaries and wages have a marked contribution at the local economic scale. Payments benefiting employees by Rössing during 2006 amounted to N$245,593,000 and regional suppliers (within the Erongo Region) received N$489,900,000 in that year. Rössing paid N$158 million to the Namibian Government in 2006 in companies taxes. The contributions of RUL to the local economy is put into perspective in Figure 16 where selected contributions from the mine are compared with Swakopmund's

municipal expenditure for 2000 and 2001. Reducing uranium prices resulted in Rössing mine running at a loss for 2003 and 2004 and realising a marginal profit in 2005. An improving uranium market price to 72 US$/lb resulted in an after tax profit of N$304 million in 2006 and reinvigorated the potential for the continuance of the Rössing mine.

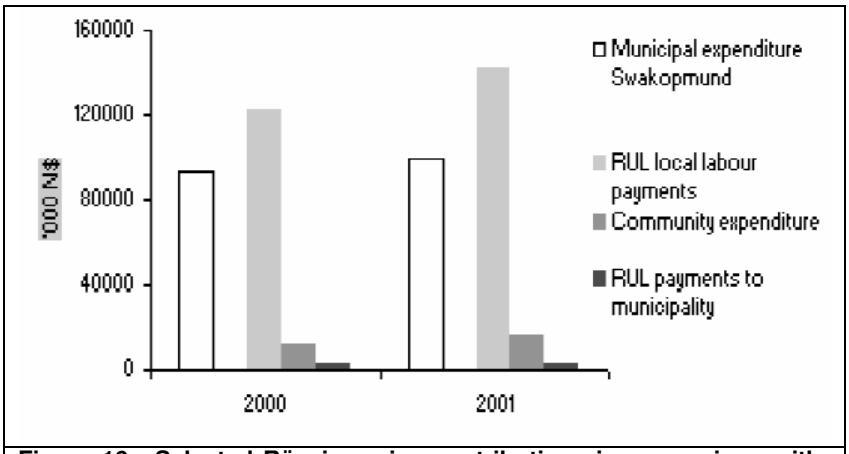
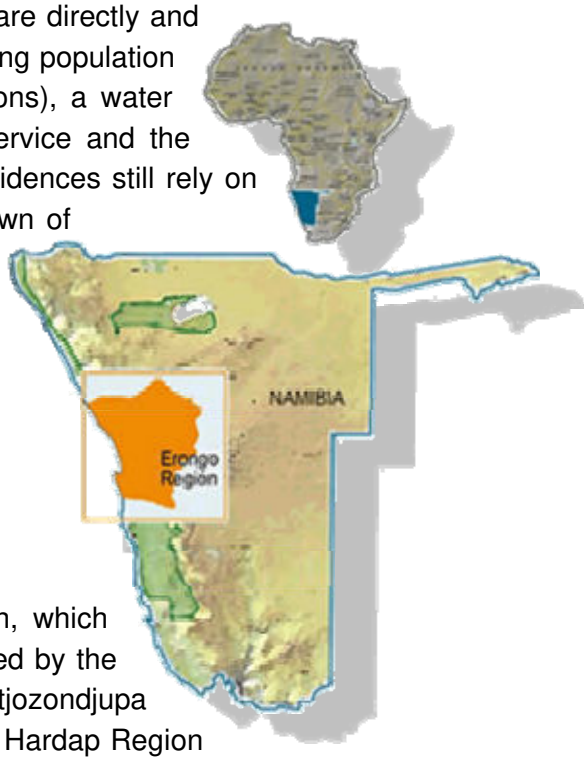


Figure 16: Selected Rössing mine contributions in comparison with Swakopmund municipal expenditure(Sustainability Assessment for the Life Extension of the Rössing Uranium Mine. 2005)

Swakopmund came to the fore as a holiday destination in the 1940s and its development accelerated with the inception of the Windhoek to Swakopmund road in 1967 and again in the 1970s with the inception of the Rössing mine. Swakopmund currently has a population of around 28,522 people (Source: http://world-gazetteer.com, 2007), and whilst RUL still has a marked influence on the economy, the town has diversified its economy into commerce and tourism and, to a lesser extend, manufacturing. Registered businesses climbed from a stable 140 units in the 1970s (pre- Rössing mine) to 194 and 368 in 1980 and 1991 respectively. The number of registered businesses collapsed in 1992 in conjunction with a major downsizing at RUL and then increased dramatically in 1998 to 504 units and continued to increase to 729 by the year 2002. The second major downsizing at RUL mine did not impact negatively on the business registration rate in Swakopmund, potentially indicating a developing independence and diversification of the economy and increasing resilience to the potential economic impacts arising from the closure of Rössing mine.

The town of Arandis on the other hand remains heavily dependant on RUL. The town is currently home to approximately 4 500 people of which 66% are directly and indirectly reliant on RUL mine for their livelihood. The remaining population relies on one of two clothing factories (employing 165 persons), a water metering factory (12 employees), a few local shops, civil service and the Town Centre. Regardless of the distance, many Arandis residences still rely on Swakopmund for their shopping needs. The future of the town of Arandis is perhaps the most significant social economic issue associated with the proposed extension of the life of the Rössing uranium mine.



5.3 BIOPHYSICAL ENVIRONMENT

5.3.1 Site Location, Extent and Context

The Rössing uranium mine is located in the Erongo Region, which comprises the central western part of Namibia, and is bordered by the Atlantic Ocean to the west, the Kunene Region to the north, Otjozondjupa Region to the north east, Khomas Region to the east and the Hardap Region

Source: Rössing

to the south. The Erongo Region consists of seven constituencies covering approximately 64,000 km² and is home to almost 108,000 people or approximately 6% of Namibia's populace in 2001. In 2007 the Erongo Region's population was calculated at 147,441 people (Source: http://world-gazetteer.com, 2007). The majority of this population reside in the two urban centres, namely, the tourist town of Swakopmund and the fishing and major port town of Walvis Bay (75 km SSW of Rössing). Also located within the region are the smaller towns of Henties Bay (88 km NW of Rössing), a coastal tourist town north of Swakopmund, and Arandis, a mining town associated with the Rössing mine. Notwithstanding these urban centres, the smallholdings located on the lower Swakop River (50km SW of Rössing), twelve farms located between the Khan-Swakop confluence and the farm Tannenhof, and the farms located between there and the former Rössing Country Club, much of the land remains uninhabited and unproclaimed, apart from the designated National Parks and state controlled recreational areas further to the west. This sparse inhabitancy and land use pattern in the surrounding areas arises from the lack of surface and ground water and associated low agricultural potential that characterises the area.

The Rössing mine site itself is found at 15º 27' 50" East and 22º 02' 30" South, approximately 65km east north east and inland from Swakopmund and the Atlantic Ocean, in the Arandis Constituency. The 18,411 ha licensed mining and accessory works area is bordered by the town of Arandis, approximately 12 km to the north west and by the incised Khan River valley, approximately 4.5 km to the south east, as seen in the aerial photograph in Figure 17. The site is located on the generally south east-facing, rough and undulating slopes between the Khan River valley (at 350 mamsl) and the gravel plains closer to Arandis (at 600 mamsl) near the eastern edge of the Central Namib Dessert. The topography is characterised by a series of steeply incised valleys, tributaries of the Khan River, intersecting the site and running in a northwest-southeast alignment. Of the licensed mining and accessory works area, approximately 2,165ha (11.4%) has been disturbed by mining activity, mining waste disposal and mine infrastructure to date.

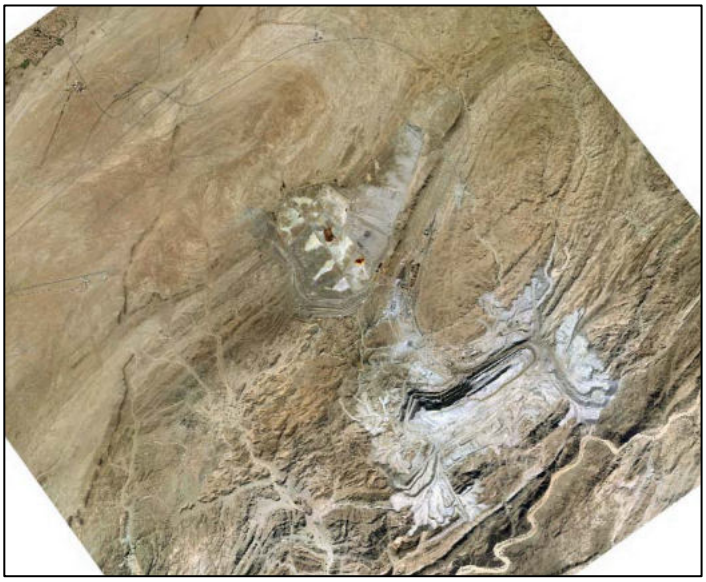


Figure17:Arial photograph of Rössing mine (source:RUL)

5.3.2 Mine Infrastructure and Processes

The approximate 2,165ha physical mining footprint comprises of the open pit, uranium extraction plant, tailings dam, waste rock dumps and infrastructure, all of which can be seen in Figure 17. Besides the open pit and processing plant, the mine infrastructure in general is comprised of the following:

- A double-lane tarred access road from the main Swakopmund-Usakos road;
- A full gauge railway line linking the mine's services areas with the main Windhoek – Usakos – Swakopmund – Walvis Bay railway line;
- Water supply pipelines and storage reservoirs;
- Connection lines to the Nampower 220kV power line supplying Swakopmund and Walvis Bay;
- Sewage treatment works;
- Storage facilities for diesel and explosives, acid, solvent, petrol and ammonia;
- Worshops, laboratories, personnel, medical and administrative buildings;
- Various untarred access and haul roads linking the lower portions of Dome, Pinnacle and Panner Gorges to the central mine operation area.
- Borehole pumping and monitoring stations along the Khan River.

The open pit

The Rössing open pit, opened in 1976, is roughly rectangular in shape, 3,060 m long by 900 m wide. In 2007 the open pit had reached 390 m in depth measured from the highest bench, comprised of 26 benches of 15 m in height, using a conventional drill, blast, load and haul operation.

Figure 18: Arial photo of the Rössing open pit (source: RUL)

Pit life is estimated to terminate in 2016 or beyond, depending on uranium prices, operating costs and the realised output from the ore body. Future pit expansion from the present mined area will take the form of mining push-backs on all walls of the present pit so that the final pit will be considerably extended in area and a pit depth of approximately 500 m will be achieved eventually. (Rio Tinto Technical Handbook Series. 2002)

The rock disposal areas

During 2006, waste rock comprised 58% of the rock mined at Rössing during the year. This high proportion is due to the requirement of having to remove surface material to expose underlying ore rock. Waste rock consists primarily of barren country rock and of sub-economic uranium ore, as determined by the in-pit radiometric scanners. The waste rock varies in consistency from large boulders to finer sands and gravel-sized particles.

At the end of 2006, the footprint area of the various rock disposal areas amounted 658 ha. These are comprised of number waste rock disposal areas and a number of low and high-grade-high-carbonate content (high calc) stockpiles in close proximity to the open pit. The low

grade and high calc stockpiles are situated on top of inactive waste rock dumps, where they remain accessible for potential future uranium extraction.

All of this material is transported by haul truck and disposed of at one of several designated sites surrounding the open pit. The rock dumps are predominantly situated in the valleys and dry river gorges that drain towards the Khan River. Waste dumps 2, 5 and 6 overlie Pinnacle Gorge, while Waste dumps 4 and 7 fill various tributaries of the Dome Gorge system. Rock dumps extend up to 2 km away from the open pit. With the exception of the amphibole schist lithological unit, which comprises a small proportion of the total rock mass mined, the rocks are not prone to weathering. The rate at which mechanical weathering processes act on natural material is measured in geological time; i.e. it is very slow. However, chemical processes affect the rocks, which are covered with residuals from the blasting process in the form of nitrates. Rainwater runoff has the potential to leach these residuals through the rock mass into the underlying aquifers. As a result, control mechanisms have been installed to prevent potentially contaminated rainwater from entering the Khan River. Due to the high carbonate content of some rocks, the low annual precipitation and the coarseness of the rock fragments, stormwater drains through the waste rock dumps rapidly and thus the potential formation of acid mine drainage is very low.

Tailings dam

All solid waste arising from the uranium extraction process (tailings) are conveyed or pumped to the tailings facility, located the west of the north east trending ridge, effectively separating the facility from the rest of the mine workings. The facility has been in operation since the commencement of activities in 1976 and was approximately 650ha in area in 2005. The tailing dam is 95m at the highest point and the starter wall was constructed using waste rock, effectively damming the upper portion of Pinnacle Gorge. The upper portion of Pinnacle Gorge is intersected by the seepage collection dam wall and the gorge itself is filled with waste rock for a distance of 3km, which acts as a safety mechanism to prevent any solids eroding into the Khan River in the event of a failure of the tailings dam wall.

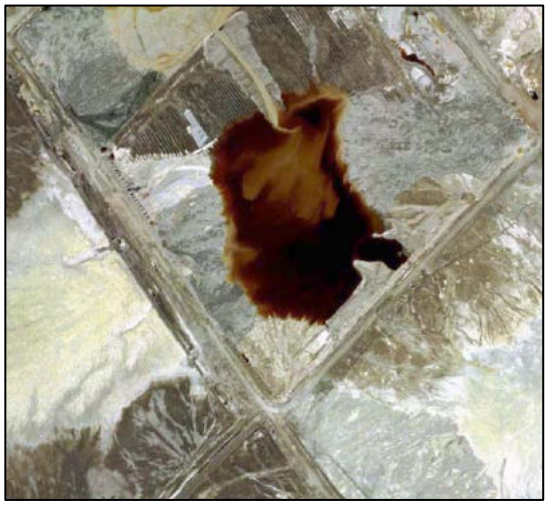


Figure 19: Tailings paddocks showing grey and yellow chemical precipitates after dessication (source: RUL)

Generally the tailings produced by Rössing's activities are coarse, containing a relatively low proportion of fines by industry standard. The tailings, 50 – 58% solids are pumped into one of eleven 30 ha tailings paddocks. Coarser sediments are rapidly deposited and the tailings solution is pumped back to the recycling ponds for reuse in the processing plant. Mine life extension until 2016 will require that an additional 164 million tonnes of tailings be deposited, resulting in the need for the extension of the tailings dam footprint.

After a paddock has dried out chemical precipitates are left behind in the former pond area. The chemical precipitate, powdery in texture, reaches 5 cm in thickness and is comprised of clay, gypsum, iron hydroxides and traces of radionuclide. The dry precipitate is readily picked up during wind velocities approaching 40 km/h and thus there is a need to implement dust control mechanisms which include grading of the precipitates to cover the finer material with the coarser substrata, forming evenly spaced wind breaks and then spraying with a chemical dust-binder.

To prevent seepage from the tailings facility entering the natural drainage lines in the area a number of seepage control mechanisms have been installed, including trenches at the toe of the facility and a plastic core surface water collection dam further downstream. During 2006 this seepage trenches and dam recovered an average of 5 992m^3 per day which was recycled. The alluvial aquifers in Pinnacle, Panner and Dome Gorges are protected by cut-off trenches that intercept alluvial seepage. In 2006 the trenches recovered an average of 135 m^3 of seepage per day. A number of recovery boreholes have been sunk, particularly in the vicinity of Panner Gorge, west of the tailings facility, where bedrock is fractured in places. In 2006, 170 m^3 per day of seepage water was recovered from the boreholes. Boreholes have also been sunk into the tailings dam to recover inventory water ands these produced an average of 312 m^3 per day during 2006. Boreholes and trenches around the northern toe of the tailings facility contributed another 672 m^3 per day. During 2006 these systems combined, recovered 1 289 m^3 per day, nearly 100% of the groundwater seepage generated and with no direct discharges into the Khan River having occurred.

5.3.3 Topography and drainage

Rössing is located on the generally south-east-facing, rough and undulating slopes at a mean elevation of 575 mamsl near the Western edge of the Central Namib Dessert. The topography in the southern reaches of the site is characterised by the several steeply incised and deep storm-wash gullies and gorges that drain into the Khan River to the south, resulting in a rugged and hilly landscape. As one moves north from the Khan River, toward the town of Arandis the storm-wash gullies become less pronounced and are interspersed with resilient rock ridges and occasional inselbergs, resembling a more typical Namibian desert plain.

Figure 20: West facing arial photo of the Rössing Dome (source: Rio Tinto Technical Handbook Series: 2002)

The site is divided into two sections by a steep-sided north easterly trending ridge of hills between Pinnacle Gorge and Dome Gorge, rising to 707 mamsl at Westdome Hill. The areas to the north and west of the ridgeline are characterised by rolling hills, whilst areas to the east are more rugged, with crested and steep-sided hills. These hills and ridges continue to the south of the Khan River, where after they dissipate abruptly giving way the gravel plains of the Welwitschia Flats, which covers almost the entire area between the Khan and Swakop rivers up to the confluence between them, an area forming part of the Namib-Naukluft Park.

5.3.4 Geology

- The following is an extract from the Rio Tinto Technical Handbook Series: 2002.

The Rössing uranium deposit lies within the central zone of the late pre-Cambrian Damaran orogenic belt that occupies much of central and northern Namibia. The early pre-Cambrian Abbabis formation is overlain by the Etusis and Khan formations of the Nosib group. The Abbabis rocks, which include variegated gneisses, phyllites, recrystallised carbonates and biotite schists, are exposed in the cores of anticlinal or domal structures. Intense deformation and high grade metamorphism are characteristic for the entire district.

The Etusis and Khan formations consist of metasediments that are overlain by marble, biotite-cordierite gneiss, conglomerates and feldspathic quartzite of the Rössing Formation.

Various types of granitic rocks were generated by syntexis and partial melting, and emplaced into the Damaran metasediment sequence some 510 million years ago. Dolerite dykes of Triassic age are prevalent and crosscut all older features.

Some migmatitic dome structures contain abnormally high concentration of uranium, giving rise to an increased local, natural radioactivity level. Elevated radioactivity levels can be found in water samples taken from the Khan and Swakop Rivers. The Rössing uranium mine is amongst the lowest grade uranium mines in the world and thus the exposure to radiation is limited. In 2006, no Rössing employees exceeded the International Atomic Energy Agency (IAEA) exposure standard of 20 millisieverts per annum (mSv/a). The additional radiation dose from mining activity has been calculated for Arandis residents at 130 µSv/a (0.13 mSv/a), substantially below the ICRP recommended dose limit of 1000 µSv/a (or 1 mSv/a).

5.3.5 Climate

Climatic variance and conditions play an important role in the distribution and type of organisms inhabiting the area as well as the rate of diffusion, direction and distribution of atmospheric pollutants.

Wind

Three thermo-topographic wind systems are identified as characterising the Rössing environment, namely the on- and off-shore winds resulting from the cold sea and hot desert. Secondly, the anabatic and catabatic valley wind systems affected by the Khan River valley. Thirdly, the mountain-plain system, brought about by the relationship between the desert plains, plateau plains and their separation from one another by the escarpment.

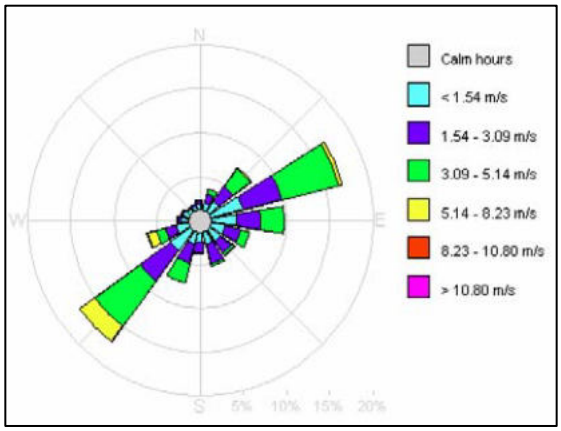


Figure 21: Average wind speed and direction measured during 1998 at Rössing mine (source: Sustainability Assessment for the Life Extension of the Rössing Uranium Mine, 2004)

Berg winds are a fourth and noteworthy wind system affecting the Rössing environment. High pressure cells further inland can cause already warm desert air to cascade off the escarpment, undergoing further heating by adiabatic processes. This results in a super-heated, sometimes high velocity off-shore wind, approaching 125 kms/h, the key factor affecting the Aeolian erosion and deposition processes and gives rise to the characteristic dust storms of the Namib Desert.

Predominant winds at Rössing, listed in order of magnitude, are the south westerlies, the north easterlies and the easterlies. The 1998 wind rose shown in Figure 21 illustrates the predominant wind direction and velocities.

The wind systems at Rössing are the pivotal influencing factor affecting the extent and direction of the dust plumes emanating from the Rössing mine site. The tailings dam, coarse ore stockpile, fine ore conveyor belts and the crusher plant area, despite engineering controls, generate significant quantities of dust that are picked up by the wind and dispersed across the site.

Precipitation and evaporation

Rainfall in the Central Namib Desert region is very low. The average rainfall for the region over the long term is less than 100 mm per year but due to the erratic distribution, much of the area receives less than 50 mm per annum. This variance is seen by the 400 mm falling in the headwaters of the Khan versus the 200 mm at Usakos and a mere 35 mm at Khan Mine. The average annual rainfall at Rössing mine is between 30 mm and 35 mm. Much of this rainfall is received in late summer and early autumn in the form of high intensity, short duration showers or thundershowers. Virtually no rainfall occurs during the winter months. This erratic rainfall pattern combined with the topographic and ecological environment creates a situation where flash-flooding is a risk.

Evaporation rates near the Rössing mine are very high, and have been recorded at between 6 mm and 15 mm per day during the hot December month with lower rates outside of this time and at this evaporation rate the entire annual rainfall, if left exposed at the surface, would dry up in a couple days. The imbalance between annual rainfall and annual evaporation losses is the keystone around which all considerations relating to Rössing's water management program are orientated.

5.3.6 Ecology

The mine is located towards the eastern edge of the Central Namib Desert vegetation zone. A marked east-west vegetation distribution pattern is evident, closely related to the inland distribution of coastal fogs, which can penetrate as far inland as the mine. All plant species found here are considered to be drought tolerant, drought resistant or succulent. Livestock grazing has extensively modified the vegetation in the Swakop River. The large mammal species found in the area are considered to be nomadic, moving widely and entering an area when food is plentiful after rains. Short-lived annuals, which occur after local rainfalls and floods, provide a vital source of good quality grazing for plains game. Klipspringers are frequently seen around the Khan River gorges, whilst Gemsbok, Springbok and Hartmann's

Zebra are occasionally seen at natural seeps along the Khan River. Dassies, Black-backed jackal and troops of Chacma baboons have been observed in Panner and Pinnacle Gorges. The environment is particularly rich in insect fauna, with a large proportion of endemic species. In the order of 280 invertebrate species have been recorded in the vicinity of the Rössing mine from surveys undertaken in 1984 and 1985. New species have been described from these collections and some specimens await description.

Four distinctive habitat types can be identified and are briefly described as follows:

Undulating granite hills

The granite hills are characterised by gentle slopes with large areas of surface quartz gravel. Plant cover in this habitat is patchy, although most slopes support a few widely spaced individual shrubs. After rains, these hills become almost continuously covered with annual grasses. The habitat supports a relatively diverse arid plant community, with several species of conservation importance, including, *Aloe asperifolia, Euphorbia gariepina, Adenolobus pechuelii, Commiphora saxicola, Sarcocaulon marlothii, Zygophyllum cylindrifolium and Zygophyllum stapffi.* Of particular importance are the *Lithops ruschiorum*, which should be more widely distributed but have come under pressure from illegal plant collecting and are now classified as vulnerable according to IUCN criteria.

Drainage lines

The larger drainage lines running through the site are aligned and drain in a north east to south west direction. Larger drainage lines form wide, open valleys and floors lined with coarse, mostly granite derived sands. Although there is rarely surface water in the river systems there remains an appreciable sub-surface flow that is able to support riparian vegetation. Summer rainfalls on the interior plateau region provide a major source of water to the riverine vegetation and seasonal variations in vegetation are largely related to the frequency, intensity and duration of river flows. Most of the species located in the granite hills also occur within the drainage lines, as well as protected tree species such as *Acacia erioloba* and *Parkinsonia africana.*

Quartz outcrops

Small quartz outcrops occur throughout the site, usually emerging on hilltops. This habitat often supports a greater number of species than the surrounding area, and often a species assemblage of greater conservation importance, including the *Aloe asperifolia, Adenia perchuelii, Euphorbia gariepina* and *Lithops ruschiorum.*

Marble-quartzite ridges

The marble-quartzite ridges, running predominantly in a north east to south west direction are comprised of dark, exposed quartzite rock and loose quartzite gravel on the surface. This habitat type, after good rains, has continuous annual grass cover and a widely spaced perennial shrub component, which has lower species diversity than the surrounding granite hills habitat type. Many of the shrubs found in the granite hills habitat type also occur here and the noteworthy species include the *Aloe asperifolia, Adenolobus pechuelii, Aizoanthemum*

membrumconnectens, Commiphora virgata, Sarcocaulon marlothii, Zygophyllum cylindrifolium and *Zygophyllum stapffi.*

5.4 NATURAL RESOURCES AND RESOURCE USE

5.4.1 Water

Water in the Central Namib area is primarily sourced from two large alluvial aquifers, namely, the west flowing Kuiseb and Omaruru Rivers, which by Namwater's calculations can sustain a supply 15.05 Mm³ per annum. Namwater operates large wellfields in the Kuiseb and Omaruru deltas and supplies Swakopmund, Walvis Bay, Henties Bay, Arandis, small scale Swakop River farmers as well as the three large industrial users, Walvis Bay Port Authority, and the Langer Heinrich and Rössing mines. The Omdel water supply scheme in the Omaruru River Delta currently supplies 68% of its water to the towns of Henties Bay, Swakopmund and Arandis and a further 28% is utilised by the Rössing.

The Khan and Swakop Rivers have previously been used for water supply, but high salinity levels render the water unsuitable for human consumption and expensive to treat. Rössing mine abstracts water from the Khan River for use as industrial water. These abstractions, in 2003, accounted for 8% of the total water usage at Rössing mine. Under a Department of Water Affairs abstraction license, Rössing mine may abstract a maximum volume of 0.87 Mm³ per annum, reduced to 0.6 Mm³ per annum in 1995 due to poor rains, provided that water level drawdown does not exceed 15m below the surface and that vegetation monitoring occurs on a

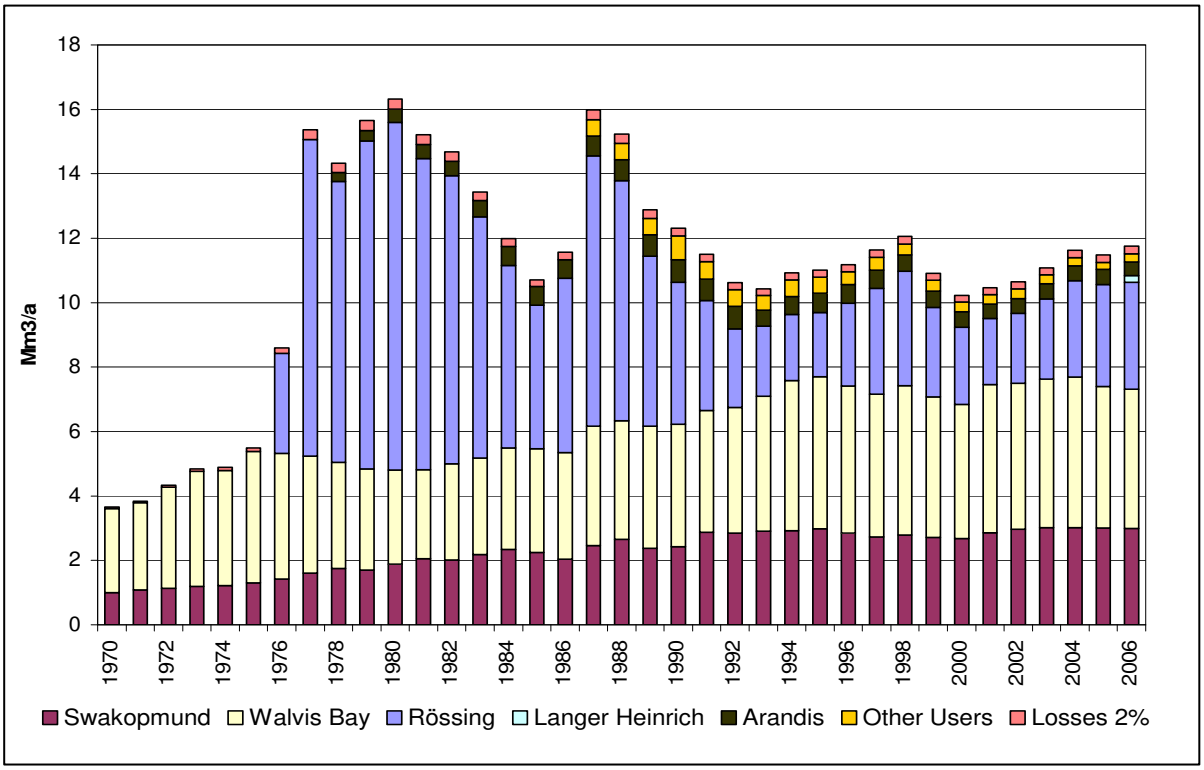


Figure 22: Historical use of freshwater from the Kuiseb and Omaruru aquifers since 1970 (Rössing Uranium Mine. 2007)

regular basis. In compliance with this requirement, Rössing mine undertakes a biannual survey of the Khan River riparian vegetation by assessing the vitality, growth rate, productivity and decay together with the sub-surface water levels to assist in the sustainable management of this resource. The last significant recharge of the Khan River aquifer occurred in 2000 and as a result of this and the findings of the monitoring program, Rössing mine reduced annual abstraction volumes to approximately 0.25 Mm^3. Abstraction from the Khan River is currently occurring at a rate of 0.25-0.28 Mm^3/a. In 2006 it was calculated that between 60% and 70% of fresh water utilised at Rössing was recycled and Rössing is targeted to reduce its water consumption per tonne of U_3O_8 by 10% over that recorded for 2003. Whilst these targets were met for 2004 and 2005, 2006 saw an increase in water consumption to 77 m^3 per tonne of U_3O_8 produced above the 2006 target when Uranium production was accelerated. New water saving initiatives are planned to ensure future targets are consistently met by 2008.

Rössing has a ground water pollution control system in place, whereby potentially polluted ground water is abstracted and recycled, and to monitor this, Rössing undertakes annual ground water quality monitoring of between 80 and 120 of its boreholes per year, around the mining site, and reports the findings directly the Department of Water Affairs, who monitor compliance with the permit conditions.

5.4.2 Alluvial Sand

Alluvial sand deposits in the gorges vary in thickness up to about 8 m and up to 20 m in the Khan River bed. Alluvial sand has been mined from the dry river beds to the north of the Khan River and used for various purposes at Rössing mine, including rehabilitation, building material and road material. The open pit requires large quantities of sand for the surfacing of haul roads, ramps and waste rock disposal areas. Since 2003 RUL has mined an average of 133 000 tonnes of sand per year. In an effort to conserve the alluvial sand resource, mining of alluvial sand for road dressing material ceased in early 2007 and material for this purpose is currently obtained from the tailings facility.

5.4.3 Energy

In 2005 Rössing mine consumed approximately 30 MW of electricity, which was about 3% of Namibia's installed capacity. At that point, approximately 60% of Namibia's energy is supplied via the Southern African Power Pool (SAPP) with largest generation contributor being the South African-based Eskom. The national grid is also supplied by a number of Namibian-based facilities, including, Ruacana Hydro-electric Scheme (249 MW), Van Eck coal fired power station in Windhoek (120 MW) and the Walvis Bay coal fired power plant (24 MW).

In 2003 Eskom was already experiencing capacity problems in meeting South Africa's peak electricity demands and the Nampower is thus investigating alternative power generation and supply sources to meet Namibia's growing domestic and industrial demand.

More recently, Rössing started to express energy consumption in megajoules per tonne (MJ/t) of ore processed, which is the combined energy usage incorporating electricity and fuels per tonne of ore processed, allowing for the measurement of total energy efficiency. Rio Tinto has

set a target to improve energy efficiency by 5% in 2008 from that expended per tonne in 2003. Due to activities associated with mine extension in 2006, RUL exceeded its target of 91 MJ/t when they realised an energy consumption rate of 113.6 MJ/t.

6 IDENTIFIED IMPACTS

The components of Phase 1 of RUL's proposed expansion project are anticipated to impact on a range of biophysical and socio-economic aspects of the environment. One of the main purposes of the SEIA process is to understand the significance of these potential impacts and to determine if project alternatives are available that are more beneficial to the socio-economic and biophysical environment, or if the impacts can be minimised or mitigated to an acceptable level. This section of the Scoping Report identifies the full range of potential impacts and proposes which impacts should be considered in detail in the SEIA stage to follow. It should be noted that the identification of the impacts described in Sections 6.3 and 6.4 below have been derived from concerns raised during the public participation undertaken to date, as well as input from the project team and responsible RUL personnel. Section 3.1 above describes the most noteworthy issues raised by I&APs in particular.

6.1 CONSTRUCTION PHASE IMPACTS

These are impacts on the socio-economic and biophysical environment that would occur during the construction phases of the proposed acid plant, ore sorter and SK4 mine. They are inherently temporary in duration, but may have longer-lasting effects, e.g. the contamination of groundwater during construction could have effects that may last long after the construction phases are complete. Construction phase impacts could potentially include:

- Disturbance of biodiversity resources;
- Impacts on heritage sites;
- Impacts on water resources, namely groundwater occurrences;
- Socio-economic impacts, e.g. temporary housing, in-migration of work seekers;
- Management of materials required for construction or establishment;
- Increase in traffic volumes to the mine and in the vicinity of the construction sites;
- Windblown dust and concomitant release of radioactive materials from exposed substrate;
- Noise pollution and vibration; and
- Pollution from waste and other contaminants.

Based on the temporary duration of the construction phases and the fact that negative impacts of construction can generally be reliably predicted and mitigated, more attention will be given to the operational phase impacts of the proposed Phase 1 components than to the construction phase impacts. This is certainly the case in this instance as, for example, construction phase impacts related to the extension of the ore sorting plant and construction of the new acid plant are regarded as low. These construction related impacts can easily be accommodated within a generic Social and Environmental Management Plan (SEMP) and RUL's own best practice.

However, wherever relevant, specialist studies would consider construction phase impacts, and in certain cases, would be focussed on construction phase impacts e.g. impacts on biodiversity resources are mainly construction phase impacts.

It should be noted that a comprehensive construction phase SEMP will be developed and implemented to regulate and minimise the impacts during the construction phase. This construction specification SEMP will be developed as part of the SEIA Report phase.

6.2 OPERATIONAL PHASE IMPACTS

Given their long term nature, operational phase impacts will come under close scrutiny in the SEIA stage of this assessment process, effectively prompted by this Scoping Report. The specialist studies will identify and assess the implications of these impacts and include measure to minimise predicted impacts. The assessment of potential impacts will help to inform RUL's selection of preferred alternatives or to confirm that the best available technologies have been identified and selected, and for these to be submitted to MET:DEA for their clearance. In turn, MET:DEA's decision on the environmental acceptability of the proposed project and the setting of any conditions will be informed by the assessment of alternatives and selection of technologies, together with the specialist studies, amongst other informants, to be contained in the SEIA Report.

It is normal practice that, should the proposed Phase 1 expansion be authorised, the development and implementation of an operational SEMP would be required. The operational SEMP is designed to mitigate negative impacts associated with the operational phase of the project and will be informed by the mitigation measures that emerge from the SEIA process.

6.3 SOCIO-ECONOMIC IMPACTS COMMON TO ALL THE PROJECT COMPONENTS

The identified impacts to be assessed during the SEIA process, that relate to the social and economic implications common to the construction and operation of the acid plant and associated infrastructure, the ore sorter and the mining of the SK4 ore body, are as follows:

- The extent of employment opportunities created as a consequence of the proposed developments, both for permanent and contracted workers;
- The occupational health and safety of workers, both permanent and contracted, including air pollution (emissions, dust, radioactivity), and noise;
- The public health and safety of surrounding communities and visitors to the area;
- The need for housing for temporary construction workers, i.e. the location and servicing of construction camps;
- The need for housing for the envisaged increase in employee numbers;
- The extent of commercial benefits for the local and regional economies;
- The in-migration of people seeking employment;
- The availability and adequacy of social services such as schools and medical care;

- The availability and adequacy of infrastructure services such as domestic water supply, waste management, electricity supply and transport services;
- The social ills and community health issues that may accompany in-migration of work seekers, the densification of settlements and unfulfilled expectations; and
- The implications for both local residents and tourists of the possible visibility and noise of the proposed developments.

6.4 IDENTIFIED IMPACTS PER PROJECT COMPONENT

6.4.1 Acid plant and associated handling, storage and transport

The identified impacts related to the following acid plant and associated sulphur handling, storage and transport activities will be assessed during the SEIA process:

- The offloading of sulphur from ship in the Port of Walvis Bay;
- The location, engineering design, construction, operation and decommissioning of the bulk sulphur storage facility to be installed in the Port of Walvis Bay, including the occupational and public health and safety implications;
- The means of loading and design of the wagons for the rail transport of sulphur from the Port of Walvis Bay to the Rössing mine;
- The location, engineering design, construction, operation and decommissioning of the bulk sulphur storage facility to be installed at the Rössing mine, including the occupational and public health and safety implications;
- The location, engineering design, construction, operation and decommissioning of the acid plant and associated infrastructure (pipework, storage tanks etc) to be installed at the Rössing mine;
- The operational implications of managing the occupational health of personnel and the proper handling of materials required for the running of the acid plant and associated infrastructure;
- A review of the preferred site and associated infrastructure (pipework, storage tanks etc) for the acid plant at the Rössing mine, relative to occupational and public health and safety implications;
- A review of the preferred site and associated infrastructure (pipework, storage tanks etc) for the acid plant at the Rössing mine, relative to visual impact, episodic flood impact and the seismic consequences of blasting operations;
- A review of the energy balance resultant from the operation of an acid plant at the Rössing mine;
- A quantification of air emissions and consequent occupational and public health and safety implications resultant from the operation of an acid plant at the Rössing mine;
- A review of the management and disposal of toxic and other waste generated by the operation of an acid plant and associated infrastructure at the Rössing mine; and
- A review of projected water consumption and management.

6.4.2 Radiometric ore sorter plant and associated reject rock disposal

The following identified impacts related to the ore sorter and reject rock disposal sites will be assessed during the SEIA process:

- A review and assessment of the scope and findings of the environmental assessment undertaken for the radiometric ore sorter plant during 2005.
- An assessment of the projected volume of reject rock material to be disposed of during the extended life of the mine insofar disposal options are concerned. (Besides the seven sites identified and assessed during the earlier study, the possibility of utilising existing, designated waste rock disposal areas is being kept as an option. An engineering cost study is also underway to determine the most beneficial means of transporting the reject rock, i.e. whether by truck or conveyor, and the findings of this study will provide an important informant in the finalisation of feasible disposal site alternatives. Once feasible disposal site alternatives are available, the mine's land use plan regarding location and spatial extent will provide a point of departure for the SEIA stage.);
- An assessment of the potential impacts on the biophysical environment of reject rock disposal site alternatives;
- An assessment of the potential impacts on occupational and public health and safety of reject rock disposal site alternatives;
- An assessment of the visual implications of reject rock disposal site alternatives;
- An assessment of the biodiversity implications of reject rock disposal site alternatives;
- A review of the preferred site, ore sorter design and associated infrastructure (conveyors, pre-screening units etc) for the sorter plant relative to episodic flood impact and the seismic consequences of blasting operations;
- A review of the preferred site, ore sorter design and associated infrastructure (conveyors, pre-screening units etc) for the sorter plant relative to occupational and public health and safety;
- A review of the energy balance resultant from the operation of the ore sorter and associated infrastructure (conveyors, pre-screening units etc); and
- An assessment of vibration resultant from the proposed pre-screening units (cf. present extreme vibration from the existing pilot ore sorter plant).

6.4.3 Mining of the SK4 ore body

The following identified impacts related to the mining of the SK4 ore body will be assessed during the SEIA process:

- A review and assessment of the scope and findings of the draft Environmental Management Plan for the extension of mining activities into SK4 undertaken during 2007 (unpublished);
- An assessment of the biodiversity impacts resultant from mining the SK4 ore body;

- A review of the impacts of blasting, noise and vibration resultant from mining the SK4 ore body;
- A review and assessment of the engineering design (alignment and geometry) of the haul road proposed for the SK4 pit, as well as other service infrastructure such as water and electricity supply;
- A review of the projected volume of waste rock to be disposed of during the extended life of the mine insofar disposal options are concerned. (Although disposal site *Waste 7* has been identified for such disposal, longer term implications will be assessed. The mine plan would provide a point of departure in this regard.);
- An assessment of the potential impacts on occupational and public health and safety resultant from mining the SK4 ore body (cf. dust, radiation and noise);
- An assessment of the visual implications resultant from mining the SK4 ore body;
- A review and assessment of the supply, storage, application, runoff and reuse of water necessitated by the mining of the SK4 ore body; and
- A review of the energy balance resultant from mining the SK4 ore body (cf. drilling, blasting, loading and hauling activities).

6.5 SPECIALIST STUDIES

As required by the Request for Proposals put out by RUL when embarking on the SEIA process, Ninham Shand formed a team with a suite of specialist consultants in various disciplines[19]. As part of the scoping exercise, the team of specialists attended a site visit and workshop to determine if, on the basis of available information and the site inspection, the scope of their work as originally envisaged was appropriate or whether their Terms of Reference needed to be amended. The outcome of the workshop was that, while some impacts might have been considered to be relatively benign, best practice and a need to fully understand the implications of the proposed project warranted that further investigation of all identified issues be undertaken.

A description of the proposed specialist studies follows and the Terms of Reference for each is also provided. This allows the public the opportunity to comment on, and the authorities to approve of, the proposed approach to the SEIA stage. Assurance is thus provided that the work undertaken addresses the issues of concern at the requisite level of confidence and that a robust basis for informed debate and decision-making is provided.

Accordingly, the following specialist studies by the relevant specialists are proposed to be undertaken in the SEIA stage to follow:

6.5.1 Socio-economic impact assessment

The socio-economic implications of RUL's proposed Phase 1 expansion project will be assessed by Marie Hoadley, an independent social impact consultant. The scope of her specialist study is as follows:

[19] Note however that RUL has directly commissioned certain of the specialist studies, as described in Section 1.7 and further reflected in this section.

This study, to include both construction phase and operational phase socio-economic impacts, will investigate and describe the national, regional and local socio-economic conditions before investigating and describing the direct, indirect and cumulative social and economic impacts of the components of the proposed expansion project presently being investigated.

Specific activities to be attended to during the study are to:

- undertake a desktop study of current literature on social impact assessments, Namibian legislation and policy, the development environment in Namibia and existing information on the communities of interest;
- establish broad baselines of the receiving socio-economic environments;
- undertake wide, inclusive, transparent and ongoing public participation and consultation;
- assess the identified impacts;
- develop a management framework to address negative impacts and optimise benefits; and
- liaise with the other SEIA specialists so as to supplement the socio-economic study with information from their areas of expertise and to ensure integration of socio-economic issues into the overall SEIA Report.

The study complies with Namibian legislative and policy requirements and the Rio Tinto standards, guidelines and guidance documents as these relate to the socio-economic and community components of the project.

The socio-economic study will address:

- socio-economic aspects, including employment, training, housing, inward migration, the potential for increased social ills, demands on, and capacity of local services, and cumulative effects;
- environmentally induced socio-economic impacts, including land-use, water quantity and quality, local concerns and perceptions of environmental impacts, and cumulative effects; and
- mitigation measures to address identified impacts and measures to optimize benefits.

6.5.2 Air quality specialist study

The air quality specialist study will be undertaken by Airshed Planning Professionals and the scope of their study is as follows:

As a **baseline assessment**, a general description of the climate for the greater region would be determined from the existing monitoring data and historical records. Meteorological mechanisms govern the dispersion, transformation, and eventual removal of pollutants from the atmosphere. All available local meteorological data will be analysed and where necessary, missing data inter- and extrapolated. For the purposes of establishing the local climatology, it is a necessity to analyse at least one year's data. However, a normal requirement is for a five-year database. An analysis of the data would serve to:

- Provide a general description of the local climate;
- Calculate fugitive airborne dust emissions; and,
- Be used in the dispersion simulations.

Hourly average meteorological data will be utilised, including wind speed, wind direction and temperature. Mixing heights will be estimated for each hour, based on prognostic equations, while night-time boundary layers will be calculated from various diagnostic approaches. Wind speed and solar radiation are used to calculate hourly stability classes. The analysis of meteorological data will include diurnal temperature profiles, wind roses, atmospheric stability classifications and inversion height estimations.

Air quality data will be analysed in comparison to both local and international guidelines and standards. The USA Environmental Protection Agency, the European Union and the World Health Organisation are normally cited.

An **impact prediction study** will follow, as now described.

The modelling scope includes the dispersion of air pollutants arising from all potential sources at the proposed pit, ore sorter and acid plant. When addressing airborne pollutants, both routine and upset emissions will be included.

Stack emissions are relatively well-defined. The quantification of fugitive dust emissions from mining operations on the other hand always requires use of past experience, and the availability of emission factors. The most readily available emission factors are those published by the USA Environmental Protection Agency.

The parameters important in estimating fugitive dust emission rates from mining operations include:

- Overburden handling;
- Topsoil removal;
- Movement of mining equipment;
- Operating procedures;
- Terrain;
- Vegetation;
- Precipitation and surface moisture; and
- Wind speeds.

Emission factors for typical mining operations have been used successfully in the past. These factors and equations include:

- Vehicle traffic;
- Storage piles; and
- Dust emissions generated by wind erosion of exposed areas.

Ground level concentrations of pollutants for all these sources (Mining perations, ore sorter and acid plant) will be performed. Dispersion models compute ambient concentrations as a function

of source configurations, emission strengths and meteorological characteristics, thus providing a useful tool to ascertain the spatial and temporal patterns in the ground level concentrations arising from the emissions from various sources.

All emission scenarios will be simulated using one of the following models:

- ADMS 3 (UK);
- USA Environmental Protection Agency's Industrial Source Complex model (version 3), and in particular the short term component (ISCST3); or
- The US Environmental Protection Agency's AERMOD model.

The model selection will be based on the complexity of the terrain and the availability of detailed meteorological data. The AERMOD models require upper air data, which is not always readily available. Alternatives are to use simulated data such as the global ETA model.

The **project deliverables** for the air quality study will comprise:

- A summary of meteorological parameters;
- Model input data preparation and assumptions;
- A description and quantification of the sources of pollution;
- Isopleth plots of ground level concentrations;
- Health risk assessment (non-radioactive) and a comparison to Local and International guideline values and standards; and
- Comprehensive assessment report comprising assumptions made, methodology used, results produced and impacts predicted.

6.5.3 Quantitative risk assessment

The quantitative risk assessment will be undertaken by RisCom and the scope of their study is as follows:

- To develop accidental release and fire scenarios for the proposed sulphuric acid plant and the handling, storage and transport of elemental sulphur feedstock via the Port of Walvis Bay and on the mine site. The potential risks during the start-up of the plant from cold will be included as a scenario.
- Using generic failure rate data (tanks, pumps, valves, flanges, pipe work, gantry, couplings, etc) to determine the probability of each accident scenario.
- For each incident developed in the previous step, determine the consequences (toxic end points, thermal radiation, domino effect, etc).
- Calculate Maximum Individual Risk values taking into account all accidents, meteorological conditions and lethality.

This information will then be used to identify any shortcomings and rank the risks for possible risk reduction programmes.

The results of the assessments will be tabled in a document addressing some or all of the topics listed in the Major Hazard Installation regulations derived from the South African Occupational Health and Safety Act (No. 85 of 1993). It should be noted that the risk assessment will not

constitute an environmental risk assessment, i.e. it will be confined to risks to human health and not to possible biophysical impacts. The risk assessment will exclude natural events such as earthquakes and floods.

6.5.4 Visual impact assessment

The visual impact assessment will be undertaken by Visual Resource Management Africa (VRMA) and the scope of their study is as follows:

VRMA uses the *VRM methodology* developed by the *Bureau of Land Management (BLM) from the United States Department of Internal Affairs* to measure contrast in order to analyse potential visual impacts associated with projects and activities. The basic philosophy underlying the system is that the degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. The VRM study consists of the following stages:

Visual inventory

Different levels of scenic value require different levels of management, involving the identification of the visual relationships which exist between the existing landscape, the proposed landscape modifications and the people (receptors) in the area. This requires the following studies:

- A site visit to create a photographic assessment of the current landscape character of the sit and region;
- A viewshed analysis to determine the extent to which the proposed modifications (and alternatives) would be visible to the surrounding areas; and
- A visual inventory to map and quantify the visual significance of the area where the proposed modification is to take place and defines Visual Resource Management Objectives for the area.

Contrast rating

The analysis stage involves determining whether the potential visual impacts from proposed modifications would meet the management objectives established for the area, or whether design adjustments will be required. The steps in the Contrast Rating Process are:

- Obtaining a detailed project description; and
- Measuring the Degree of Contrast that the proposed modifications would create from each of the identified key observation points.

Impact assessment

Impacts will be defined for all the proposed landscape modifications and the defined alternatives based on the following criteria:

- Distribution of impacts: Advantages and disadvantages;
- Extent: The spatial or geographic area of influence of the visual impact;
- Duration: The predicted life-span of the visual impact;

- Intensity: The magnitude of the impact on views, scenic or cultural resources;
- Probability: The degree of possibility of the landscape modification occurring; and
- Significance: A synthesis of the above.

Management actions

The following criteria will be utilized to formulate management actions:

- Avoidance;
- Mitigation;
- Compensation and offsets;
- Rehabilitation and restoration; and
- Enhancement.

6.5.5 Radioactivity and public dose assessment

This potential impact will be assessed by means of collating available information and extrapolating predicted dispersion of radioactive material by means of modelling. The acceptability of the findings derived in this way will be confirmed by the Nuclear Energy Council of South Africa (NECSA). Professer De Beer of NECSA will be undertaking this work.

The public dose assessment will be informed by modelling of emissions through the atmospheric pathways and by modelling of potential exposures through the aquatic pathway.

The scope of work is as follows:

Public exposure will be considered at a number of receptor locations through the atmospheric pathway (radioactive dust and radon). The future scenario to be assessed is the operational phase of RUL's maximum expansion scenario taking all developments foreseen in this expansion process into account.

The purpose is to determine whether a maximum expansion will increase public exposure of the critical population at Arandis above the dose constraint. Should this be the case, development may need to be managed in such a way that prevention or mitigation of exposures above the dose constraint is achieved. It is assumed that post-closure exposures caused by the maximum expansion will be equal to or lower than the exposure in the operational phase and therefore not need to be specifically assessed in this phase.

The dose constraint to be used is 300 mSv/a millisieverts per year. A probabilistic assessment will be carried out and the significance of the change in exposure caused by the additional dose compared to the background dose will be determined. A sensitivity analysis will be carried out in order to understand which potential mitigation actions would result in the most significant dose reduction.

The receptor locations to be assessed are:

- The location of the new acid plant within the current industrial complex of Rössing mine;
- E Camp, which is an office and visitors centre just outside the mine;
- The Arandis Airport;
- Khan Mine;
- Arandis town, considering town extension towards the main road and therefore the tailings dam;
- Goanikontes in the Swakop River;
- Trekkopje exploration camp site;
- Valencia exploration camp site;
- The Langer Heinrich Uranium mine;
- The farming community outside Swakopmund;
- The town of Swakopmund.

In order for the results to be incorporated into mine planning and for the work to be reviewed by independent third parties, the following deliverables will be provided:

- Assessment report including sensitivity analyses and sufficient illustrations for the reviewers to understand the input parameters and sources for the model. The report will contain appendices with tables of all data used.
- A set of digital maps showing receptor locations, source geometry and isodose contours for the maximum expansion scenario on the locally used survey grid system (LO15).

6.5.6 Biodiversity assessment

The biodiversity assessment will be undertaken by the Desert Research Foundation of Namibia (DRFN) and the scope of their study is as follows:

To identify sensitive areas and apply a system of biodiversity quantification that includes the level of endemicity of species and their conservation status. The 'father company' of RUL, Rio Tinto, intends to use RUL as a pilot site for its biodiversity strategy to identify sensitive areas.

This project will build on plant biodiversity work which has already been conducted in the area by Dr Antje Burke, as well as animal biodiversity work conducted in the mid 1980s by staff of the State Museum. Activities that would need to be to be carried out are now described.

Status, distributional and ecological Information

Status, distributional and ecological information pertaining to the known animal site endemics will be ascertained and compiled into a format appropriate to the SEIA's needs. Follow-ups of the 1980s work has already been initiated by Dr John Irish and will be brought to a conclusion.

Identification of species

All species in all taxonomic groups will be identified and listed, and their known distributions mapped in relation to the intended areas of expansion. They will all be ranked according to the criteria of vulnerability and irreplaceability, to identify those that have high conservation priority.

Field surveys

Field surveys of the biological soil crusts and lichens, invertebrate pit-trapping and collecting surveys and small vertebrate censuses will be conducted over the area, to obtain information pertaining to the distribution and occurrence of the prioritised species. Habitats shown to host high-priority species will be identified, described and mapped, both within the area of mine expansion and the neighbouring areas. Once the high-priority habitats are recognisable in terms of topography, vegetation and other features, it will be possible to check outlying areas for the occurrence of similar habitats.

Database input

Information from the field surveys will be fed in to the growing database, thereby gradually building up a model of conservation priority of the different habitats, and the spatial occurrence of the various habitats known to host high-priority species. Likewise, information from a botanical survey previously conducted by Antje Burke will be fed into the database.

Compilation of maps and reports and the presentation thereof

Compile multi-layered maps and reports that will be easily interpreted by the SEIA project team and RUL, and make oral presentations on the conclusions and recommendations of the study. Information collected in the entire exercise will serve as a useful baseline for future monitoring of occurrence and abundance of high-priority species.

6.5.7 Archaeology (i.e. heritage)

A heritage survey was undertaken during 2006 for the entire RUL mine licence area, and again during 2007 when the focus was on the areas of the proposed SH and SK pits.

A consequence of these studies was the issuing of permits for the exploration phase of the expansion project. Their renewal and amendment will be undertaken as part of the SEIA process by Dr Kinahan, an independent contract archaeologist trading as Quaternary Research Services.

The scope of the 2006 survey was as follows:

- Desk assessment based on existing data from the RUL licence area and related records;
- Design of field survey based on desk assessment and orthophotography of survey area;
- Systematic field survey with full documentation of all heritage related occurrences;

- Estimation of previous impacts based on survey results projected to disturbed ground;
- Assessment of significance and vulnerability based on standard rating criteria; and
- Heritage conservation and impact mitigation programme for implementation.

Field survey

The field survey consisted of a detailed documentary and photographic record of all heritage related occurrences within sample areas selected for examination. The intensity of field survey (i.e. percentage cover) was determined by a desk assessment and involved a statistical weighting of types of terrain that usually yield archaeological remains. In the case of the RUL licence area, which has a long history of mining activity, the survey made use of bi-temporal pairs of aerial photography (e.g. 1972 and 1998) to estimate the scale of impacts prior to the proposed survey. Actual observations (from the field survey) and inferred occurrences (based on the aerial photography) were integrated within a GIS project framework, with all field survey records in digital format.

Assessment

Heritage related occurrences (palaeontological, archaeological and historical finds) were assessed according to their significance and their vulnerability to impacts. Significance was estimated on a scale of 0 – 5, according to the value of a particular site or object to the cultural history of the property and the surrounding region. The significance rating is also affected by the state of preservation and the degree of previous impact. Vulnerability was estimated on a parallel scale of 0 – 5, according to the exposure of the site or object to future impact. The two scales allow value and risk to be independently assessed.

Conservation

In a controlled environment such as the RUL licence area it is possible to limit unintended impacts by imposing buffer zones with corresponding signage or barriers on the ground. Unavoidable impacts need to be mitigated by means of excavation, surface collection or other procedures to rescue materials and information that would otherwise be lost. Integration of the heritage survey GIS with the mine environmental management system will reduce or eliminate inadvertent impacts.

The scope of the additional work carried out earlier this year was to undertake a field survey of the SK area that entailed a detailed examination of the designated area and the location and evaluation all heritage sites. The sites were documented in the same way as the sites covered by the general survey of RUL's mining licence area. A separate report was compiled on the SK area with detailed proposals for mitigation of impacts.

6.5.8 Water resources management assessment

The water resources management assessment will be undertaken by Ms Sandra Müller of RUL and the scope of her study is as follows:

The objective of the study is to assess the impact of RUL's Phase 1 mine expansion projects on water management aspects, especially water use, runoff and groundwater quality.

Freshwater consumption

The acid plant will consume approximately 1000 m^3/day of fresh water at full production. The ore sorter will need water for dust suspension and the required volume must be determined in co-operation with the engineering consultant.

Increased mining activity in the SJ open pit will increase the demand for dust suppression water from the current level of 700 m^3/day to 1300-1500 m^3/day. An engineering project is in progress to supply recycled water from the seepage control system to the open pit. This will create a shortfall in seepage supply to the processing plant that has to be made up by adding 0.26 Mm^3/a of fresh water. The background of the project will be described in some detail to dispel stakeholders' fears that RUL might increase abstraction from the Khan River.

The expected total increase in freshwater consumption of around 2000m^3/day will raise the mine's annual water demand from 3.3 to 4.0 Mm^3. The increase is within the maximum of 4.5 Mm^3/annum provided for in the current water supply contract with NamWater. The impact of the increased abstraction on the coastal aquifers and other water users will be described in the report. The existing Rössing Water Management Plan, which describes the current status of the aquifers, will supply the required baseline information.

Effluent and runoff

The potential for contaminated runoff and effluent generation will be investigated for each project. The acid plant is located close enough to the processing plant to channel acidic effluent into the Plant Spillage Sump. The ore sorter and SK4 areas will generate waste rock, which may form leachates containing sulfate, nitrate and uranium after intense rainfall of more than approximately 20 mm per event. RUL will carry out geochemical characterisation studies according to procedures recommended by Rio Tinto experts. The determination of acid rock drainage potential will form part of these tests. The results will however not be available in time for the Phase 1 SEIA report. The results of preliminary leach tests carried out on SJ waste rock and ore will be used in the meantime to indicate the magnitude of potential impacts on groundwater quality.

Hydrogeological investigation

A comprehensive hydrogeological study consisting of geophysical borehole siting, drilling of monitoring boreholes, yield testing, water quality sampling and 3D flow modelling will be carried out as part of the SEIA. Most of the results will only be available for the Phase 2 SEIA. For

Phase 1 a report will be produced that focuses on the SK4 pit and its hydrological impact, taking into account all the new information that will become available before the report deadline.

The company Bittner Water Consult (BIWAC) will evaluate the geological structure of an area covering the Rössing Dome, identify suitable sites for monitoring boreholes, arrange a drilling contractor and supervise the drilling project. The borehole data will provide baseline water quality data for the area potentially affected by mine expansion projects. The hydrogeological parameters and water levels will be used as input for an extension to the existing 3D flow model of the mine site.

Aquaterra will extend the hydrogeological flow model and simulate the impact of the new open pits on the water table. The output of this model will later be used to set up a geochemical transport model that will identify contamination flow paths, velocities and allow for the effective design of the control measures.

The results of the hydrogeological investigation will be summarised in a report that will form part of Phase 2 SEIA.

Report outline

The table of contents for the Phase 1 SEIA water management report is as follows:

- Impact of the acid plant, ore sorter and SK4 pit on freshwater consumption;
- Impact of increased water demand on coastal aquifers;
- Impact of the acid plant on runoff and effluent generation;
- Impact of the ore sorter on runoff and surface water quality;
- Impact of the ore sorter on runoff and water quality;
- Impact of the SK4 pit on surface water runoff and quality; and
- Impact of the SK4 pit on groundwater quality.

6.5.9 Noise and vibration

A noise and vibration study will be undertaken by Namibian Vibration Consultants (NVC) during the SEIA stage of the present process. The findings of such a study are unlikely to be detrimental to decision-making, since these impacts are well understood on Rössing mine and have been monitored and managed for a considerable period of time. The outcomes of the envisaged noise and vibration study will certainly result in continued and enhanced application of RUL's occupational health and safety procedures.

The noise and vibration study is intended to identify noise and vibration sources, evaluate and prioritise the sources according to significance of potential impacts and then recommended effective measures to design and implement appropriate control and mitigation measures. The scope of work will include:

Establish RUL's baseline noise and vibration levels (including blast noise and vibration) as well as background noise and vibration levels for existing operations. The baseline noise and vibration study will be based on noise measurements in accordance with the SANS 10103: 2004

and SANS 10328:2001, or equivalent National or International Standards. The study will determine the existing levels within and around the proposed mine areas, as well as selected positions within any noise and vibration exposed community.

Identify which components of the facility and activities are the key contributors to external noise and vibration levels. Conduct a risk assessment to identify whether management controls and/or ongoing monitoring/modelling are required to address significant risks.

An **inventory** of all identifiable noisy and/or vibrating equipment and machinery on the mine will set up and its noise and/or vibration output will be measured using a standardised method. This task must cover both existing stationary and mobile equipment and sufficient samples to provide a reliable value where items are duplicated.

A **qualitative assessment** will be made of the effect of vibration from blasting and in-pit mechanical activities. This task will include blast and ground vibration measurements at the site boundaries and/or sensitive receivers remote from the pit as are possible.

The analysis of the data produced will be utilised to produce recommendations for control mechanisms suitable for ongoing noise reduction programs to meet regulatory requirements.

Establish a model or real time assessment of near and far field noise and vibration levels throughout the life of the operation. Conduct a noise and vibration impact assessment according to applicable standards (SANS 10103:2004, SANS 10328:2006, SANS 11204:1995/ISO 11204:1995 and SANS 13474:2005/ISO/TS 13474:2003). Modelling will, where applicable, incorporate baseline/background data, community expectations, and regulatory requirements and identify significant exposures to sensitive receptors.

Recognised software for predicting noise and vibration contours, for ground noise and vibration sources will be used to enabling different scenarios to be realised and tested to optimise layouts of potentially noisy activities, plant, and equipment, in the area. The model will utilise standard and user-defined profiles, and terrain, as inputs. The profile and calculation algorithms are based on several guidance documents that address atmospheric absorption and noise attenuation. The main outputs from the model will be noise and vibration exposure contours that are used for land use compatibility mappings and impact assessment.

The analysis of the data produced under the baseline study and modelling program will be utilised to undertake a current situation environmental noise and vibration impact assessment. From this a forward looking environmental noise and vibration management plan will be developed.
Based on the outcome of the study, environmental noise and vibration monitoring program, methodology and equipment will be recommended as well as recommendations for monitoring machines' vibration to ensure optimal conditions to avoid noise and vibration emission.

Occupational hygiene - RUL has a set noise target to have a 20% reduction in the number of employees/10 000 exposed to noise >85dB (A) without allowance for hearing protection by the end of 2008. To achieve this target further work on specific noise sources needs to be done and will include:

- Identification, assessment and evaluation of all plant and workshop noise sources.
- Recommend appropriate methods of reducing those noise sources contributing most to the daily Leq of the workforce, especially those employed in areas where the area noise level is greater than the statutory limit of 85 dB(A).
- In addition to the measurements performed, measurements specifically related to the occupation noise and vibration targets will be performed in all areas of the plant. This data will then be used in order to identify the major noise and vibration sources and recommend continuous noise and vibration reduction procedures appropriate and therefore feasible in the mine.
- The assessment will include cost and feasibility estimates in order to achieve a 5%, 15%, and 30% reduction in the number of employees subjected to occupational noise/vibration levels above the target.

6.5.10 Mineral waste and tailings management

The proposed Phase 1 components of RUL's expansion project will necessitate the revision of existing mineral waste and tailings management. However, these activities are also well understood, due to their having been managed for a considerable period of time. The necessary expertise is available within RUL, as RioTinto Technology and Innovation, to provide the appropriate level of technical input into the SEIA stage of the present process.

The Rio Tinto *Excellence in Mineral Waste Management Program* has been developed to help operations and projects reduce the environmental, health, financial and reputational risks posed by mineral wastes such as tailings, waste rock and open pits. This programme is designed to help reduce the risks posed by reactive mineral wastes by identifying issues of potential concern and developing cost effective and realistic management and control strategies. The program is intended to provide expert technical analysis and guidance outside of the formal corporate assurance framework. It is pertinent to any environmental exposure hazard posed by mineral wastes including but not limited to acid rock drainage (ARD), salinity, contaminants soluble at neutral pH, radionuclides, cyanide, spontaneous combustion and asbestos. The program is focused on environmental management issues rather than geotechnical stability issues, which are addressed by other corporate initiatives.

Mineral waste issues must be successfully managed throughout the exploration, mining and processing cycle, from initial characterisation and realistic costing during project development through to final closure. The key goal for the management of reactive mineral wastes is to ensure that environmental impacts always remain within acceptable limits. Management and control strategies should be designed to meet the limits in a reliable, cost effective manner that meets or exceeds local regulations and permit conditions, and is consistent with the Rio Tinto HSE standards. The *Excellence in Mineral Waste Management Program* assesses the operation's performance against a set of key performance areas and benchmarks. Areas of unacceptable risk or uncertainty will be highlighted, conceptual solutions will be identified and action plans developed through interactive cooperation between site staff and Rio Tinto specialists. On-going technical support will also be provided, as agreed and as required for implementation of the identified solutions. More complex data collection, modelling, analysis and design should only be performed if the key questions cannot be resolved simply.

Methods

Implementation of the *Excellence in Mineral Waste Management Program* will generally require a site visit lasting approximately five days by a team of two to three mineral waste management specialists. Longer visits and larger teams may be required depending on the agreed scope of the program and for bigger sites where numerous mineral waste management issues are being examined. The review team may include outside technical specialists if needed, but will always be led by personnel from Rio Tinto. The first part of the visit will be taken up with inspections, interviews with key technical and management personnel, and document and data reviews. These will include:

- Site Baseline Characterisation;
- Stakeholder Requirements and Expectations;
- Waste Material Characterisation;
- Release Mechanisms;
- Migration Pathways and Fluxes;
- Potential Receiving Environments;
- Integrated Conceptual Understanding;
- Development of Receiving Environment and Performance Criteria;
- Materials Management and Control Strategies;
- Monitoring and On-going Assessment; and
- Management Skills and Resources.

Performance in each performance area will be compared to benchmarks that are appropriate to each site's unique geochemical and environmental setting. Issues identified during this assessment will be discussed with key technical personnel at the site and conceptual solutions will be identified during a one to two day workshop. After agreement is reached with senior management on the recommended conceptual solutions, a draft prioritised action plan will be issued to the site for final signing off. The program will aid in implementation of Rio Tinto's Mineral Waste Management Environmental Standard and it will fulfil the requirement for an independent review of the operation's ARD Management Plan as required by the Rio Tinto Acid Rock Drainage Prediction and Control Environmental Standard.

7 CONCLUSION AND RECOMMENDATIONS

7.1 CONCLUSION

This Scoping Report has been informed by the issues and concerns raised by the authorities, the proponent (RUL) and by the project team, as well as the public participation process to date. It has presented the context and rationale for the project, described the project components and screened the suite of possible alternatives, mitigatory actions and environmental implications.

Both the external and internal reviews of a draft version of the present Scoping Report, undertaken by Dr Peter Tarr of the Southern African Institute for Environmental Assessment and Dr Peter Ashton of the CSIR respectively, have indicated that the document meets accepted standards for the scoping stage of environmental impact assessments. However, both reviews are critical of the inaccessibility of the report, insofar the use of technical wording and abstract phrases is concerned. An attempt has been made to address this shortcoming as far as possible. Several other concerns were raised regarding the accuracy and completeness of some of the technical information provided and these have been corrected where appropriate. On balance, we are of the opinion that the present Scoping Report serves its purpose in a satisfactory manner.

7.2 RECOMMENDATIONS

In response to the scoping now completed, the following specialist studies will be undertaken:

- Air quality study;
- Quantitative risk assessment;
- Visual impact assessment
- Social impact assessment;
- Radioactivity and public dose assessment;
- Biodiversity;
- Archaeology (i.e. heritage);
- Water resource management;
- Noise and vibration study; and
- Mineral waste and tailings management.

Specifically, the Scoping Report has determined the scope of work and level of details of each of the above investigations.

As discussed in Section 3.3, the following alternatives are proposed to be taken forward to the next stage of the EIA process for detailed assessment:

- Acid plant and related handling, storage and transport of sulphur feedstock:
  - Design of handling and storage facility in Port of Walvis Bay
  - Design of rail wagons required for sulphur transport
  - Stack height of acid plant
- Radiometric ore sorter plant:
  - Vertical or horizontal arrangement of pre-screening units
  - Suitable disposal site for reject rock
- SK4 ore body:
  - Haul road design and alignment
  - Waste disposal
  - Water management

These aspects of the listed Phase 1 SEIA project components will be subjected to the consideration and evaluation of alternatives in the assessment stage of the process. The aspects that do not have alternatives will nevertheless also need to be assessed. This will be done by means of determining that acceptable levels of mitigation are available, or by confirming that the best available environmental design or practice is being applied.

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ANNEXURE A:
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ANNEXURE D
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REPORT DISTRIBUTION CONTROL-SHEET

PROJECT NAME: **SOCIAL AND ENVIRONMENTAL IMPACT ASSESSMENT: PROPOSED EXPANSION PROJECT FOR RöSSING URANIUM MINE IN NAMIBIA: PHASE 1 ~ ACID PLANT, ORE SORTER & SK4 PIT**

PROJECT NUMBER: 402239

REPORT TITLE: Scoping Report

NS REPORT NUMBER: 4492/ 402239

DATE: November 2007

No of copies	Organisation	Electronic / Hard copy
1	MET:DEA	Hard copy
1	MME	Hard copy
1	RUL	Hard copy / Electronic
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1	Ninham Shand : George library	Hard copy / Electronic
2	Ninham Shand : Head office library	Hard copy
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30 issued		

NINHAM SHAND/Thursday, 08 November 2007/

GLOSSARY

1:100 year flood: a large magnitude flood which has a statistical recurrence frequency of once in every 100 years.

Acid: substance with a pH of less than 7.

Alkali: substance with a pH of more than 7**.**

Alluvium: mud, sand and gravel and other materials moved by streams and rivers and deposited by them.

Alpha particle: a particle consisting of two protons plus two neutrons. Emitted by a radio-nuclide.

Ambient: background or natural condition.

Anion: a negatively charged ion e.g. chloride (Cl-), sulphate (SO42-), phosphate (PO43-), nitrate (NO3-), carbonate (CO32-) and bicarbonate (HCO3-) etc.

Annual limit of exposure (ALE): is a special secondary limit used for radon gas and is defined as follows: the exposure to an airborne radio-nuclide, expressed as the time integral of concentration, which would result in the ICRP's reference man inhaling the **annual limit of intake** for that radio-nuclide.

Atmospheric stability: stability is a function of barometric pressure, temperature through the air column and wind.

Berg winds: very strong, hot winds which usually blow during the winter months from the east and north-east.

Beta particle: a particle, emitted by a radio-nuclide, with a mass and charge equal in magnitude to an electron. The electric charge may be positive, in which case, the beta particle is called a positron.

Bioaccumulation: the accumulation of toxic substances eg heavy metals, in plant and animal tissues.

Buffering capacity: the ability of soil or rock to resist an induced change in pH.

Bund: a wall built to contain spills and prevent them from entering the environment.

Calcareous: containing calcium carbonate.

GLOSSARY

Calcine: the residue of iron oxide left after roasting of the pyrite (FeS2) in the acid plant.

Calcine: the residue of iron oxide left after roasting of the pyrite (FeS_2) in the acid plant.

Calcite: calcium carbonate, CaCO3.

Calcrete: calcareous hardpan, usually occurring near the surface, underlying very shallow soils.

Cation: a positively charged ion e.g. calcium (Ca2+), magnesium (Mg2+), sodium (Na+), potassium (K+), aluminium (Al3+), ammonia (NH4+) etc.

Conductivity, electrical: a measure of the ability of a material to conduct electricity. It is expressed in Siemens per metre and 1 mS/m = 0.001 S/m = 0.01 mmho/cm.

Contamination: pollution.

Corrosive: a substance that can corrode, or gradually destroy through chemical reaction, another substance.

Cut-off trench: a deep trench excavated through the alluvium in the gorges down to bedrock to intercept seepage and/or ground water flow. Some trenches are equipped with pumps.

Derived air concentration (DAC): the DAC for a given radionuclide is a **derived limit** and is the activity concentration of that **radionuclide** in air (Bq/m^3) which, if inhaled by reference man for a working year of 2 000 hours under conditions of light physical activity (breathing rate of 1.2 m^3/h), would result in an inhalation of one **ALI**, or the concentration which for 2 000 hours of air immersion would lead to the irradiation of any organ or tissue to the appropriate limit."

Derived limits: are related to primary limits by a defined model such that if the derived limits are observed, it is likely that the primary limits would be observed. A commonly used derived limit is the **derived air concentration** (DAC).

Desiccant: a substance that removes moisture from the air.

Dewatering well: a borehole drilled into bedrock and equipped with a pump to pump out seepage water on a continual basis.

Diurnal: daytime.

GLOSSARY

Dose equivalent limits (DELs) or primary limits: apply to an occupationally exposed individual and a critical group of exposed members of the public. A dose equivalent is a measure of the total quantity of radiation to which the whole body of a person is exposed. The ICRP's DELs apply to the sum of the relevant doses from external exposure in a specified period and the 50-year committed dose from intakes in the same period. Both external and internal exposures must be considered when assessing compliance with DELs.

Emanation co-efficient: expresses the fraction of the radon atoms which emanate from radio-active materials.

Exothermic reaction: a chemical reaction which gives off heat e.g. oxidation of pyrite.

Fracture zone: a rock mass with numerous cracks caused by deformation and stress.

Fugitive dust: emissions of those air pollutants that enter the atmosphere without first passing through a stack or duct designed to control their flow.

Fumigation: a very high concentration of fumes and gases near ground level under extreme temperature inversion conditions.

Gamma ray: a discrete quantity of energy, without mass or charge, that is propagated by a wave. Emitted as a radio-nuclide.

Gneiss: a foliated metamorphic rock of coarse grain with a banded appearance.

Grit blasting: the use of coarse silica (grit) under very high pressure to clean out the interior of pipes etc.

Ground water: water flowing under the ground surface. At Rössing, the term is used to describe naturally occurring ground water (as opposed to Seepage, see below).

Gypsum: calcium sulphate ($CaSO_4.2H_2O$), (often builds up as a scale inside pipes).

Heavy metal: metals with a high specific gravity e.g. lead, copper, nickel, zinc etc., which are soluble in water at a pH of less than 5.0.

Hydraulic conductivity: a measure of the ability of a material to conduct ground water.

Igneous rocks: rocks which are usually crystalline or glassy that have solidified from magma (molten rock).

GLOSSARY

Impervious: prevents the passage of liquid or any other substance.

Ionisation: the process by which a neutral atom or molecule acquires an electric charge. The production of ions.

Ionising radiation: radiation that produces ionisation in matter. Examples are alpha particles, beta particles, gamma rays, X-rays and neutrons.

Isotope: nuclides with the same number of protons, but different numbers of neutrons.

Jarosite: a radio-active form of gypsum (see Gypsum).

Leachate: a liquid, resulting from percolation of rainfall through a landfill site combined with the products of in situ decomposition, which seeps from a landfill site.

Leaching: the process of dissolving out uranium from the ore using sulphuric acid.

Lithostratigraphy: rock sequence.

Marble: a metamorphosed limestone. The calcium carbonate of the limestone is recrystallised as calcite.

Membrane: a liner, usually made of plastic, which is used to prevent liquids from penetrating the ground.

Metamorphic rocks: sedimentary or igneous rocks which have undergone changes brought about by heat or pressure.

Monitoring borehole: borehole used to collect water samples and record water levels to monitor changes in chemistry and hydraulic characteristics.

Muckpile: loose pile of rock which forms at the base of the bench after blasting.

Neutron: an elementary particle with unit atomic mass approximately and no electrical charge.

Non-point source: a diffuse source of pollution, usually uncontrolled eg a gravel road or the tailings dam.

GLOSSARY

Nuisance dust: also known as fall-out dust. This dust is visible to the naked eye and has a size range of >20 to <200 μm.

Occupational health exposure: an exposure occurs when a person is exposed to liquids, solids and gases as part of their normal job function.

Paddy: a small, basin-shaped disposal area on the tailings impoundment (see **Tailings impoundment**) which is built up in incremental lifts. Water from the tailings slurry accumulates in the centre of the paddy from where it is returned to the plant.

Particulate dust: dust derived from controlled or point sources, such as stack emissions.

Particulates: airborne particles (dust).

Penstock: the conduit which drains water from the paddy pools.

Permeability: refers to the ease with which gases and liquids penetrate and pass through unconsolidated (soils, alluvium) and consolidated (rock) materials.

Phreatic surface: water table

Piezometer: an instrument that measures the magnitude and direction of water pressure in a borehole.

Piezometric head: interstitial water pressure e.g. in a tailings impoundment.

Plant Spillage Sump: a large, partially lined pit situated below the thickeners and leach tanks, which collects all spills and runoff from the plant area up gradient of it (also referred to as a "snake pit").

Point source: a single, often controlled point of emission eg a stack or fan outlet.

Pollution: the introduction into the environment of any substance which has, or results in, harmful or undesirable effects to man and the environment.

Primary aquifer: a water bearing zone in which all the interstitial pores are hydraulically connected i.e. saturated. At Rössing, the primary aquifers are found in the alluvial silty sands and gravels which have accumulated on the valley floors.

Proton: an elementary particle with unit atomic mass approximately and unit positive electrical charge.

GLOSSARY

Pyrite: iron sulphide, FeS2, which is used at Rössing to manufacture sulphuric acid in the acid plant.

Pyrite: iron sulphide, FeS_2, which was used historically at Rössing to manufacture sulphuric acid in the acid plant.

Quartz: a hard, glass-like mineral made from silica, SiO_2.

Quartzite: a quartz sandstone with a quartz cement.

Radiation: the process of emitting energy as waves or particles (refers to **ionising radiation** in the text).

Radio-active decay: the spontaneous transformation of a radio-nuclide. The decrease in activity of a radio-active substance.

Radio-activity: the property of radio-nuclides of spontaneously emitting ionising radiation (see **Ionising radiation**).

Radio-nuclide: an unstable nuclide that emits ionising radiation (see **Ionising radiation**).

Radon daughters: the radon daughters of major importance are polonium^{-218}, lead^{-214}, bismuth^{-214} and polonium^{-214}.

Radon: radon^{-222} is an inert, radio-active gas formed by the radio-active decay of radium^{-226}, a long-lived member of te uranium^{-238} decay series.

Raw water: fresh water sold to Rössing in bulk by the Dept of Water Affairs.

Respirable dust: dust with a particle size less than 10 μg, which can be inhaled.

Risk assessment: a systematic, quantitative evaluation of the health and environmental risk of exposure to chemical or physical agents.

Risk management: the process of evaluating alternative options and strategies for reducing risks and selecting the best option.

Schist: a foliated metamorphic rock of medium to coarse grain.

Secondary aquifer: water bearing strata in which the water is contained in fractures and fissures in the rock.

Secondary limits: are used when primary dose limits cannot be applied directly. They have been developed for external and internal exposures as follows:
external exposure - limits expressed in terms of dose equivalent indices;
internal exposure - limits expressed in terms of annual limits of intake (ALI).

Seepage: the term "seepage" is used at Rössing to describe the effluents from various mining activities which have seeped into the ground.

Self-confinement factor: gives that fraction of radon atoms that is released into the atmosphere. The factor is a function of the thickness of the radio-active material and the effective relaxation length.

Silicosis: lung fibrosis caused by inhalation of dust containing silica.

Slimes: very fine grained particles (silt and clay) in a water slurry.

Spring: a naturally occurring phenomenon where ground water daylights on the surface of the earth. Springs occur where the water table meets the ground surface or where water under pressure reaches the surface.

Suspended inhalable dust: also known as PM2.5 because it is less than 2.5 μm.

Syncline: a fold in rocks shaped like the letter U.

Tailings impoundment: the area, comprising a series of paddies (see Paddy), in which tailings are disposed.

Tailings impoundment: the area, comprising a series of paddies (see **Paddy**), in which tailings are disposed.

Tailings: the coarse sand and silt which remains after the uranium has been leached out i.e. the waste product of the reduction process.

Thoron: thoron is an isotope of radon^{-220} and is the product of the radio-active decay series of natural thorium^{-232}.

Tillite: a hard boulder clay, left after the melting of an ice sheet.

Toxic: poisonous.

GLOSSARY

Toxicity: the ability of a substance to cause damage to living tissue, impairment of the central nervous system, severe illness or, in extreme cases, death when ingested, inhaled or absorbed by the skin. The toxic hazard of a material may depend on its physical state and on its solubility in water and acids. The hazard also depends on the quantites received.

Transmissivity: the ability of an aquifer to transmit water.

Trigger value: a value, determined by means of a risk assessment which indicates that pollution may be occurring.

WABCO tyres: tyres from the very large haulage trucks used on the mine to carry ore from the pit.

Water table: the upper surface of the ground water.

Working level (WL): is any combination of radon^{-222} and its daughters resulting in the emission of 1.5 x 10^5 MeV alpha activity per cubic decimetre of air, or 3.7 Bq/dm^3 radon^{-222} in equilibrium with its daughter elements.

Yellow cake: ammonium diuranate.

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28 August 2007

Our ref : 402239/7.1163

Chief of Planning
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Ministry of Environment and Tourism
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Windhoek
NAMIBIA

For attention: Dr F Sikabongo
Email : freddy@dea.met.gov.na

Dear Dr Sikabongo,

SOCIAL AND ENVIRONMENTAL IMPACT ASSESSMENT FOR RÖSSING URANIUM LIMITED'S PROPOSED EXPANSION PROJECT

Thank you for meeting with us on 17 August 2007 to discuss the above-mentioned Social and Environmental Impact Assessment (SEIA). Your attention to the matter is appreciated.

We understand that previous meetings in this regard have been held with yourself, Peter Tarr of SAIEA and Rössing personnel. You indicated that your Directorate is sufficiently informed about the proposed expansion project and are comfortable with the launch of the SEIA.

As described at the meeting, the environmental process has been necessitated by Rössing's proposed expansion, comprising the following elements:

1. A new sulphur burning plant at the mine, and associated infrastructure that includes storage, handling and transport of dry sulphur from Walvis Bay harbour to the mine;
2. A new and expanded radiometric ore sorter plant and related elements (currently only a pilot sorter plant); and
3. New mining activity at the SK4 orebody, a smaller area within the proposed new SK pit.

The above projects are being dealt with as Phase 1 of the SEIA and will be taken through to the Environmental Impact Report stage in our assessment. There are a number of other elements of the expansion project, to be dealt with in more detail later during Phase 2, that will only be addressed as far as the Scoping stage in the present SEIA. These are:

- Open pit development of two new orebodies designated as SK and SH;
- The development of a heap leaching facility;
- The establishment on a vacuum belt filter plant within the existing plant area;

- The development of alternate processing facilities with their associated processing plant infrastructure;
- New rock waste disposal facilities in undisturbed areas; and
- New tailings disposal facilities in undisturbed areas.

We envisage submitting the Scoping Report for Phase 1 to your Directorate by the end of September 2007 and the finalized SEIA report for Phase 1 and Scoping Report for Phase 2 by the end of December 2007.

Our envisaged programme for the process is reflected below.

Activity ↓	Aug	Sept	Oct	Nov	Dec	Jan
Project inception						
Authority consultation						
Draft Scoping Report						
Public meetings for Scoping						
Finalise & submit Scoping Report						
Specialist site visit						
Specialist reports						
Draft Environmental Impact Report (EIR)						
Public meetings for EIR						
Finalise & submit EIR						

With regard to Namibia's Environmental Impact Assessment Bill, you informed us that should it be promulgated during the undertaking of our process, it would not be applied retrospectively and therefore would not be applicable to this SEIA. However, the standards and procedures applied by us would comply with global best practice, as well as Rio Tinto's own internal standards, and would thus result in a robust product of international standard.

We enclose for your information a copy of the Public Information Document that has been made available to interested and affected parties by the public participation practitioner, Marie Hoadley.

We look forward to working with you on this project. Should you wish to discuss the matter further, or require any additional information, please do not hesitate to contact us.

Yours faithfully
NINHAM SHAND

Genie de Waal
Technical Assistant

Brett Lawson *PrSciNat; EAPSA[Cert]*
Associate Environmental Practitioner

ENCL : Public Information Document

Rössing Uranium - Public Meetings on its Mine Expansion Project

In terms of the requirements of the Environmental Assessment Policy for Sustainable Development and Environmental Conservation of the Republic of Namibia, three Public Meetings will be held in connection with the Environmental and Social Impact Assessment of Rössing Uranium's Mine Expansion Project.

All Interested and Affected Parties (I & APs) are invited to attend the public meetings, where there will be an opportunity to raise concerns and ask questions about the Mine Expansion Project.

Details of the Public Meetings:

Town: Swakopmund
Date: Monday, 20 August 2007
Time: Open Session: 16:00 – 18:00
Formal Presentation: 18:00 – 20:00
Venue: Alte Brücke Conference Centre, Strand Street

Town: Walvis Bay
Date: Tuesday, 21 August 2007
Time: Open Session: 16:00 – 18:00
Formal Presentation: 18:00 – 20:00
Venue: Pelican Bay Hotel, Esplanade

Town: Arandis
Date: Wednesday, 22 August 2007
Time: Open Session: 14:00 – 18:00
Formal Presentation: 18:00 – 20:00
Venue: Arandis Town Hall, Acacia Street

Guests are welcome to visit us at any time from the start of the Open Sessions to discuss the Mine Expansion Project before the start of the formal presentations at 18:00.

Should you wish to register as an Interested and Affected Party or receive more detailed information and regular updates, please give your contact details to Marie Hoadley or Alwyn Lubbe at:

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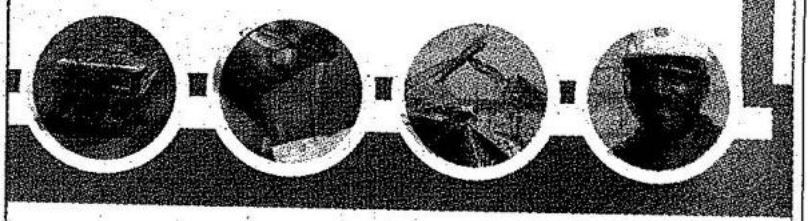

Rössing Uranium
A member of the Rio Tinto Group
WORKING FOR NAMIBIA

RIO TINTO

Rössing Uranium - Public Meetings on its Mine Expansion Project

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WORKING FOR NAMIBIA

RÖSSING URANIUM MINE EXPANSION PROJECT

Social and Environmental Impact Assessment

Public Information Document

August 2007

Public Participation return address for comments:

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Table of Contents

1. Introduction

1.1 Purpose of this Document

This project information document describes a number of proposed expansion projects at Rössing Uranium (Rössing) in the Erongo Region of Namibia, which are currently undergoing a Life of Mine Options Analysis (LOMOA) process.

This document will be disseminated to all stakeholders and interested and affected parties to ensure that they are informed of the proposed LOMOA Project and will provide information on the potential impacts that are likely to require investigation and intervention. The intention is to promote participation by stakeholders in the Social and Environmental Impact Assessment (SEIA) process.

The objective of an SEIA process is to identify negative socio-economic and environmental impacts and develop measures for impact avoidance and/or mitigation. The overall intent is to advance sustainable development by contributing to social well-being, economic growth and protection of the natural environment.

Rössing has commissioned a number of independent consultants to assist it in undertaking the SEIA in accordance with the requirements of the Namibian Constitution and relevant legislation, which includes the Minerals Act, no. 33 of 1992, the Environmental Management Bill and the Namibian Environmental Assessment Policy (1995).

Stakeholder consultation and participation are important in this process as it provides a forum for them to raise their concerns and suggest changes to the development. Ongoing information dissemination will give stakeholders the opportunity to view the development of the project and note any changes due to their contributions. The draft SEIA report will be available for comment at a number of venues, on the web and stakeholders will have the opportunity to question the process, suggest changes, raise issues and concerns and ensure that their contributions to the process have been included and evaluated

You can participate directly in the SEIA process by registering as a stakeholder with the Public Participation Manager whose contact details are given on the first page of this document. This is also the channel which you can use to raise issues, concerns and questions about the SEIA process and the proposed developments.

1.2 Rössing Uranium – Brief Background

The Rössing deposit was discovered in 1928, but only actively investigated after 1956. When Rio Tinto became involved in 1966, an intensive programme commenced, delineating a large, low grade uranium deposit that could be mined by means of an open pit. Operations at Rössing commenced in 1976 and have continued unabated for more than 30 years. Employment at Rössing is considerably lower today than at its peak, but the mine currently employs nearly 1100 people, 96% of whom are Namibians, and is an important contributor to the Namibian economy. In addition to the open pit, Rössing operates a mill and sulphuric acid leach plant which enables the mine to produce uranium oxide (U_3O_8) for export via Walvis Bay.

The mine is a significant consumer of water and power. Presently water efficiency gains have enabled the mine to use less than half of its original water volume of the late 1970s. Rössing's power consumption represents about 5% of Namibia's total usage.

Although, Rössing Uranium is majority owned by Rio Tinto (69%), the Government of Namibia, a minority shareholder (3%), has the majority (51%) in voting rights.

Through the Rössing Foundation, the company contributes to community development in the north-central regions of Namibia as well as locally in the Erongo Region.

In December 2005 the mine's operational life was extended to 2016, with potential to extend to 2021. With a growing nuclear power industry recognised worldwide as an efficient carbon-free source of power and with an increase in the demand for uranium resulting in notable long-term market price increases, Rössing is favourably positioned to capture opportunities to increase its market share and to achieve production growth and expansion options for the mine.

In 2006, the mine produced 3,617 tonnes of uranium oxide. With the expansion project, the plan is to increase production over the next few years to full capacity of 4,500 tonnes. This increase will be targeted through technical innovations, opening of new mining pits, establishing new processing facilities with associated waste storage facilities. The expansion includes a new sulphur burning acid plant on site and sulphur storage in the Walvis Bay harbour. The recruitment of additional full-time employees and further training and development of current employees will continue.

1.3 The SEIA Team

Lead SEIA Consultant	Brett Lawson, Ninham Shand
Social Impact Assessment	Marie Hoadley
Public Participation Process	Marie Hoadley
Rössing SEIA Manager	Rainer Schneeweiss, Rössing Uranium
Rio Tinto Environmental Advisor	Svenja Garrard
Risk Assessments	Alistair Forbes – Rio Tinto plc
Specialists:	
Archaeology	Dr John Kinahan - Quaternary Research Services
Hydrogeology	Arnold Bittner, BIWAC and Jon Hall, Aquaterra
Biodiversity	Dr John Pallett, Desert Research Foundation of Namibia
Public Radiation Dose	NECSA (Nuclear Energy Corporation of South Africa)
Landscape impacts	Stephen Stead, Visual Resource Management Africa
Air dispersion	Lucian Burger, Airshed Planning Professionals
Independent reviewer	Dr Peter Tarr (Southern African Institute of Environmental Assessment)

2. The Proposed Project

2.1 Project Overview

A number of uranium occurrences were identified in the early 1970s within Rössing's mining license area but were not economically viable when the mine was commissioned in 1976. With the recent increase in uranium prices, these mineralised areas are now potentially exploitable and are being investigated by Rössing to evaluate the feasibility of mining.

A maximum expansion scenario would involve opening of satellite pits to the current open pit, establishing new rock disposal facilities, as well as potentially establishing new processing plants with tailings facilities. Included in the above is the establishment of a new sulphur burning acid plant at the mine site and sulphur storage and handling facilities at the Walvis Bay harbour. Associated with the expansion would be the employment of additional staff. The evaluation of overall project portfolio is referred to as Life of Mine Expansion Options Analysis (LOMOA).

Rössing therefore proposes to expand its operations beyond 2016, an operational period for which environmental clearance was granted by the Ministry of Environment and Tourism (MET) in 2004.

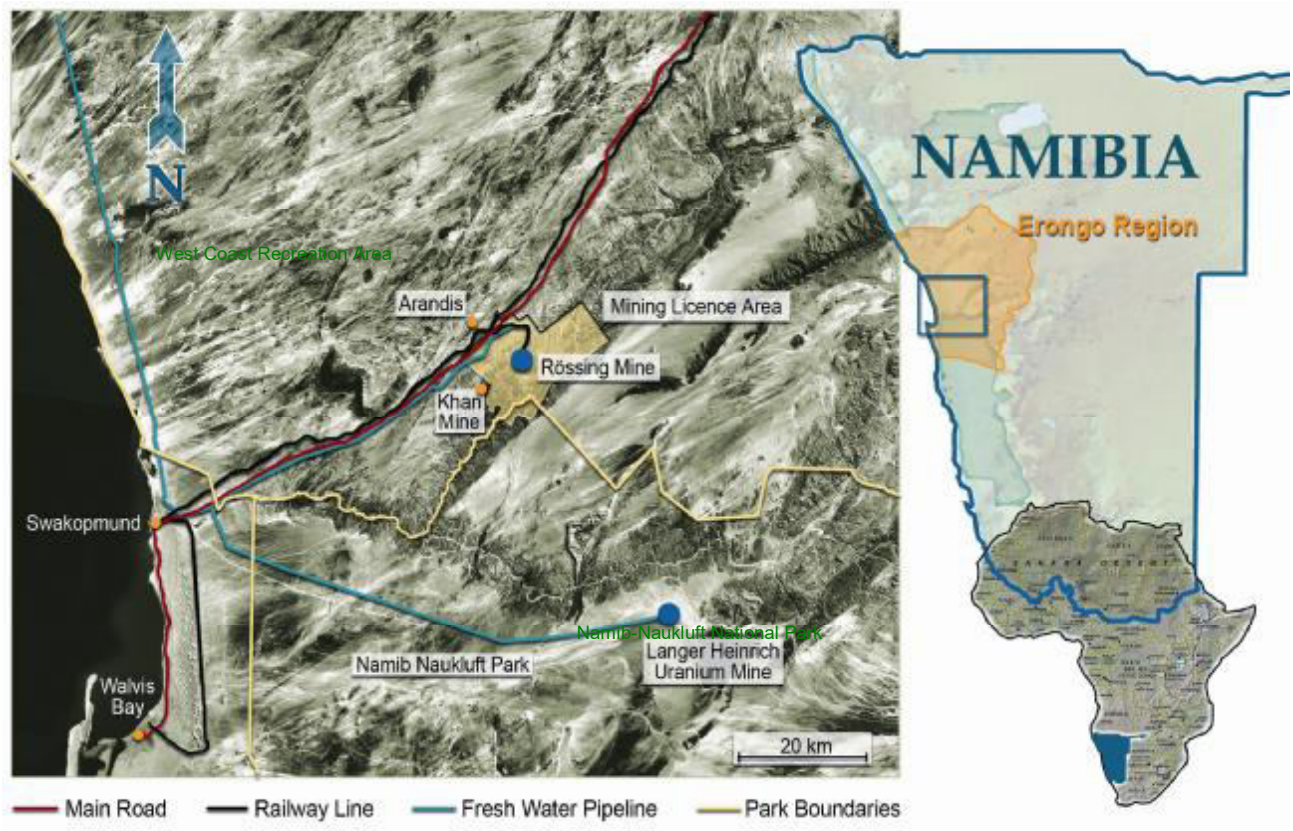

Figure 1. *Regional Setting of Rössing Uranium.*

The expansion of Rössing's operations will take place over a number of years. During the first phase of the expansion programme, mining will be extended in 2008 into an area known as SK4, a small ore body adjacent to the current open pit. In addition, a sulphuric acid plant on site with associated sulphur storage and transportation by rail between Walvis Bay and Rössing Mine will be developed in 2008. The feasibility of establishing a radiometric ore sorter plant with associated reject rock disposal facilities is also currently being evaluated and needs to undergo an environmental assessment as part of the evaluation.

In a following phase, the potential development of a heap leach treatment process for low grade ore, and the development of satellite open pits in the SH and SK ore bodies next to the current open pit are being considered. Both pit developments might require the establishment of new metallurgical processing plants and potentially new waste rock and tailing disposal areas.

2.2 First Phase

2.2.1 SK4 Pit Extension

Rössing proposes to extend mining activities 1 km to the east of its current operation, into an area known as SK4. This area is adjacent to the current pit (see Figure 2 below) and in the short term is seen as a potential supplementary source of ore to the process rather than an expansion. While this extension will increase the current mining footprint, it will not entail any significant modifications to the current operation with respect to plant capacities, water extraction or tailing and rock waste disposal. Foreseen impacts are related to land use in a currently undisturbed area. Other aspects are similar to those managed in the current operation and would require changes in the environmental management plans of the existing operation.

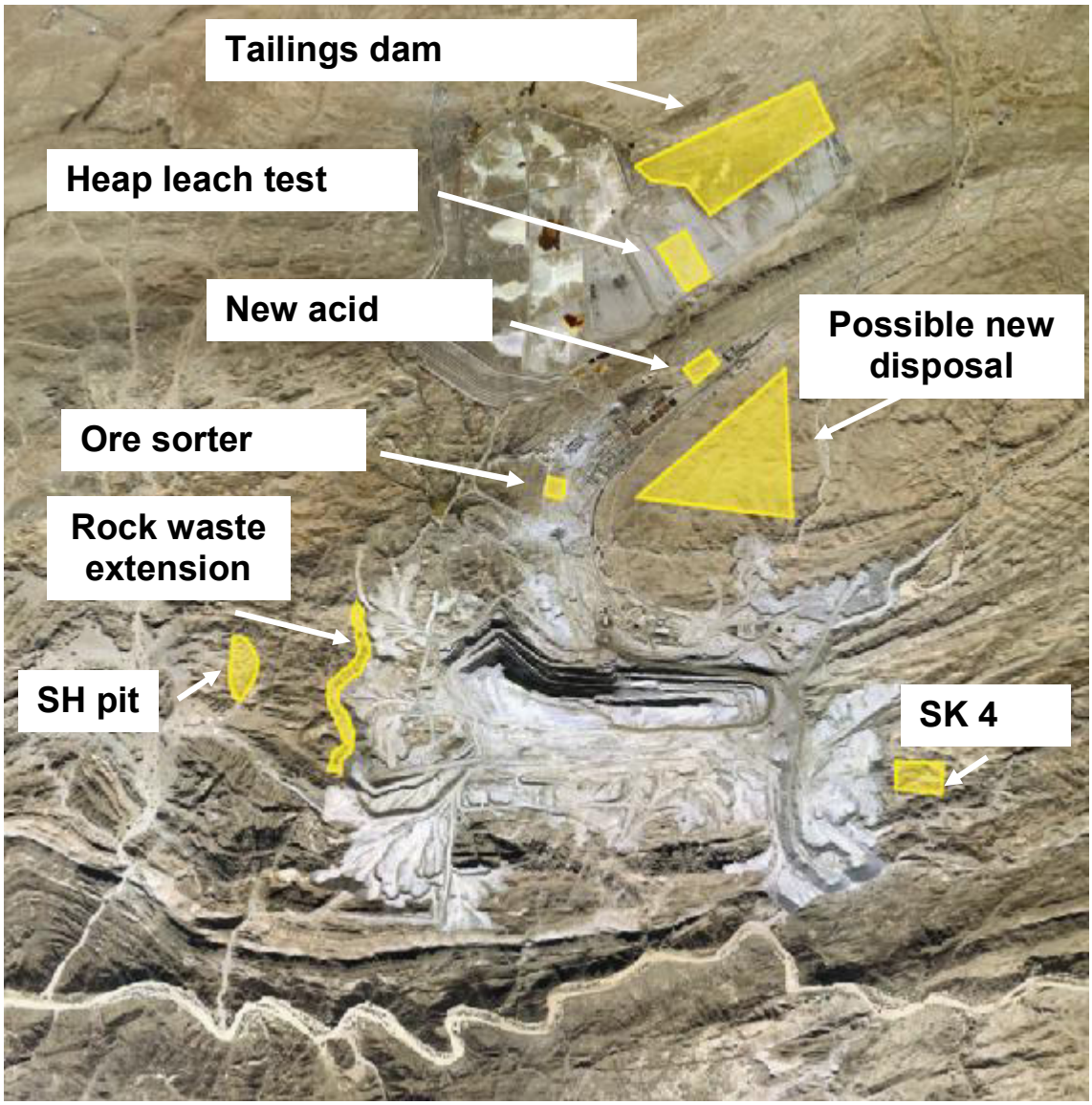

Figure 2 *Site Map of Rössing Uranium showing potential project sites*

2.2.2 Radiometric Ore Sorting Plant

A change to the ore processing flow is being evaluated to allow for a certain size fraction to be beneficiated using radiometric ore sorting. As part of the project, a new pre-screening plant will replace the existing one, and will draw material from the existing coarse ore stockpile.

Specific size fractions will be scalped off in the pre screening plant and the remaining size fraction will be processed using the radiometric ore sorters to provide an 'accepts' stream and a 'rejects' stream. The 'accepts' stream contains ore above the selected uranium grade and conversely the 'rejects' stream contains waste. The existing 500t coarse ore bin will be reconfigured (or replaced) to increase its live capacity and to feed the secondary crushers. The proposed plant is to be positioned within the current operations of the mine.

The engineering work for the project would entail construction of systems for ore reclaiming, the pre screening plant, the production ore sorting plant, waste handling, and tie-in for all equipment into the current operation. It would include provision of various facilities, including on-site utility distribution (water, power etc) and lay-down areas for construction.

The main area of impact foreseen would be a significant increase in the footprint of waste rock dumps, should it not be possible to dispose the reject waste rock onto existing dumps due to volume or economic constraints. A new rock dump would have to be placed on currently undisturbed ground and, among other aspects, might be perceived as visually intrusive.

2.2.3 Sulphuric Acid Plant

Rössing's metallurgical process uses sulphuric acid leaching to extract the uranium from the ore. An on-site pyrite-burning acid plant was commissioned in 1976 but was mothballed in 2000 when prices of imported acid fell below production cost. Since 2000, the mine's acid requirements have been imported via Walvis Bay harbour. Current economic evaluations show that value can be added by establishing a sulphur-burning acid plant at the mine site and to import additional acid, if required.

The mothballed acid plant at the mine site will be demolished, and a new sulphur burning acid plant is planned for the Rössing mine site. The on-site acid storage facilities will be upgraded and utilised to store imported and produced acid. The acid off-loading and rail loading facilities, as well as the tank farm at the harbour, will be maintained, and rail transport of acid to Rössing site will continue.

In order to acquire the sulphur feedstock for the acid plant, it is planned to import sulphur by ship into Walvis Bay and to establish a bulk sulphur handling facility at the harbour. The sulphur would be stored in the bulk terminal and then transported by special rail cars to the mine site. A similar process was in operation in the late 1990s before the operation of the old acid plant at the mine was discontinued. Sulphur is not toxic but is flammable and produces sulphur dioxide when burning. The mine plans to establish world best practice storage and handling facilities in Walvis Bay harbour and the mine.

An acid plant produces sulphur dioxide by burning sulphur and reacts it with water to produce sulphuric acid. Environmental impacts to be managed therefore relate to water consumption and air quality control. However, since burning sulphur to produce sulphur dioxide creates heat, this heat can be used to, for example to generate electricity. Rössing is considering utilising the excess energy to heat the leach tanks for improved uranium extraction and to generate electricity on site.

2.3 Second Phase

During 2008 a number of projects will only be evaluated to feasibility level of cost estimation. However, these projects should be assessed at this stage with respect to their environmental aspects.

2.3.1 Heap Leaching

It is proposed that a heap leach treatment process to treat low grade ore will be developed. Currently the project is in its prefeasibility phase with some pilot work being undertaken.

Heap leaching is a process during which crushed ore is put on a leach pad and a mixture of acid and other chemicals percolate through the pile of ore. Uranium leaches out of the crushed ore and collects at the bottom of the pile from where the solution is pumped to the processing plant for the extraction of uranium. The bottom of the leach pad consists of a double liner (for example layers of plastic sheeting and clay) and a leak detection system.

Environmental aspects to be managed will relate to groundwater protection and closure of the heap. Residual acidity within the used pile will need to be neutralised so that no harmful effluents will be generated after closure of the heap leach operation.

A test heap leach operation will be constructed in the current tailings facility to establish economic viability and environmental characteristics of such an operation.

2.3.2 Satellite Ore Bodies

Additional satellite open pits in the SH and SK ore bodies are being investigated. As the ore type is different to that currently mined, their development will require modified treatment. It is anticipated that a new processing plant will be required with associated new waste rock and tailing disposal areas.

Exploratory drilling and leaching test work are currently being undertaken.

In order to more effectively extract uranium from the rock by leaching, grinding the rock to a finer consistency than currently achieved is being considered. This in turn will have an effect on the resulting tailings material to be disposed of. Finer tailings will initially bind more water before drying out, will require a larger area for disposal and will have to be managed more intensely to prevent dam failure and wind erosion of dust.

Both new pit deployments will take place in currently undisturbed areas and impacts on biodiversity are expected. In the case of the SH ore body, archaeological sites have been found in its vicinity and potential impacts and their management will need to be considered in cooperation with the National Heritage Council.

The SK ore body to the east of the open pit will require the establishment of new rock waste disposal areas, due to the size of the SK pit and its distance from current rock dumps.

3. The Environment

3.1 Biophysical Setting

Rössing is located near the inland edge of the hyper-arid Namib desert some 60 kilometres east-north-east of the town of Swakopmund in the Erongo Region of Namibia.

The Rössing uranium deposit lies within the Central Zone of the late Precambrian Damaran orogenic belt that occupies much of northern Namibia. All of the primary uranium mineralisation and the majority of the secondary uranium mineralisation occurs within alaskite, which is an alkaline leuco-granitic rock.

The climate of the region is arid. Precipitation is between 30 and 35mm per annum. Rainfall is highly variable and occurs mainly in late summer and autumn as showers or thunderstorms of high intensity and short duration. Virtually no rain falls in the winter months.

The predominant winds experienced at Rössing are north-easterly and west to south-westerly. A strong north-east to easterly flow, known as a Berg wind, from the escarpment to the coastal areas, occurs approximately 50 times per year, mainly during April to September. These winds can have high velocities, are accompanied by marked increases in maximum temperature and can transport large quantities of dust, sand and fine gravel.

The mine area is situated within relatively hilly terrain along the northern bank of the Khan River, a tributary of the Swakop River. The Khan River is one of the four main river systems of the Namib Desert, draining from the high plateau westwards to join the Swakop River (25km from Rössing) before it flows into the Atlantic Ocean. The rivers are classified as ephemeral or episodic, with their flows only reaching the river mouths after exceptionally heavy rainfalls in the interior. Sub-surface water in the river sands and gravels, however, does exist. Apart from the Khan River, ephemeral and permanent springs are two other important sources of surface water in the area.

The mine is located towards the eastern edge of the Central Namib Desert vegetation zone. A marked east-west vegetation distribution pattern is evident, closely related to the inland distribution of coastal fogs, which can penetrate as far inland as the mine. All plant species found here are considered to be drought tolerant, drought resistant or succulent.

The large mammal species found in the area are considered to be nomadic, moving widely and entering an area when food is plentiful after rains. Avian, rodent, reptilian and amphibian fauna are found at Rössing and the environment is particularly rich in insect fauna.

3.2 Surrounding Communities

3.2.1 Erongo Region

Overall, Erongo Region has the third highest Human Development Index ranking in Namibia, and has the second lowest level of household poverty. Mean per capita income is almost twice the national average. Although industrial activity is limited, the region has good access to the necessary infrastructure for economic development and is well served by transport infrastructure (including three airports at Arandis, Swakopmund and Walvis Bay), police, schools and health services. This is especially true for the coastal towns of Swakopmund and Walvis Bay. The harbour at Walvis Bay is one of the key economic features of the region and is connected to the rest of Southern Africa via the Trans-Caprivi and Trans-Kalahari Highways.

HIV is a serious problem for the region's development and the HIV/AIDS Counselling statistics for 2004 revealed that of 5197 people pre-tested in the region, 33.4% tested positive. Death as a result of AIDS-related illnesses, which may be under-reported, accounted for 2.52% of deaths and the HIV prevalence rate in the youth (up to 29 years) was 25.9%. Regional studies done on pregnant women during 2004 revealed a prevalence rate of 28% in Swakopmund and 25.7% in Walvis Bay. The rate of tuberculosis in the region is high compared to the rest of the country, with most cases reported in Swakopmund and Walvis Bay.

The three communities which are likely to be most impacted, both negatively and beneficially, by Rössing's expansion project are Arandis, Swakopmund and Walvis Bay. A community of small-scale farmers is active in dairy and vegetable farming on smallholdings in the lower Swakop River and the identification of potential impacts on this community will form part of the SIA.

3.2.2 Arandis

Arandis was established in 1976 to meet the accommodation needs of Rössing's workforce. As Rössing wanted a settled workforce, the town was established with amenities which encouraged employees to settle there with their families. It is situated 5 kilometres from the mine. Arandis is currently served by three schools, a number of pre-primary centres, a government clinic, and a private clinic. The prestigious Namibia Institute of Mining and Technology (NIMT) is situated on the outskirts of the town.

In 1992 the town was handed to the Namibian Government and it became a fully fledged local authority in 1994. The alternative economic activities that have developed are insufficient to provide significant employment opportunities and the direct cash input from employee wages, which should benefit the town, is spent mainly in Swakopmund as Arandis offers little to tempt consumers. A period of stagnation in the development of the town started in 1992 and this was reflected in the gradual deterioration of infrastructure, the closing of the hospital which was replaced by a government clinic, ongoing high unemployment and continuing prevalence of unskilled labour.

Arandis has always been dependent on Rössing and this dependency continues. The mood in the town is currently one of optimism, given improved uranium prices and the number of new uranium mines that are opening in the region. The Arandis Town Council anticipates employment opportunities, a increase in demand for housing and industrial business premises to service the mines.

3.2.3 Walvis Bay

Walvis Bay is situated at the end of the TransNamib Railway from Windhoek, approximately 100 kilometres from Rössing. The population of the town is estimated to be 65,000. Social services are provided by two well-equipped hospitals, one of them private, and three clinics. There are twelve schools and a number of pre-primary facilities.

Walvis Bay is the centre of the fishing industry, both catching and processing. Although the fishing industry has been in decline, Government policy on resource management should halt the over-exploitation of fish stocks and the sector is viewed as one of the fastest-growing in Namibia in terms of employment, export earning and contribution to GDP.

The town is the principal port of Namibia, has been granted Export Processing Zone status and is the most industrialised urban centre in the Erongo Region. It is the only natural deep-water port in the country and an important railhead, serving as an import-export facility for, amongst others, processed fish, copper, uranium oxide and sulphuric acid. Rössing has contributed considerably to the economy of the town through its use of these facilities. The port is currently being marketed as an alternative to ports further south and east in South Africa.

Tourism plays a significant role in the economy of the town and it is well-equipped with numerous natural resources, infrastructure and activities to develop this sector. In 2003, Walvis Bay ranked third of the places most visited by tourists to Namibia.

3.2.4 Swakopmund

Swakopmund, located approximately 60 kilometres from the mine, is a thriving tourist centre and Namibia's second-largest town. The population, which is estimated to be 35 000, is served by thirteen schools, two private health facilities, a state hospital and a number of clinics.

A major catalyst for the expansion of the town and the development of its infrastructure was the commencement of mining activities by Rössing in the 1970s. The commercial sector of the economy has expanded and some light manufacturing is undertaken. The town provides logistic support for Rössing. A number of the new uranium companies that have commenced activities in the region have based their head offices in Swakopmund and there is likely to be a demand for both business and residential property, which is not freely available.

The main economic activity in the town is tourism and this sector is growing. The well-preserved historical buildings in the town are a major attraction, particularly for tourists from Germany and the town serves as a centre for extreme sport activities, as well as excursions into the desert by road or air. There is growing concern in the town about the environmental impacts of uncontrolled tourist activities.

4. Aspects to be Addressed as Part of Overall Expansion Project SEIA

The aspects listed below will be addressed as part of the overall Mine Expansion Options Analysis (LOMOA) project.

4.1 Assessment Process

4.1.1 Impact Assessment and Drafting of Management Plans

The Namibian Environmental Assessment Policy requires a Social and Environmental Impact Assessment for mine expansion projects. In addition, the Minerals Act requires the preparation of Environmental Management Plans based on the impact assessment. Rössing has commissioned

Ninham Shand, an internationally renowned engineering and environmental management consultancy to undertake the SEIA for the LOMOA project. In addition, a number of internal and external reviews will be undertaken to ensure that the process follows national and international environmental guidelines.

4.1.2 Independent Review

An independent review of the SEIA will be carried out by the Southern African Institute for Environmental Assessment. The institute will provide key input, review and guidance during the process and a final review prior to submission of the SEIA and environmental management plan documentation to Government.

4.1.3 Sustainable Development Risk Assessment and Scoping

A risk (threats and opportunity) assessment will be carried out early in the overall project development and reviewed on a periodic basis. This will determine what mitigation and opportunity enhancements need to be programmed for project development, implementation and closure phases to ensure that Rössing's sustainable development criteria are met. The results of the exercise will flow directly into the scope for the SEIA. The assessment work will be facilitated by Rössing's parent company, Rio Tinto plc.

4.1.4 Rio Tinto Review

Rio Tinto plc has its own internal rigorous review process to ensure that all projects meet Rio Tinto standards which are based on international best practice. Prior to submission for approval, the results and conclusions from the SEIA process will be documented and undergo an internal review of the Rio Tinto technical evaluation group comprising internal experts.

4.1.5 Legal Review

A formal review of Namibian legislation relating to all relevant aspects of mine expansion projects including closure will be carried out as part of the SEIA.

4.1.6 Stakeholder Engagement

Stakeholder engagement involving Government liaison (including Ministry of Mines and Energy, Ministry of Environment and Tourism, Ministry of Health and Social Services) will be carried out as part of the SEIA for the LOMOA project**.**

4.1.7 Timing of the SEIA and public participation.

The first public meetings around the process will be held on 20-22 August 2007.
The public is invited to provide feedback on the information provided at these meetings and register as I & APs.
We would prefer to have all comments in by 17 September 2007 so that these can be considered for inclusion in the Scoping Report.
A further public meeting to review the draft SEIA will be held in the first week of December 2007.

4.2 Social Impact Assessment

A social impact assessment (SIA) will focus on future options that enhance prospects for local sustainability and support planning for closure. Implementation of an SIA will be based on a consideration of potential social and community risks relative to the expansion project scale and Namibian regulatory requirements.

A social assessment will be undertaken to determine impacts which might be related to aspects such as contract mining and housing demands for an increased workforce. The employment of

additional staff is likely to require the management of specific impacts, for example employee housing and transportation, the provision of increased municipal and medical services and the shortage of local educational services.

The potential socio-economic issues that will be examined as part of the SIA include the following:

- Creation of employment opportunities, i.e. the use of local labour;
- Increased training requirements to serve the purposes of the expanded operation and a resultant higher level of skills in the region;
- Increased remittances to labour-sending areas,
- Increased demand for housing in surrounding areas. There is no accommodation available in Arandis and a new housing development would have a positive impact on the revenue of the municipality and on property values but it would also lead to continued dependency on Rössing, with negative impacts on future closure;
- Likely positive effect on the commercial life of the surrounding towns as more disposable cash enters the economy. The benefits of this in Arandis will only be realised if developments in the town encourage local spending;
- Social disruption due to the potential existence of possible construction camps close to Arandis which could possibly lead to increased social ills and stresses;
- Increased demand for social services which may not be met by current provisions. Schools are generally full, health facilities are resource-constrained and, in particular, social services in Arandis are not likely to cope with even a moderate increase in demand;
- Opportunities for providing services to the mine and the growth of viable SME's;
- Increased prevalence of informal settlers as job seekers migrate to perceived employment opportunities, and
- Increased traffic as a result of commuter services. Rössing would provide transport for employees living in surrounding towns which would result in an overall increased road transport.

As there has been an increase in uranium mining in the immediate vicinity of the three communities, a significant number of the above potential impacts must be considered as cumulative impacts, with implications for future closure. Arandis is particularly vulnerable to such cumulative impacts.

4.3 Environmental Impact Assessment

A comprehensive, risk-based assessment process will be followed. Specific areas that will be examined include the following:

4.3.1 Water

The increase in production to full capacity will increase the demand for water. Currently water is supplied and abstracted by NamWater under the Omdel water supply scheme from the Omaruru River (under permit from the Department of Water Affairs and Forestry). The water demand for the expansion projects will be determined as part of the assessment process and further water savings measures at the mine will be considered. In addition, the creation of an alternate water supply to industry through seawater desalination is currently being discussed with NamWater.

4.3.2 Biodiversity

Information on flora and bird species currently exists for the mine site. However, more detailed biodiversity information is required given the number of endemic invertebrates occurring in the area and further biodiversity surveys will be commissioned. The findings of these surveys will be collated and represented in a biotope map of the area. Similarly, the findings will be used to assess the impact of the LOMOA project on biodiversity and assist in reducing land use impacts.

4.3.3 Archaeology

An archaeological survey of the mine site has been undertaken. Given the number of sites of archaeological value in various sections of the lease, appropriate mitigation measures will be developed in consultation with government to ensure that the impact of the LOMOA development on these sites will be minimised.

4.3.4 Public Dose Assessment

Increased surface area available for radon emanation due to pit excavation and rock disposal need to be quantified in order to calculate changes in the public radiation dose. This work will involve air dispersion modelling in combination with radiation dose assessments. Models for the mine already exist and will need to be updated for the different development scenarios.

4.3.5 Noise and Vibration

Blasting close to surface creates noise and vibration which can be heard and felt in Arandis. Increased frequency in blasting and related seismic effects on infrastructure need to be understood and awareness created with interested and affected parties. A noise and vibration survey will be commissioned to estimate the impact on local residents and surrounding infrastructure.

4.3.6 Air Quality

A fall out dust survey will be undertaken to understand the cumulative impact of more frequent blasting and mining operations. Similarly, air quality modelling will be undertaken to assess the impact of a sulphur burning plant on air quality.

4.3.7 Land Use Impact Assessment

Mineral waste disposal will have a substantial impact on land use. Hence, the waste disposal strategy for the LOMOA project will be an integral part of the overall waste disposal strategy for the mine. An overall land use plan consistent with the Rio Tinto land use standards is under development.

4.3.8 Visual Impact

The visual impact of the LOMOA projects from public areas, like the main road from Swakopmund to Usakos as well as from access roads to the mine, needs to be determined. A landscape characterisation and visual assessment will be commissioned.

4.3.9 Hydrogeological Study

Hydrogeological work will be carried out to define potential operational and post closure seepage pathways and to identify groundwater control measures which might become necessary in addition to the current control measures. In order to establish the hydrogeological baseline dataset, further monitoring boreholes will be drilled and sampled and further geohydrological modelling of the area will be carried out to predict groundwater flow.

4.3.10 Energy Consumption and General Green House Gas Emissions

Climate change and optimised energy use will be considered, in keeping with Rio Tinto's international commitments to reduce energy consumption and green house gas emissions.

4.3.11 Mineral Waste Standards Compliance

The Rio Tinto Mineral Waste Standard will be incorporated into the project development schedule. This relates mainly to the geochemical and mineralogical characterisation of ore and waste and will need a set of analytical tests to be conducted. Rössing is part of the Excellence in Mineral Waste Management initiative implemented by Rio Tinto.

5. Invitation to Participate

Inclusive and extensive participation in the EIA process will ensure that all relevant issues are considered and addressed. It also ensures that the SEIA is conducted in a transparent and comprehensive manner. Stakeholders are encouraged to contact the SEIA team about any concerns they have regarding the project.

RÖSSING MINE EXPANSION PROJECT
PUBLIC PARTICPATION PROCESS
LIST OF MEETINGS – SCOPING PHASE

DATE	NATURE OF MEETING	PARTICIPANT/S
14 June 2007	Risk Identification Workshop.	Multistakeholder
20 August 2007	Public Participation Meeting	Multistakeholder - Swakopmund
21 August 2007	Key Informant	Freddy Kaukungua, Office of the Mayor of Swakopmund
21 August 2007	Public Participation Meeting	Multistakeholder – Walvis Bay
22 August 2007	Public Participation Meeting	Multistakeholder - Arandis
24 August 2007	Focus Group	Rod Braby and Nathalie Cadot, Nacoma.
4 September 2007	Key Informant	Peter Tarr, SAIEA.
4 September 2007	Key Informant	Ms Ulitala Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare
5 September 2007	Focus Group	Job Tjiho, Lloyd Ulrich, Rössing Foundation
5 September 2007	Key Informant	Lysias Uusika, Community and Sustainable Development Officer, Rössing Foundation
5 September 2007	Key Informant	Florida Cloete, CEO, Town Council of Arandis
6 September 2007	Key Informant	Officer WA Nghwaamwa, Officer in Charge, NAMPOL, Arandis
6 September 2007	Key Informant	Danie van Niekerk, Coastal Tourist Association, Nathalie Cadot of NACOMA
6 September 2007	Key Informant	L //Garoeb, Chief Regional Officer, Erongo Regional Council
6 September 2007	Key Informant	Mr Mike Ipinge, General Manager: Community Development Services, Town Council of Swakopmund
6 September 2007	Focus Group	Berdine Potgieter, Environmental Health Officer and Clive Lawrence, General Manager, Health, Municipality of

		Swakopmund.
6 September 2007	Key Informant	Amanda Horn, Community Relations Officer, Rössing Uranium.
7 September 2007	Focus Group	Roswitha Lowe and Tristan Cowley, Tour and Safari Association, Namibia
7 September 2007	Key Informant	Helge Denker, Director, Namibian Environment and Wildlife Society.
18 September 2007	Key Informant	Edkhardt Muller, Namibia Institute for Mining and Technology
18 September 2007.	Key Informant	J Awaseb, Regional Director of Education, Erongo Region
18 September 2007	Key Informant	Mr F Holtzhausen, Engineering Services, Town Council of Swakopmund
19 September 2007	Key Informant	Dr Wotan Swiegers, Chamber of Mines of Namibia
20 September 2007*	FocusGroup	Dr Tshiteta (Regional Director, Health, Erongo Regional Council), Sr Rosie Palmer, Dr Wotan Swiegers (Chamber of Mines of Namibia)
20 September 2007	Focus Group	Mr AP Els Chief Health Services, Walvis Bay Municipality, Sr S Atiogbe Matron, Sr AC Slinger, Registered Nurse. Dr N Ruswa, Dr M Gweja
20 September 2007	Focus Group	FK Shilongo, Regional Commander, Erongo Region, Ministry of Safety and Security, Chief Inspector GU Mavenjowo, Border and Coastal Guard Unit Commander and Inspector O Kashuupulwa, Station Commander, Swakopmund
20 September 2007 .	Focus Group	K Asino, Town Planner, R Archer, Inspector Hazardous Waste, Walvis Bay Town Council
2 October 2007	Electronic	P Sander, Hospital Manager, Cottage Medi-Clinic.
3 October 2007	Telephonic	Florida Cloete, CEO, Town Council of Arandis

*Meeting held. Participant requested time to submit additional information.

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held at Swakopmund on 21 August 2007 between Marie Hoadley and Freddy Kaukungua, Office of the Mayor of Swakopmund

MH The purpose of the meeting was explained against the background of the Rössing MEP.

FK A presentation of the MEP to the Management Board would be appreciated.

MH Requested information on who to contact in the Swakopmund Town Council and in the private sector with regard to the SIA component of the ESIA. This was provided.

FK With all these mines opening, we are going to have a problem with schools. All the schools are full to overflowing. In Mondesa, most of the schools are teaching on a shift system, and most of them are adding classrooms. It is not only the employment issue that is causing overcrowding at the schools. There is a perception that the education standard in Swakopmund is relative higher than elsewhere. There are fourteen schools, not counting the pre-schools, and only four of these go to grade 12. There are three hostels (one for the Namib primary school) and they are all full. The regional officer, Mr Awaseb, can give details on the schooling situation.

MH The situation with health services?

FK We have one state hospital, one private and one state clinic. There are also a number of private consultancies. Staff complements are a bureaucratic decision – depending on the area it services, the government decides what level of service the health system will provide. I would not say we have a shortage of staff, but rather a shortage of capacity. The person to speak to is Dr Tshiteta, the Regional Director.

MH Is there not a clinic in the DRC?

FK No. Unfortunately the DRC people have to use the clinic in Tamariskia.

MH How much housing stock does Swakopmund have? I understand that there is not much available.

FK There are houses available but they are not being put up for sale right now. Prices are starting to fall because the market for such very high prices is not there. We would welcome it if a big company asked us for a piece of land and built a large number of houses. This would be a way of stabilizing prices.

MH What is the current population of Swakopmund estimated at?

FK According to the polio vaccination programme last year, there are between 40 000 and 42 000 people in town.

MH And the unemployment rate?

FK It's always difficult to state this because of the different ways in which unemployment is defined, but it is about 40%. Mr Ipinge will be able to give you a more accurate figure.

MH What is the current population in the DRC?

FK About 6000 people.

MH Has it grown lately?

FK There are definitely signs that the population has increased. We see more vagrants in the streets, and the crime rate is increasing. This is usually a result of unemployment.

MH The economy of Swakopmund is based on tourism. Is there any other sector that makes a significant contribution?

FK No – it is really a service economy, based on tourism. This is a fragile base, as tourism is very easily affected by crime. You can get the number of bed nights from HAN (Albie van Biljon at Alte Brucke) but remember that there are also some aspects that we cannot take into account. Flats are bought and rented out, and this is not controlled. Currently there are 137 self-catering apartments which are rented out, and this number is growing.

MH What is the water situation like in Swakopmund?

FK At a recent presentation Namwater stated that the idea is that there is water, but with the current growth it will not be sufficient, so desalination is becoming a reality. For those of us who get water from the Omaruru, the situation is stable for a few years, but the Walvis Bay water table is much lower than thought.

MH Are there any other proposed developments which could impact on, or be impacted on, by a growth in large development projects? For example, one of the things we will need to consider for this particular project, and the significance will be increased by other projects, is an increase in traffic.

FK Yes, two things are being talked about at the moment. The one is to move the railway station out of the town area, towards the airport. The other is to make a heavy-duty vehicle by-pass to Walvis Bay, one that will go behind the dunes, along the same route as the railway line. The current main road to Walvis Bay will then become a scenic route.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Swakopmund on 24 August 2007 between Marie Hoadley and Rod Braby and Nathalie Cadot of Nacoma.

MH Explained the purpose of the meeting: to introduce the project to Nacoma and to discuss the organizations perceptions and concerns.

RB We are concerned about the number of desalination plants that are being talked about. There is an impact on the coast, but also a growing band of high impact along the coast towards the interior. How many jobs are we looking at, and where will the workers be housed?

MH Decisions about housing, and the avoidance or mitigation of impacts, are among the critical areas of socio-economic impacts that will need to be carefully assessed. These will be addressed in the ESIA report. Apparently there is a waiting list for stands in the DRC. Do you have any experience of informal settlement in Swakopmund?

RB Yes, informal settlers live in the river bed, in the Damara Tern breeding areas. This has been a problem for the last ten years. People are reporting it, and the authorities of Swakopmund and Walvis Bay are working together on the problem of squatting in the river. Some of them are dangerous, one is mentally ill, but there is no institution in Namibia for such people – it is a real social ill. You can contact Danie Holloway at the Stilts. He monitors the situation in the river bed. How is resource use going to be affected?

MH Rössing already has programmes in place to reduce water consumption, but the solution seems to be desalination. The acid plant will produce 1/3rd of the energy requirements. An increase in resource use caused by inward migration will be addressed in the ESIA. Do you envisage environmental impacts resulting from greater recreational use of areas like the dunes and the beaches?

RB Yes, that is highly likely.

RB How is traffic and road use going to be affected? Will there be an increase in transport requirements? And other mines? There is also likely to be increased traffic as a result of Botswana purchase of a piece of land on the Walvis Bay harbour, opposite Mola Mola. This is to use the harbour for their export needs, and goods will be brought by road via the Trans-Kalahari.

RB Our primary concern is water. This is a hot issue.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Windhoek on 4 September 2007 between Marie Hoadley and Peter Tarr, SAIEA.

MH Explained the purpose of the meeting. A general discussion about the RU Project and discussion of a platform for addressing cumulative socio-economic impacts.

PT Cumulative impacts are enormous. They have to be put into the ESIA.

MH That is part of our brief. To address cumulative impacts will require co-ordinated responses. Socio-economic impacts include job creation (and potential job losses) with consequent demands for housing, social services, use of recreational facilities, growth and development of informal settlements. There is also increased resource use.

PT These should be included in an integrated ESIA. How strong is RU on integration?

MH In my experience on this project, extremely strong.

PT How will the housing situation be resolved?

MH An early take is that extra housing should be provided in towns with an already stable economy. They will be better able to withstand the impact of downscaling and closure and the subsequent loss of revenue.

MH I'm concerned about fostering dependency. It's fine to build additional houses provided that, during the life of mine, economic activities are developed which will be independent of mine income. Usakos should do some as Karibib has done – develop its main road to capture passing trade, for example. Arandis, about 16 years down the line, has not successfully developed an independent economy.

PT Talk to Tony Barber, who is doing the SIA for Valencia.

MH I know him. Will do so. Now, about a forum for the discussion of cumulative socio-economic impacts?

PT Yes, it is a very good idea. There are fora discussing other aspects, and some of these are driven through the Chamber. Wotan Swiegers would be a good person to talk to, and the Chamber would be a good driver. Who else did you have in mind?

MH Ideally, all the mining companies, though this may not be possible. We also need the impacted parties and sectors represented – local authorities (Arandis, Swakopmund, Walvis Bay, Henties Bay when Marinica comes on line) possibly Usakos and then also the marginalized groups, such as Spitzkoppe.

PT There is another group who should be represented – the Topnaars. They have political traction. There are governance issues between the chief and the person who runs the Topnaar Development Trust, but you should be able to work through these.

MH There are a number of sectors that are impacted. Tourism, for example, where environmental impacts in turn impact on livelihoods.

PT Are you talking to them?

MH Yes, Crispen Cowley and some others. This idea of a consultative forum is still very new. We need a forum that is large enough to be representative of the main players and implementers, but not so large that it becomes unmanageable, like having most of the people unavailable when you call a meeting.

PT Rod Braby at NACOMA is a good guy.

MH We need to have socio-economic impacts and mitigation measures managed strategically, just as all other components should be.

PT Yes, this is a critical need. There is something which would tie in with a consultation

forum, and could possibly be reflected in the consideration of cumulative impacts in the ESIA. The possibility of an SEA has been out there for a year now. DIFD is keen to fund an SEA focusing on the uranium rush in Namibia (contact John Hobbs). This proposal has been taken to MET and Dept. of Water Affairs, but the political will to implement it seems to be lacking. The mining companies too, with one exception, were in favour of such a direction. Strong advocacy is needed to bring it back on the table, and it could be a mitigating factor for cumulative impacts. You should look at the guidelines DIFD has just put out, downloadable from their website: (Applying Strategic Environmental Assessment. Good Practice Guidance for Development Co-operation (OECD). I have spoken to John Hobbs lately, and the funding is still available.

MH These minutes will get circulated to RU and the ESIA team, and everyone takes out what relates to their area of concern or responsibility and needs to be pursued.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Windhoek on 4 September 2007 between Marie Hoadley and Ms Ulitala Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare.

MH Explained the purpose of the meeting – to familiarize the Ministry with the project and to gain input on concerns and possible mitigation measures.

UH Is there going to be a big increase in employment?

MH Yes, especially if we take the employment created by all the new mines.

UH Then, are you looking at training as well as what would happen if mines closed unexpectedly.

MH Well, even if they went to the expected date of closure, we could still have unemployment. And yes, training is an important consideration.

UK How are you going to handle training?

MH We are looking at building it into the contract between RU and the contractors – that training must be done and ideally, particularly in the case of unskilled and semi-skilled workers, this training would put the workers in a position where they could be offered permanent jobs with the operation when construction is finished.

UK That would be good, but the contract between the contractor and his worker should clearly spell out the training benefits. We find, too often, that training is promised in the contract, but that in the end, there are disparities between what was promised and what was done. It is the duty of the contractor to make training accessible to the workers, even if he can't provide it himself. Are you looking at other types of skills?

MH Yes, mobile skills for alternative livelihoods will be proposed.

UK What are you doing about housing construction workers?

MH From the social aspect, we would like to see the construction workers housed in a construction camp. As many of them are migrants, they can impact severely on local communities, and it is better for both groups if there is not close contact. A management plan for a construction camp will be proposed.

UK What will that include?

MH It is to ensure that the contractors have a decent lifestyle, but also to mitigate any potential impacts arising from their presence. For instance, they will have to undergo an AIDS induction programme.

UK When you do that type of thing, be sure that you treat them as human beings, not just as a bunch of workers.

MH That is inherent in the management plan. Contractors will, as an example, be required to have programmes that, where relevant, comply with Rössing's standards, and these are very highly regarded. I would like to talk about retrenchment. Currently, Namibian legislation does not deal at any great depth with requirements for retrenchment.

UK No, the legislation is not satisfactory.

MH When is the new Act to be promulgated?

UK That is hard to say. The Act has to go to the National Assembly now, so I can't really discuss it.

MH Are you familiar with the South African requirements around retrenchments?

UK No.

MH What then, would you recommend should be put in place to guard against the impact of retrenchment?

UK Training for skills outside the mining industry, and also redeployment where possible. Are you aware that large-scale unemployment will also have a national effect? All those employed people are currently paying into the social grant fund. If they don't have work, they will be drawing from it. This could have a big impact on the budget.

MH Yes, there are other impacts that go beyond the region as well, such as remittances. The ESIA will make proposals for avoiding or mitigating these impacts. But to another matter – do you think there is room for a forum in which the cumulative socio-economic impacts of mining in Erongo could be discussed? And would your Ministry be prepared to be involved?

UK The Ministry would be interested and happy to be involved, but the modalities will need to be looked at. Who are you looking at including in such a forum?

MH This idea is very young, and much work will need to be done, but probably the convenors would look at impacted sectors and communities, experts, and representatives of all tiers of government as these are appropriate to such a forum.

UK You should be careful of mixing local, regional and national government, as they all experience different impacts, have different priorities. Where do you see such a forum being located?

MH It is too soon to say, but the suggestion has been put forward that the Chamber of Mines could be a good driver.

UK As I said, the modalities would have to be worked out, but keep us in the loop.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Arandis on 5 September 2007 between Job Tjiho, Director, Rössing Foundation, Lloyd Ulrich, Assistant Director, Rössing Foundation and Marie Hoadley.

MH Introduced the project and explained that this was a brief meeting to update baseline information on education in Arandis and to discuss perceptions of potential impacts of the proposed expansion, together with ways of meeting the challenge. A more in-depth meeting would probably be required later in the project.
According to reports I have had, the standard of education in Arandis has dropped. Is this an accurate assessment?

LU Eighteen months ago it would have been correct. All the schools have picked up tremendously, to such an extent and students making it into NIMT. Kolin Foundation pupils are consistently scoring among the top students in Grade 12 examinations.

MH At the time of the baseline (2005) there were also some problems with teachers. How is addressing these progressing? Are the teachers using the RF Teachers' Centre?

JT Teacher capacity is still a problem – children can be upgraded quickly, with the teachers we also depend on self-motivation. We have some good teachers. Many right now are possibly are up to par. We are also working in Swakopmund. We expect, within a year, to turn schools around, and turn them into Centres of Excellence. We have targeted Arandis first but to turn a school into a centre of excellence is a decision that needs to be taken by all stakeholders and can not be taken by us in isolation. It does require a buy in with a big commitment from our partners.

JT We are building two maths centres at the coast – one at Arandis, one at Swakopmund. We are also going to build science centres and laboratories – one of these in Arandis. We are employing tutors and mentors to work with both teachers and learners. We have a higher benchmark than government.

MH Are you building capacity in ALL schools?

JT The brief of the Rössing Foundation has changed – our educational programme has been expanded to Swakopmund and Ondwangwa.

LU We are working with Atlantic Primary and Secondary School and Festus Gonteb Primary School in Swakopmund, to some extent with J P Brand a former Topnaar School outside Walvisbaai, and in Ondangwa with Shinime Shiivula Primary School, Olukolo Primary School, Oshitayi Primary School, Iihenda Senior Secondary School and Nangolo Senior Secondary School.

MH What is the current teacher: pupil ratio in Arandis?

LU I will send you spread sheets with this information.

JT When you look at teacher: pupil ratios you can't just look at Erongo. Because so many of the rural schools are undersubscribed, the ratio in the region looks good and the average staffing norm is below normal. You have to look at individual schools and towns. Swakopmund and Walvis Bay are overcrowded, the official staffing norm of 34:1 has been exceeded and it is getting worse. In terms of optimising socio-economic benefits and providing good schooling for

workers' children, the biggest potential is in Arandis for accommodating pupils.

LU Walvis Bay would not be a choice. The amount of time that it would take to transport children to Arandis for schooling would extend their working day too much. Transport-wise it would be cheaper to build five classrooms here than to commute from Walvis Bay.

MH This option, of bussing children that distance, is not even under consideration. It is simply not practical. Our aim is for children to be schooled where they live.

JT We could immediately start a programme of dedicated classroom building in Walvis Bay, Swakopmund and Arandis. The problem is housing – affordable housing is not available, certainly not in Swakopmund, and accommodation is not available in Arandis and Walvis Bay.

Subsequent to this meeting, baseline statistics of schooling needs in terms of classrooms at all the schools in Walvis Bay, Usakos, Swakopmund and Arandis were sent.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Arandis on 5 September 2007 between Marie Hoadley and Lysias Uusika, Community and Sustainable Development Officer, Rössing Foundation.

MH Purpose of the meeting: to work in partnership with Lysias to engage with the farmers in the Swakop River, and to get his view of the potential impacts of the project.

LU I am new in this position. I have not yet engaged with the farmers, and the person who would know about them is unfortunately away for a week. I think we will have a problem with informal settlers. I lived in Mondesa for a month when I took this position, and there are large numbers of informal settlers living in shacks in back yards there. We could see an increase of this, and I think we will see this develop in Arandis.

MH What about Spitzkoppe?

LU I am not familiar with the current situation in that community. I was involved in the establishment of the conservancy, but that was some time ago.
Housing is a huge problem in Arandis – there are no vacant houses. I am staying in Swakopmund because there is no house for me in Arandis. There are lots of people coming into town, contractors and people looking for employment.

MH Where do they live?

LU If they have friends or family in town, they move in with them. If not, they rent a room.

MH I know its early days, but what is your impression of the Arandis community?

LU They have little economic initiative. You see many people of working age just hanging around the street. They seem to lack initiative to do things for themselves, as if they are expecting somebody to come and find employment for them. As an example, look at all the bottles lying around. Nobody has thought of recycling these.

MH Let's talk about the logistics of meeting with the farmers in the Swakop Valley.

Summary of arrangements: MH to send emails to those who had addresses. LU to phone others – try to find a venue. Date set as 17 September at 09h00. LU to accompany MH for the meeting.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Arandis on 5 September 2007 between Marie Hoadley and Florida Cloete, CEO, Town Council of Arandis.

MH Explained the purpose of the meeting: perceptions of the MEP in Arandis, and to get some baseline updates.

FC She had been to the public participation meeting, and was aware of the project. If we look at the Council's ten-year strategic plan, Rössing Uranium undertook to support the ATC to realize this vision. This project means that they will still be here, and its makes the vision attainable. The Working Group is constantly assessing our strategies – how can we be sustainable and de-link economic growth from the mine? There is pressure on the LED strategy to do this.

MH To what extent is new investment and interest in the town based on mining activity?

FC A lot of investors are linking their investment to life-of-mine. Bank Windhoek has taken over home loans from Council, but the repayment period is 13 years, i.e. linked to life of mine. Developers ask how many people will be employed by the mines, and on that basis they decide how much building to do. Rössing has taken a decision that all contractors must set up a base in Arandis – this is very positive, but also dependent on life-of-mine. Employment often means a temporary alleviation – skills development is essential, and they should be skills for other forms of employment. The sudden activity is definitely the result of all the mining going on. Everyone asks about the life of mine.

MH How does the community feel about the new developments?

FC Positive, because of the changes of employment, but the dependency continues. The local residents want houses for free because ATC offer them for free. The arrival of new mines also creates and expectancy that they will get benefits such as houses for nothing. They also fear inward migration, largely because they can't face competition.

MH Has there been much employment recently in the town?

FC What there has been is largely from contractors, but if the new developments go ahead, more work will be created.

MH What is the current availability of housing?

We have nothing available and over 150 people on the waiting list. We have sold over 200 erven.

MH What kind of people and businesses are coming in?

FC Financial services, auditing services, ProLink, who presented a mixed development proposal – financing, development and marketing, has taken 80 stands. We are a looking at upgrading the CBD. Many operators from Windhoek are also coming in. NIMT is quiet about progress with regard to hostel. There are also private people coming in – from Windhoek and from Swakopmund. They are not coming for job opportunities or to open businesses. They are simply coming to live here.

MH What is the schooling situation like? Has there been an improvement since the baseline study was done?

FC Arandis could be a Centre of Excellence in education. This is a particular focus

of the Rössing Foundation. There is capacity in the schools, but I don't have in-depth knowledge. The RF will be able to tell you more. However, we need to take care that the teaching and training must not focus on servicing the mining industry. Employment and careers in other economic sectors must also be catered for.

MH State health services have been very poor in Arandis. Has the situation improved? Will it be in a position to cope with extra demands?

FC Health services would not be able to cope, they would definitely have to improve. We do have a social worker now, who comes once a week and is fully booked. An inter-company initiative for occupation health is being established through the Chamber of Mines. Arandis will have a satellite facility. The town is to make provision for a site. Such a facility could be used in Arandis to serve the community as well.

MH Has the ATC developed a strategy to deal with inward migration?

FC Not yet. We did think of demarcating an area for informal settlement, but the concept was blown out of all proportion by vested interests.

MH Have you spoken with the NHE about low-cost housing in the event that you have to formalise informal settlements?

FC Not yet, but we will be.

MH The crime level in the town?

FC Still low, but possibly there is under-reporting. Vandalism is still a big problem, probably increasing. We are currently reviving the police-public relations forum.

MH The sewage system? I have heard reports that it is not functioning well at all.

FC We have an agreement with Rössing for assistance to prepare the plant to cater for ten thousand people.

MH That is a huge increase. Are there indications that the population is already increasing?

FC Yes. The population is now 5200 according to the polio vaccination campaign.

MH That is from 4500 in 2005. Where are the new people staying?

FC With friends and families, and they also rent rooms.

MH Is Woerman Brock definitely opening in Arandis?

FC Yes, by the end of the year.

MH Recovery for services – has there been any improvement?

FC No, in fact Namwater has taken over the management of the water supply. The non-payment and the payment of arrears are major issues. It has caused much conflict in the community, and the ATC has little support from the Councillors. Some of them are among the non-payers. Many of those who are not paying are in fact people who are employed.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Arandis on 6 September 2007 between Marie Hoadley and Officer WA Nghwaamwa, Officer in Charge, NAMPOL, Arandis.

MH Explained purpose of meeting. Brief overview of project and potential impacts on Arandis, as well as establishing the capacity of social services to cope.

MH In 2005 the level of crime in Arandis was very low. Is it still so?

WN It is still very low, with the exception of assault and alcohol abuse, where the statistics are going up – I think this is the result of money as people get jobs. We get between 10 and 15 cases per month of assault and women and child abuse, 10-15. This is a change in the crime pattern. Housebreaking is on the increase, and armed robbery. About 16-25 cases are reported a month. Domestic violence is not reported. Violence against women is becoming a problem. Men need to be educated. When they have money, they just beat up their wives or girl friends. Commercial sex is making an appearance. At the end of the month, sex workers move into Arandis from Walvis Bay and Swakopmund. We have had an increase in crime and expect more.

MH Is the increase in crime recent?

WN Yes, quite recent – since last year. Since all the mining activity has started. A lot of new people are coming into the town.

MH What are the main types of crime?

WN Assault and alcohol related crimes.

MH Is any particular sector of the community involved in criminal activities?

WN Yes, the youth, and they are involved in so-called commercial crime. Before housebreaking was for food, but now they take safes and money. Foreign youths come in and commit crime, locals get drunk at the end of the month, and they indulge a lot in disorderly behavior. At the end of the month you can see the bottles littering the streets and men urinating in public. We lock those who are drunk up for a while and they pay a fine.

MH How much crime is being committed by people from outside Arandis?

WN Serious offences, such as robbery and housebreaking, are often committed by people from outside. With contract workers and the new mine, you will find a lot of drinking. There are also a lot of foreign contractors, but they are more disciplined and very seldom get locked up for a lack of discipline. Arandis people are getting jobs, but they drink their money out, so outsiders will get their jobs.

MH What impacts do you expect from inward migration and possible informal settlement?

WN An increase in crime and types of crime that we have only heard about in Arandis.

MH What is the current capacity of NAMPOL in Arandis?

WN 20 people, including administration, foot patrols and the 24-hour charge office. We have no traffic police although there is talk of opening a traffic office, Rössing does little for Arandis police. We have a high accident zone from here to Usakos, especially over holidays. Government is trying, but the private sector should help.

MH What is the area of your jurisdiction?

WN It stretches from Arandis to Trekkopje and includes the Valencia and Bannerman mine sites. To go to Valencia is about 200 kilometres as we do not have a four-wheel drive vehicle. So we usually ask Usakos to go there, and they pass the case on to us.

MH What is your relationship with the Arandis Town Council like? Are you working in partnership?

WN Yes, the partnership is working well. We work together on community issues, and have established the Police Public Relation Committee. This is a multi-stakeholder committee, and we meet to discuss daily crime in the town.

MH Have you managed to control the access of children to alcohol?

WN We are trying, and have had some success. Shebeens are not a big problem anymore. We have 9 registered, and no illegal ones.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Swakopmund on 6 September 2007 between Marie Hoadley and Danie van Niekerk of the Coastal Tourist Association and Nathalie Cadot of NACOMA.

MH Explained the purpose of the meeting. Tourism and mining are major economic sectors in Erongo, and the meeting was to gain insights into tourism's perception of the mining activities and also to find ways in which the two sectors could complement each other.

DvN Danie – from our side, we have had no problems with the mines up to now. We have had a number of meetings with Nacoma, and also with Bannerman. The mines are not situated in the area in which we operate. Our biggest area of concern is all the reports in the newspapers about the number of uranium mines that are opening, and the possibility that they will move closer to Swakopmund. The closer the mines move to Swakopmund, the more it will move into the area that we use for our tours. We operate in the Swakop River Valley up to Goanikontes. We do half-day desert tours, and in the Swakop River Valley we go off the main road. We frequently do night trips, camping and desert dinners. We use specific sites. At the moment, our main concern is the Bannerman concession, which extends right up to the plots. However, Bannerman has been very forthcoming and open, and they have told us that our operating areas are not really where they are interested in at the moment. Their hot spots are just outside our area.

NC From the first viewing platform at the moonscape you can hear the noise of mining activity.

MH Do you take tours up to Cape Cross?

DvN Yes. The road from Swakopmund to Henties Bay and the right into the desert to the Brandberg, which is one of the main tourism routes, for tour operators and for individual tourists. People like to go to the seal colony, but it is not one of the main attractions. At Wlotzkasbaken, where a big desalination plant is going up, there is an important lichen field (this falls into Nacoma's territory) and there are concerns that this lichen field will be damaged.

MH Are people very interested in the lichens?

DvN The lichens are just another interesting occurrence that people like to see. They always stop and look. Infrastructure affects game more than the mine does. Game crossings are not that effective. Game move down these rivers for nourishment. As it becomes drier in the interior, animals start walking west towards the sea and down the rivers. The Langer Heinrich pipeline is close to the river, and there is some doubt as to whether there are enough game crossings. Game has been seen on the road to Henties Bay. The government will have the final decision and there is not much we can do about it. The main reason people come to Swakopmund is because of the desert. Swakopmund needs tourism. Increasingly, incentive groups are coming in, and there are many spin-off economic benefits, such as entertainment.

MH How many tourists visit the Rössing pit?

DvN NamibI will be able to give you more detail on that, but the pit tours are not well marketed. We have had groups of people who wanted to go, but tours are not

run frequently. As far as I know, they are only run on Fridays, and then not every week.

MH What do you see as the best way to ensure that the two sectors work together and to prevent alienation between them?

DvN We must have consultation of the kind we have had with Bannerman, so that each knows what the other is doing. Mining tours would also be a good idea.

NC NACOMA has technical committees on various aspects of the environment. We could look at setting up a technical committee on uranium mining in Erongo.

MH Thank you, that sounds like an excellent idea.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Swakopmund on 6 September 2007 between Marie Hoadley and L//Garoeb, Chief Regional Officer, Erongo Regional Council.

MH Explained the purpose of the meeting. Introduced the Mine Expansion Project. We need a broad overview of perceived impacts on and benefits for the region. Looking for suggestions on how to maximise/minimise benefits and impacts.

LG You touch on an issue which is very important and pertinent. Economically, mining is very good; it will create employment and income. But there are many mines, and it comes down to the need for housing, water, infrastructure, and also the impact it might have on the environment. We have well-protected dunes and plants. We don't want these destroyed. All stakeholders should really be involved in mining developments that are coming up. There should be a conference where all the mines in the Erongo look at how we can get the best out of these benefits and minimise the negative impacts.

MH One of the aspects that Rössing will need to take into account when making decisions about accommodation for employees is schooling. What is the position with regard to schooling in Swakopmund, Walvis Bay and Arandis? Do the schools have the capacity to take in a significant number of extra learners?

LG We already have problems with schools in Swakopmund and Walvis Bay. Especially with secondary schools, there is no place in their yards to put up extra classrooms. This is where mines come in with their social responsibility programmes. Look at Arandis as an alternative for good schooling. If you want people in a certain place, look at the schools, the health services and consumer services. We are pushing for more schools in Arandis and in Henties Bay. We have to look at Arandis.

MH And housing? There is going to be a great need for extra housing. What is the position in the coastal towns like?

LG There is a serious need for housing in all the towns and they must be affordable. If people cannot afford the houses, they will squat, and we then have to cope with the social evils that result. If we do not plan proactively, then we have to expect all these evils. Inward migration is going to have a huge impact on social life and criminal activities. We must not make the same mistake as Windhoek. Municipalities have to be involved – we need to know what their future plans are. They must make erven available.

MH If employees are housed in Swakopmund or Walvis Bay, there will be an increase in commuter traffic, and there is likely to be a growing number of trucks on the roads as a result of all the activity around mining. What is the road infrastructure like? Will it be able to take much extra traffic?

LG Infrastructure – when we talk about roads, there will be more pressure on our tarred roads. These roads were built at a specific time; nobody took the possibility of so many mines developing into consideration. Commuter traffic is already heavy. It will be advisable for all the role players to come together to look at these aspects. The municipalities must come to us and tell us what they are planning and what they need. We must have a conference around mining development.

MH What other impacts do you anticipate for the coastal towns?

LG There will be a real strain on service providers in Swakopmund. In Walvis Bay, they have requested funding to upgrade/replace the sewage system. You do really need to look at Arandis.

LG Arandis needs businesses to persuade people to buy there. The mines need to get together with businesses and tell them how many people they are prepared to employ in Arandis, then investors can put up services for consumers, such as supermarkets. To get other industries into Arandis, they should talk to relevant ministries. MTI can also be approached. International investors can also be approached.

MH It is doubtful whether, currently, Arandis has the service structure in place to cope with a larger population. The health services are an example.

LG The health services in Arandis are very poor. This is because we depended on the mine in the past. We must not make the same mistake again. We want to protect Swakopmund and make sure that it stays a tourist destination.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Swakopmund on 6 September 2007 between Marie Hoadley and Mr Mike Ipinge, General Manager: Community Development Services, Town Council of Swakopmund.

MH Explained the purpose of the meeting. To introduce the Mine Expansion Project and to gain information on Mr Ipinge's views on possible impacts and benefits, and of ways of addressing these in the ESIA Report.

MH What is the extent of your portfolio?

MI We deal with community development services, housing in the lower income category, shelter for those who do not have accommodation, empowerment of community members, the development of SMEs and issues of tourism. We are trying to promote Swakopmund as a top tourist attraction.

MH Do you think mining will impact on the tourism sector?

MI There is the possibility of them complementing each other. Mining house executives will come, and they will spread the word about the scenic beauty of the area.

MH What about the possibility of environmental impact? Most tourists come because of the environment.

MI What is important is that any development will change the face of an area. However, pre-planning, EIAs and precautionary measures are crucial. One can not take away the benefits that will accrue to the community and country from mines – proper measures must be taken beforehand to assess the possible impacts. With careful planning, you will find that benefits outweigh negatives.

MH Do you envisage any impacts from the mine expansion plan?

MI With so many mines opening, people will come and look for jobs. The biggest challenge for the Council is that they need accommodation, which is not readily available. These people end up creating improvised shelters to survive.

MH Is there the capacity within the Council to cope with these challenges?

MI The capacity to mitigate the challenge is there in the municipality. It is in a position to try to provide services, but some of the people are not able to afford the services. Maybe for those with jobs it is better, but some have little or no income.

MH If there is a significant influx of people, will recreational facilities cope?

MI Money could be a problem if there is a need to expand recreational facilities.

MH How many people are currently living in the DRC?

MI We can't talk about people, we should talk about households. There are 1300 erven in the DRC, of which over 1000 are currently occupied.

MH What is the unemployment rate in the DRC?

MI That part of the community is fluid – they move around after jobs, and will go anywhere, so it is not possible to give accurate statistics. However, it is true that the unemployment is very high. The income level is also lower than Mondesa, which is a lower-income community.

MH What initiatives does the Council undertake with regard to these communities?

MI We have a two-pronged plan. The first is to provide basic services and amenities. The second intervention is by way of economic development, to see

where people can be empowered to generate income for livelihoods. We place importance on skills training.

MH Has this intervention been started?

MI It has been, but on a piecemeal basis. We have built various market stalls and open markets for small-scale businesses. The initiative is ongoing, but we want to make it holistic and integrated, make it more formal.

MH Where are most of the backyard shacks being put up?

MI Mondesa cannot cope – every second house has a shack in the backyard. If you drive towards the DRC, you will see over 800 erven being developed. We want people living at the DRC and in backyard shacks to move there. There are at least 4000 backyard shacks. These new stands will be fully serviced. We are talking to NHE to see if they can provide some financing. We are trying to get away from the impacts of shacks for reasons of safety, health and congestion. At the same time, we want to try to allow the landlord to keep his income. We are promoting the building of decent rooms for people living in backyards. This will be better for them, and it will also improve the value of the property. We need more consultation around this, as the shack culture is entrenched. The way people are living at the moment, access to services is inadequate. Shacks are burning down in both Mondesa and the DRC. It is a big problem.

MH How would you suggest the impact on housing and services could be avoided?

MI Firstly, if the municipality is not informed in advance of the developments, it will be very difficult to cope with the challenges. All the developers must stay in touch with the municipality and inform it of their possible needs. We don't know what their needs are. Inward migration will be temporary – people do not leave their local places forever. What I can guarantee is that the word of possible job opportunities will spread like wildfire – in one day people will arrive very quickly. Secondly, you should look to housing in Arandis.

MH We are concerned about creating further dependency on mining in that town.

MI The approach must be two-pronged. You should try to bring in other industries, and using Arandis should go hand-in-hand with economic development.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Swakopmund on 6 September 2007 between Marie Hoadley and Bernadine Potgieter, Environmental Health Officer and Clive Lawrence, General Manager, Health, Municipality of Swakopmund.

MH Purpose of meeting: to introduce the Mine Expansion Project and to gain information on the Department of Health's views on possible impacts and benefits, and of ways of addressing these in the ESIA Report.

CL With regard to most important impacts resulting from increased employment at Rössing, I can't really express an opinion on that, as that falls under the Ministry of Health and Social Services. I don't know how it will impact on their capacity. From past experience, we have not had concerns raised about bed shortages, but the shortage of ambulances is a problem and the discarding of medical waste. We are concerned about the way they discard their waste.

MH Does your department deal with housing at all, especially if housing raises health issues?

CL The Health Dept does not deal with housing, so I am speaking under correction. The Council envisages that we will keep DRC as an informal reception area, even though it is on the verge of developing between 200 and 500 erven in the Progressive Development Area so that people from the DRC can move into a more formalised area. A major constraint is the availability of electricity services, and the Council is currently in discussion with Erongo RED.

MH How are these erven allocated?

CL You need to register with Community Development Services. The Council is open to proposals from the private sector if developers are looking for premises to build on. Developers can develop their own type of housing if so desired. A new concept of distributing land for development has been introduced, whereby private developers were brought in and shown all the open spaces in town that can be developed, so for the next four to five years the provision of housing will not be a problem. Private companies will develop on behalf of the Council. That ranges from the affluent to the more informal. We have identified five areas that can be developed in this way. Some are not serviced. The PDA area is fully serviced except for electricity. Marco Swartz is the GM Corporate Services, he deals with properties and the layouts are done by the Engineers Department.
From a health point of view, it is desirable that people move from the DRC moved to the PDA. Possibly the mines could help by assisting people with funding to build.

MH The DRC – is there a waiting list?

CL It is really a registration list.

MH And informal settlers in the Swakop River?

CL Yes.

MH Inward migration – it is likely that many unemployed people will settle in the DRC? Even employed people, if they are paid a living-out allowance, could settle there and use the money for something else.

CL Housing allowances must be managed properly. A housing subsidy is a better way to go.

MH Are clinic facilities adequate?

CL There is only one clinic, and a major need for another, for additional staff, equipment and First Aid training. We really need that, with the number of shacks that get burnt down in the DRC and Mondesa. There is no electricity in the DRC, so they use candles. In Mondesa, they overload the power supply, which burns out. We are trying to limit shacks in back yards. These shacks are a big problem. People are paying excessive rentals for poor living conditions. This has economic impacts. The social impacts on formal residential areas, particularly Mondesa, are also high.

MH Do you have an idea what the TB and HIV prevalence statistics are?

CL The regional office will be able to give you TB stats. For HIV/AIDs as well. The last survey of pregnant women indicated that there had been quite a decrease in the prevalence rates. This could be because of the counseling centre in Mondesa, and because there is a voluntary test centre.

MH In your experience, do you expect an increase in prevalence rates with an influx of people?

CL There will definitely be an impact. Prevalence will definitely increase. We have sufficient resources in Swakopmund to cope with this problem. In addition, many companies have their own workplace programmes.

MH Commercial sex?

CL Not bad. We still have two or three diehards.

MH Alcohol abuse?

CL That is still a big problem, particularly in the DRC. There are more than thirty illegal shebeens there. In Mondesa, there has been a public outcry against the number of shebeens operating. People are starting to query the ease with which shebeens get licensed. Police have now employed a Public Relations Officer, one for Erongo. Socio-economic issues are addressed at public meetings. We are trying to raise a sense of civic and social responsibility in shebeen owners. We had a real struggle to get them to accept that, once you sell liquor, no one under 18 is allowed on the premises, even if you sell bread as well and that is all they want to buy.

MH What, if any, impacts do you envisage for the Dept of Health?

CL A constraint for us is the availability of staff in the cleansing section – we struggle to get people appointed due to budgetary constraints. We have established public/private partnerships so that the service can be privatized. The current cleansing systems are not working well. We need a waste plant for Swakopmund instead of a solid waste dump. This will curb pollution in the desert, and also put an end to the scavenging on the waste dumps by people from the DRC.

BP Project Shine is sponsored by a multi-partnership which includes Rössing. Workers on the project clean the road reserve by picking up bottles and glass.

MH Do you recycle?

BP No, the quality of the glass is too poor. Where possible, we do recycle and have about twelve recycling banks for glass and one paper bank in town. All office paper of the Municipality is also recycled and collected by a local Recycler.

MH Vandalism?

CL Not much. From our point of view, the major impact will be on waste removal. We wanted to implement skips for the DRC, but an efficiency audit, of which the

draft is out, is emphasizing the shortcomings and constraints of the system. The recommendations in our report are not looked on favourably. Arandis also uses skips. Management of deposited waste, the storage and control at the dumping site is a real problem and the lacks of equipment to improve concurrent operations are the main constraints. Waste is a real problem. The idea is to have the service privatized, but the Council needs funding to implement the system.

BP We have a growing problem with street kids. Currently there are about 8-15 and we would like to do something about them. We are also getting a lot of AIDS orphans. We need a facility where the two categories can be combined – we are trying to work on a Centre. At the moment they stay with families and in a house of safety.

CL More and more springboks are coming onto the road, onto the Henties Bay road as well. Game could be using the new road to Langer Heinrich to cross the main road.

MH Any other relevant developments in Swakopmund?

CL An open market and multi-purpose community centre are being developed in Mondesa next to the taxi rank.

MH The sewage system – is it functioning well.

BP In the DRC they have a dry system (Jo-Jo) but this is not being used properly and the Council still has to provide a service. The impact on the current sewage system will be huge. It will not be able to cope with big influx; it can't cope in December as it is. In the Council's long-term plan a possible reed-bed system and or an additional sewage plant is envisaged is mentioned.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Swakopmund on 6 September 2007 between Marie Hoadley and Amanda Horn, Community Relations Officer.

MH Explained the purpose of the meeting. This is a preliminary meeting to gain some insight into key health aspects. There would need to be further meetings. I have been told that the hospitals in Swakopmund and Walvis Bay have adequate bed space, but are somewhat lacking in capacity. What is your impression?

AH Yes, I would say that that is an accurate assessment.

MH Would they be able to cope with increased demand on their services? For example, if Rössing employs just 200 extra people, using a conservative multiplier of 1:5, we are looking at a possible 1000 people who may require health services.

AH That is something you will have to ask Dr Shiteta.

MH I have been told that there has been quite a significant drop in the prevalence rates in Swakopmund. What do you ascribe this to?

AH It is hard to say. It could be the result of awareness-raising and the Government's and NGO's/CBO's programmes, but it could also be because those people who were already to far advanced could not be help by programmes and have died. An important aspect for your study is that this region has been red-flagged as a high prevalence HIV/AIDS area because of the presence of the mines and the harbour. We (meaning Namibia) are actively trying to get additional Global Funding to be more proactive and also trying to ensure that government programmes are aligned. A matter for concern is that Swakopmund does not have a hospice.

MH TB is quite high in the coastal areas. Do you have any statistics?

AH No. That you will be able to get from Sister Slinger at the TB Clinic in Walvis Bay. She will also be able to give you statistics on HIV/AIDS. Through the Improving Performance together programme Rio Tinto is developing a more concerted programme. We are identifying funding for HIV/AIDS and developing a strategy for the Business Units in the southern region. Quite recently Rössing made a donation to the UNAIDS administered Small Grants Fund on HIV/AIDS which goes into rural areas supporting CBO's with funding to run HIV/AIDS programmes. This because we get labour from these areas but simply do not have the capacity to directly access these communities.

MH Is there any co-operative action between mining companies and/or other stakeholders around HIV/AIDS?

AH No, currently there is none on community relations. One area in which there is co-operation is directed by Dr Swiegers of the Chamber. All the mines are participating in the Health, Environment and Radiation Safety forum. In general cooperation on Health, Environment and Safety is quite high.

MH We will need another and more in-depth meeting.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Windhoek on 7 September 2007 between Roswitha Lowe and Tristan Cowley, Tour and Safari Association, Namibia, and Marie Hoadley.

MH Explained the purpose of the meeting. Tourism and mining are major economic sectors in Erongo, and the meeting was to gain insights into tourism's perception of the mining activities and also to find ways in which the two sectors could complement each other.

RL Rössing is not really on the tourist route, so it does not cause us concern. How can we avoid these big operations and the huge number of them? We are concerned, but the MME just gives more licenses and does not see the extent to which they are a threat to tourism and the environment. They don't consider the impacts, and these could last for a long time. The tourist sector has never got the priority it deserves. It just has to accept the consequences or implications.

MH You should be talking to MET. That is the ministry who reviews and approves Environmental Impact Assessments before a mining licence is granted.

RL Just about every tourist who comes from Windhoek goes to the coast at Swakopmund. The feedback from the coast is that they have had consultations with Bannerman, who told them what they wanted to do. They asked the tourism association what their concerns were, and what could be done about them. A lot of the consultation had to do with routings of trucks and heavy vehicles through the area.

There are mines everywhere; it is alarming, but the best way of dealing with this is through consultation.

MH Has anyone considered doing a mining tour? There are a number of very interesting sites, at Trekkopje, the Kahn River, Rössing Mountain.

Together with CTA, that could be a good idea. But no idea should be a compromise or a trade-off for destroying the environment.

TC In the area we use – the moon landscape and Goinakontes, there could be severe impacts from heavy vehicles. The placing of the actual mine is also important, it should be well-placed. There is no way around the drilling that is done for exploration, but once the final locations are established, it will ease up. We have other concerns as well. Desalination will cause increasing traffic on the Henties' Bay Road. Every tourist goes to the WCRA; they are very interested in the lichens. It is important to see the benefits of mining. The Road in the Namib Naukluft has been bad for a long time. MET is supposed to maintain these roads, but it is cash-strapped. The mines could take over the maintenance of the roads and signage in return for being allowed to mine in the Park. The mines could take this over.

RL Rössing tours are not known any more. They used to be well-advertised. Who do we contact about this? We often have tourists who want to go there.

MH Why do people come to Namibia, specifically to the area around Swakopmund?

JT They come for the uniqueness of the Namibian environment. Five key words selected to 'brand' Namibia as a tourist destination included "rugged" and "solitude". People are happy to see the game if it is there, but don't come to

look at it specifically.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Windhoek on 7 September 2007 between Marie Hoadley and Helge Denker, Director, Namibian Environment and Wildlife Society.

MH Explained the purpose of the meeting.

HD NEWS has not responded to many of the documents disseminated, but the organisation was busy restructuring and somewhat stretched for capacity. However, I have read the PID, and have made a note of some questions I would like to ask.

MH I may not be able to answer the technical questions, but they will be answered by members of the ESIA team.

HD Before we start, I have not seen the Rössing pit. I am concerned about the local impact of increasing the footprint? Would it be possible to visit the pit?

MH I will find out what the procedure is and let you know.

HD To what extent will the specialist studies cover radiation and ground water pollution – what area is covered, which coastal towns?

MH I'll note that one for a future response.

HD Is there data available of the levels of material dispersed by wind to the coast?

MH All these aspects – radiation, water and air dispersion – are the subjects of specialist studies. I will get responses to your questions.

HD The mine must use quite a lot of water for dust suppression. How much water are they using, and where is it coming from.

MH I can't say how much they use, but Rössing has excellent programs in place to reduce their water consumption. As far as I know, the water for dust suppression comes from boreholes. The water is very saline, and not potable.

HD Will the ESIA be looking at both direct impacts and cumulative impacts?

MH Yes, looking at cumulative impacts is a specific part of our brief.

HD Are we looking at the bigger picture? Are we looking at the period of benefit in relation to the period of impact?

MH Yes. Sustainability is inherent in ESIA studies, and in terms of that concept, the benefits need to be structured so that they outlast both the impacts and the mine itself.

HD Let's go one step bigger – the general standpoint is that uranium is mined for two purposes – for nuclear power, and for nuclear weapons. What is Rio Tinto's standpoint in this regard? And with regard to the generation of waste.

MH Rio Tinto's statement of business practice, *The way we work*, applies to all Rio Tinto managed businesses and is further supported by specific guidance documents and codes of conduct. The Mine's uranium is sold through Rio Tinto uranium, which markets uranium for Rio Tinto from Rössing as well as from Energy Resources of Australia, Rössing's sister mine in the Northern Territories. Rössing's uranium is sold to European, United States, Japanese and Asia-Pacific nuclear power producers. Rössing sells uranium oxide only to power utilities in countries which are signatories of the United Nations Nuclear Non-Proliferation Treaty. Namibia is a signatory to the Non-Proliferation Treaty and additional protocols signed by Namibia. These require reporting on the production and transport of radioactive materials leaving Namibia. The Treaty facilitates cooperation in the peaceful use of nuclear energy under IAEA safeguards, and signatories have to accept audits and on-site monitoring of their nuclear activities and materials to verify that they are not being used for nuclear weapons.

HD The most direct impact on tourism will be the visual impacts. These will reduce the attractiveness of the area. Another thing – internationally, especially in Europe, people are wary of uranium and contamination. The cumulative impact of a number of mines will make them reluctant to visit the area. These impacts could be addressed by alternative land-use considerations. What impact does mining have on the long-term use for tourism?

MH A visual impact assessment will be done as part of the SEIA. The ESIA team will also be talking to the tourist sector to get an insight of that sector's perception of the mining activities in the areas where they operation.

HD Too much planning is done with hindsight. To what extent is there a strategic plan for addressing the mining of uranium in Erongo?

MH The need for an SEA has been expressed by a number of stakeholders. It is something that should be looked at as one way of addressing cumulative impacts.

HD Please keep us informed, even if we are not always able to respond.

MH We will. Stakeholder engagement is also very much about information sharing and awareness raising.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Arandis on 18 September 2007 between Marie Hoadley and Edkhardt Muller, NIMT.

MH Explained the purpose of the meeting: to discuss the increased requirements for skills by this initiative and the opening up of other mines. To discuss the capacity of NIMT.

EM NIMT's capacity is over-utilized. The Institute puts 1100 people through the system over a four-year cycle. Currently there are sixty trainees in Ongopolo, and the next phase will commence in 2008 with fifty trainees. The third phase will be training in hospitality and tourism.

MH How many of the mining companies in the area fund students at NIMT?

EM Funding is a big problem – government financial assistance has reached its limits. Rössing is the only mine in the area funding students. We have 4 students from Fluorspar. Namdeb funds 25 and Rössing 82. We receive no direct donations.

MH How has the curriculum at NIMT changed since the baseline in 2005?

EM We have added hospitality, rigging and autotronics.

MH The proposal to add a school of mining – how has that progressed?

EM Nothing has happened, we need a donor.

MH Small-scale miners – are they being trained?

EM There are proposed short courses but nothing has happened.

MH Where are students coming from, and how are they funded? Are companies trying to retain their bursars?

EM Yes, some students have job attachments. Some companies have a contractual obligation, which means that the graduate has to apply there first if a position is available. We only have Namibian students – there is no room for anyone else.

MH The new companies, have they spoken to you?

EM Yes, they have, but nothing has come of it so far.

MH How is the textile unit doing?

EM We are having a problem with trainees. The sector is not big enough to provide job attachments. This would be a very good course for women to enable them to start a domestic industry.

MH Do you have any strategies yet to accommodate students from Arandis, for example with bridging courses?

EM No, and we will not be running bridging courses.

MH Are you working with the RF on their educational programmes? Any partnership here, any alignment of objectives?

EM We are a member of their educational forum. They are planning a large upgrading, an educational, multi-functional media centre in Arandis. They should first look at the schools.

MH NIMT was going to provide hostel accommodation in Arandis for its students. Has this progressed?

EM Yes, we have to talk to Rössing Uranium, and at the moment time is against it. Rossing wants to build a hostel for 300 students.

MH What challenges do you think are posed to the region, in particular the area in

which all the uranium mines are opening?

EM We must strive to have a balanced society, not a mining mentality society. Together with housing, the whole infrastructure in Arandis has to be updated. There are no recreational facilities. We can expect an increase in social ills and crime. NIMT is developing its own health centre/clinic because of the poor services in Arandis. This has to be registered with the government. We have a sister on board and will provide health care for staff and students.

MH Do you see inward migration as a possibility?

EM Definitely, and there will be an increase in crime.

MH Briefly, what training facilities are available?

EM Apprenticeship/Vocational Training, skills upgrading, special training (practical and no theory). Recognition of Prior Learning is particularly important for skills upgrading. And we have special training, where students do only practical and no theory. The latter is only available for Kunene at the moment.

MH Could it be extended to other regions?

EM Yes, but the mining companies would need to fund the additional facilities. At the moment the mining sector in Namibia needs 500 trained artisans. Expectations of NIMT are high, but no capacity or resources are provided by those making use, or wanting to make use, of its facilities. Some of the large companies are taking our graduates to work in South Africa.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Swakopmund on 18 September 2007 between Marie Hoadley and J Awaseb, Regional Director of Education, Erongo Region.

MH Explained the project and the purpose of the meeting. It is part of a series of meeting to establish the capacity of various social services, to gain insights into the perception of potential impacts and how to avoid or mitigate these.

JA If you are looking for schools with space, Usakos has a lot of space. Henties' Bay, which goes up to Grade 10 also has capacity.

MH What is the capacity in Swakopmund schools like? Are there spaces available?

JA No, very little capacity. These schools are very full.

MH And in Walvis Bay.

JA The same applies. However, there is capacity in Arandis, Usakos and Henties Bay. Henties Bay only goes up to Grade 10.

JA The situation is that, for e.g. in Swakopmund, two schools are running two sessions (in the morning and in the afternoon) for Grade 1. Then, up to Grade 7 we don't encounter any problems. Grade 8 is again overcrowded, with 40-45 learners in some classrooms. Grades 9-12 are okay, we have enough spaces in those grades. We have encountered problems in Grade 8, and have linked principals to talk about a strategic plan to cope with the big increase in demand for spaces between Grades 7 and 8. Children from outside Swakopmund stay in hostels: we have 2 secondary and one primary hostel. These are full but not overcrowded, and we want to make sure they do not become so. We get many applications from outside the area, and we have a policy of local preference, so schools will first enrol local learners, and then look at those from outside the region. In Walvis Bay there is not really a problem in the secondary schools, and Grade 8 is fine, there are some spaces available. Grade 1 is a problem. We have hired a building from the municipality to open new Grade 1 classes. We are hoping that next year we will only need one or two new classes, otherwise we will need new buildings. In Walvis Bay children from out of town stay in private homes.

MH Is it quite easy to get staff? And are all your teachers fully qualified.

JA Yes, although accommodation can be a problem. Arandis has housing, and some teachers commute from Swakopmund. All our teachers are fully qualified, and the Rössing Foundation is assisting with capacity building. I cannot tell you at the moment how many more we can accommodate, but we certainly cannot accommodate a large number. With central government funding we can only build two classrooms a year in Erongo, and that money is already committed to Walvis Bay for the next three years to 2010.

MH What are school fees at the moment?

JA There are some differences between the schools, but primary school fees range between 4 and 5 hundred dollars a year, high schools average around N$ 700.

MH Do the schools offer a good range of sporting activities?

JA Yes, schools all over the region are very active in sports, rugby, soccer, tennis and athletics.

MH Reports state that there is a problem in Arandis with illiteracy in students at the higher grades. Does this apply in Swakopmund?

JA Yes, but we are bring in the Rössing Foundation to help with this. Reading is a problem in the region.

MH What about provision for technical subjects at secondary level?

JA Only two schools in the region are offering those subjects. Maths and science remain a problem, although these subjects are offered by all schools. The Rössing Foundations is also helping out here, as well as in English, but we need them to extend the assistance to other schools. All schools offer maths and science. RF is helping with those two, as well as English, but we still need them to extend to other schools.

MH It is likely that many of the students coming in will not be fluent in English. What is the policy with regard to mother tongue education?

JA From Grades 1-3 mother tongue education is offered, but it depends on the language. At some schools the mother tongue is offered as a subject at the higher grades. At the moment we offer teaching in four mother tongues, but we would have problems with other languages, such as, for example, Oshi Herero. If we have sufficient learners, say 20, we would start a class for that language group.

MH If there is a large increased demand for school places, what would you see as a solution to the challenge?

JA It will be a huge task and, with our current capacity, we would not be able to cope. The Ministry, the regional office and the mines must sit and talk and come up with a strategy to prepare for additional learners. Perhaps funding could be provided to build additional classrooms at existing schools. We do have space in the school grounds. Secondly we have a reasonable numbers of private schools in Walvis Bay and Swakopmund, both primary and secondary, and they have, at this moment, low teacher: pupil ratios. These schools can easily accommodate parents who can afford the fees.

MH If mining companies funded classrooms, would it be possible for them to have dedicated places for children of their employees.

JA That is doubtful – the most that we could probably have is a gentlemen's agreement reserving a certain portion of vacancies. The easiest solution to this would be to build a whole new school, preferably a primary school.

MH Would the Ministry have the capacity to operate such a school after the mines close?

JA Yes.

MH What pre-school facilities are there in Swakopmund and Walvis Bay?

JA At this moment pre-schooling is in the hands of Gender Affairs. This ministry will be taking over pre-schooling within five years, and is currently doing feasibility studies. Depending on the facilities some school will start incorporating preschool in 2008.

JA Another solution lies in Arandis – standards have improved with the involvement of the Rössing Foundation, so schools there could easily take in learners and provide quality education. If you compare the three towns, and accommodation, it would make sense to put up a new school in Arandis.

MH What about building a hostel in Arandis?

JA This could be considered, but the government is not keen on building hostels. They are too heavily subsidized.

MH Why are some schools so underutilized? For example, the Spitzkoppe school is reportedly good, but greatly underutilized.

JA This is because of a lack of water. The community has no water. END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Swakopmund on 18 September 2007 between Mr F Holtzhausen, Engineering Services, Town Council of Swakopmund and Brett Lawson and Marie Hoadley.

BL Gave a brief outline of the project, and explained the purpose of the meeting, which was requested because the consulting team needs to look at and assess regional resources.

FH I am familiar with the project – I read the public information document, and it made the process clear.

MH We need to find out what capacity there is for services. You may not be in a position to answer all of these, but we would like information on water, power, housing, roads, waste management and railways.

FH Housing is a major concern. Currently, from the Council's side, there is no serviced land. The new trend is to give big chunks of land to private developers – six or seven have applied so far. They also provide services. No provision has been made by Council for the servicing of land during the current financial year and it is doubtful whether such provision will be made for the next financial year.

MH What services are available in the PDA?

FH There are roads, water, but no electricity. The long-term development plan for the next 20-25 years indicates where the Town Council will develop and what type of developments will be undertaken.

MH What are the plans with regard to the railway station? There appears to be concern because of the proximity of the railway line to residential areas.

FH We want to relocate the railway station and have talked to TransNamib with encouraging results. They are positive about the idea. The railway station will probably be relocated behind the airport, and the salt mine siding will also be moved.

MH That is close to DRC?

FH Yes. We will be monitoring the situation and, if necessary, the appropriate safety measures will be taken.

MH What is the situation with regard to water? Does Swakopmund have enough for current needs?

FH At the moment it is doubtful. Firstly, there are problems with the reliability of the Omdel line, and secondly the availability of water. The Central Coastal Area's water allocation is probably going to be reduced by 4-5 million cubes annually. Namwater has not completed the remodelling of the Omdel aquifer as requested by Water Affairs yet. The principle of an own desalination plant is a fixed point on the agenda of the CBWUF.

MH What is the position with the roads?

FH Roads are no problem.

MH Who should I contact to get sound information on the carrying capacity of the road network?

FH Uli Trumperer of the Roads Authority will be able to give you all the information you need.

MH What is the situation with regard to the electricity supply?

MH We have no problem with local (Swakopmund) capacity in terms of infrastructure, as this was part of our master development plan. In the PDA the aim was for low-cost housing so that people can upgrade over time. Power is available there, but not infrastructure. In all likelihood the Council will provide the funding for the infrastructure to the individual sites.

MH I believe there have been problems with solid waste disposal.

FH With regard to solid waste, we have awarded a contract for a new state-of-the-art waste management area. This will be where the current waste dump is, near the DRC. That waste dump is a mess. We have budgeted for the services to that site. You should look at waste removal – ask Clive Lawrence (GM: Health Services) about that.

MH If you had a thousand new households in the town, would the services be able to cope?

FH Yes

BL Speaking as a private individual, what are your insights and comments on the impact that all the mines would have on tourism?

FH I don't think it will really have any impact.

BL Again, as an individual, do you have any particular issues or concerns about Rössing?

FH No problems. It's a good company with a responsible approach to the above issues.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Swakopmund on 19 September 2007 between Dr Wotan Swiegers, Chamber of Mines of Namibia and Marie Hoadley and Brett Lawson.

BL Introduced the purpose of the meeting: to talk briefly about the Rössing Mine Expansion Project, the cumulative impacts of all the uranium mining and to familiarize the ESIA team with what the Chamber was doing.

WS We knew that something had to be done to manage this influx of activities. We have formed a committee for Health, Environment, Radiation and Safety (HERS) The mining companies are represented by senior people, and we want to keep this a mining initiative. We have a constitution. We are not talking commercial ventures; we will focus on health, environment and radiation. We are developing a code of practice for radiation, looking at legislation globally. We have set a deadline and by the end of this year we want buy-in from all participants. By the middle of next year it must go out for review. In this way we hope to plug the gaps in legislation. We are working on a smart card and developing a central database for radiation exposure. Our second focus area is mining in natural parks – in sensitive and difficult areas. We will look at socio-economic issues. We are dealing with DRFN and have asked them to come up with a generic universally applicable impact assessment. We want a dynamic document. Another thrust is awareness, communication and education. We want to use the radio (West Coast Radio) to give a progress report once a month and also want to use the print media. We are looking at pamphlets on radiation and a DVD. If we are going to go nuclear, we need scientists, so we are working with the Polytechnic to design a new course, a three-year diploma course, with a first-year competency certificate. We need to doctors and specialists, and are trying to bring back doctors that have been here before. We need to bring about some commonality of understanding around the uranium industry, a sectoral approach in terms of high level aspects, looking at regional resources. There are frustrations at project level; EIAs are not easily finding the bigger picture. We are looking at the initiation of a move towards that kind of strategic level assessment, something government should initiate. The Chamber is assuming the role of setting standards. We are finalizing a code of conduct and are thinking along the lines that people who accept the code get a certificate from the Chamber that they are good enough. Rio Tinto has just joined the FTSE For Good. We subscribe to those principles, we want to take the FTSE system and amalgamate them with ICMM and others, and come up with something like Australia's Enduring Values.

MH Would the Chamber support an initiative for a separate consultative forum to address the socio-economic impacts of uranium mining – a component that is much neglected, and yet this is where the most severe impacts will be felt. It is usually dealt with as a sub-sector of something else, usually the environment.

WS The Chamber would be very supportive of such a move.

MH We are looking for advice on a structure for such an organization, as well as a driver.

WS We could form a sub-committee for this purpose. The Chamber will be pleased

to be the home, but funding will have to be found for the activities of the group. What specifically would you be looking at such a sub-committee to achieve?

MH There are a number of broad objectives which need to be achieved. There is a need to gain a common understanding of the socio-economic environment and development priorities in the region. If a strategic assessment is undertaken, a sub-committee must ensure that socio-economic issues are included and that both short and long-term implications are considered. As the socio-economic component of mining is a non-competitive aspect, mining companies could align their social and community development plans and co-operate in the implementation of these. This will help to ensure that potential benefits are maximised at a local level in the long term. We also need to ensure that mine development plans are aligned with local, regional and national development plans.

MH Could you give us some background to the Centre for Environmental Health that is being talked about?

WS This might take the form of a Namibian Environmental Health Institute, optimally located at the centre of the nuclear industry in Namibia – Swakopmund. Its functions and role will have to be negotiated but would include liaison and development of links with identified international institutions (such as the IAEA, WNA and the Royal Colleges) and the oversight of satellite operations (including Arandis), quality assurance and monitoring of relevance to changing demands in the wider environment. At present Chamber of Mines of Namibia is engaged in negotiations with a number of institutions (including the Government of Namibia) to establish such an Institute for Environmental Health in Swakopmund.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a focus group meeting held in Walvis Bay on 20 September 2007 between Marie Hoadley and Mr AP Els, (Chief Health Services, Walvis Bay Municipality), Sr S Atiogbe (Matron), Sr AC Slinger (Registered Nurse), Dr N Ruswa and Dr M Gweja.

MH Explained the background to the meeting and the purpose of the visit – to collect baseline data and gain information about potential impacts and mitigation measures with regard to the Walvis Bay health services.

MH What is your bed capacity and occupancy rate?

SA 120 beds. Under normal circumstances the occupancy rate is about 50%. We also have five primary health care clinics.

MH Occupancy of beds in the hospital?

SA About 50%.

MH What is your staff complement like?

SA We have eight registered nurses. We will let you know what the final figure is.

MH What is the prevalence figure for HIV/AIDS in Walvis Bay?

SA 21.4%, a bit higher than the national figure of 19.9%.

MH Your Aids programmes, are they very active?

AS At the current moment, we have a multi-purpose centre in town, the municipality runs internal, management and external programmes. The municipality has linked its programmes with those of the multi-purpose centre. It is also dealing with companies in Walvis Bay who have their own programmes. There are very good programmes running in Walvis Bay. The TB clinic also tests for HIV.

MH What percentage of deaths is AIDS-related?

SA For the period July 2006-June 2007, in excess of 50%.

MH Is commercial sex a serious problem? And do the sex workers participate in the HIV/AIDS programmes?

AE Being a harbour town, the commercial sex problem is serious. Sex workers do participate in the programmes, but sometimes circumstances put them in a position where they do not practice safe sex.

MH What is the current rate of TB infection?
Currently about 1%. In the 2006-7 period, there were 483 new patients.

MH Walvis Bay is globally significant with regard to TB. What, in your experience are the causative factors?

AE Poverty, poor living conditions. There are environmental factors as well – in this climate, which is cold and windy, you usually find windows closed. This is not good for TB. Walvis Bay has the highest concentration of multi-drug resistant TB cases globally. At the moment we have 22 in-patients. We have a MDR block where we could treat 30 patients, but we don't have the staff.

MH Which sector of the population makes use of your services?
The hospital deals largely with the indigent and very poor.

MH What are your emergency services like?
We have a casualty facility and two ambulances. Staff will always be a problem. We do need some equipment in casualty.

MH What is the major reason for which in-patients are admitted?

SA HIV and TB.

MH Is alcohol abuse a problem?
Yes, a significant one. We deal with the results, such as stab wounds, regularly.

MH Are there other significant health service/social issues that you would like to discuss?

SA We have to deal with attempted suicides at the rate of at least one every two days.

MH Have you identified any causes for this?

SA Substance abuse and poverty.

AE We have listed ten top concerns with regard to health problems. HIV/AIDs and STDs, TB, employment (linked to poverty and malnutrition) lack of housing and overcrowding, substance abuse, lack of proper food hygiene in the informal trade, lack of community development programmes, environmental pollution (fishing factories with noise, odour), lack of implementation of occupational health practices (the execution and monitoring of the Labour Act is not functioning properly).

MH Any health concerns arising from activities at the harbour?

AE We have a hazardous waste disposal facility, but we are never sure what foreign ships are dumping there. When there is abrasive blasting being done on ships, we also do not know what is in the paint that is being dispersed into the air.

MH Are orphans, AIDS orphans and street children a cause for concern?

SA The multi-purpose centre deals with this issue. We also use the Swakopmund facility. We do not have a problem with street children. There is a shelter for children in Walvis Bay – the House of Hope.

MH What is the under-five mortality rate like?

SA The latest statistics show that there were 22 deaths out of 6000 under-five's.

MH If you were faced with an influx of, say, 3000 people, would your facilities cope?

SA Yes. If it went up to 5000 we would start experiencing problems.

MH Any general comments before we close the meeting?

AE The shacks are the biggest source of TB, and this will continue. HIV/AIDS is a problem. Many men looking for work in the fishing industry come from the North. They either are infected already, or they become infected by the local sex workers.

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a focus group meeting held in Walvis Bay on 20 September 2007 between FK Shilongo, Regional Commander, Erongo Region, Ministry of Safety and Security, Chief Inspector GU Mavenjowo, Border and Coastal Guard Unit Commander and Inspector O Kashuupulwa, Station Commander, Swakopmund and Marie Hoadley.

MH Introduced the project. The purpose of the meeting: to gather baseline information on the current situation with regard to safety and security, and the capacity in Nampol regionally, to gain insights into particular concerns around the Mine Expansion Project and to discuss ways of meeting the challenges.

MH I can see that you are extremely pressed for time, so I am going to try to keep the questions straightforward, but I would appreciate any additional comments or discussion. Where does Erongo Region stand with regard to crime as opposed to national statistics?

FS Currently we are experiencing a huge influx of people looking for jobs. From the statistics at hand, the most frequently occurring crimes are housebreaking, armed robberies, other robberies and theft, and stock theft, including poaching. We are experiencing a decrease in housebreakings, quite a steep decline, especially from July to September. In June, for example, for the whole region we had 106 cases of housebreaking. This was down to 85 in August.

MH Do you know the reason for the decline?

FS In the past we have had difficulties in maintaining police cars. That problem has now been addressed, and we have been able to resume regular patrols. Our visibility is now much higher, and that helps to prevent crime. Our arresting rate is very high – we arrest, charge and send them off for justice to take its course. For the same reason armed robberies declined from 8 in June to 5 in August. There was an increase in theft and other robberies from 17 – 27 over the same period because we concentrated too much on night-time crime and neglected what was going on during the day. Stock theft showed no change, 10-10.

MH Why did those figures remain constant?

FS Communal areas and conservancies are too wide for police visibility and patrol, and we need an agreement between police and communities to control this. Communities are very enthusiastic about this. They are also worried about influx.

MH What particular aspects were they worried about? For example, were they concerned about job opportunities being taken by people from outside?

FS They were concerned about crime. They did not mention anything else to me.

MH Is it your impression that a lot of the poaching that goes on is unnoticed and unreported?

FS Yes, I would say that is the case.

FS An increase in crime is our main worry with inward migration. Even if the public and the mining companies gave millions to train officers, crime would go up because of pressure of poverty. People need to live, and if they have no jobs so they turn to crime.

MH How do crime statistics in Erongo compare to other regions?

FS We compare favourable to regions like Khomas, Oshana, Karas, but you must remember that those are industrialised areas. In Erongo residents still feel free to move around, they go to other places, and the pressure on the police officers is to protect property. Here we do not have the civil help that other areas get such as neighbourhood watch and private security firms.

MH What is the crime rate like in Swakopmund?

FS Swakopmund is the centre of everything, so it is the centre of crime. Rössing, for example, and other mines that are coming here, to prosper, they need to assist the local police – if they want their people to live well, they need to help us, to ask what we need to bring the crime rate down. For example, we can't bring in more policemen because we don't have accommodation and we don't have enough holding cells in Swakopmund or Walvis Bay.

MH We have discussed poverty as a causative factor of crime. What other causes are at work here?

FS Ignorance – some people are ignorant of the laws of the country. People are also acting as fences for stolen goods, information does not get disseminated, that type of thing. We are also experience crime among the wealthier classes. People are bringing in hard drugs, such as cocaine, and there are quite a number of users.

MH Are hard drugs not coming via the boats?

No, we don't think so.

MH Have you come across any corruption?

I have not had complaints about corruption in the police force from the public, and have not opened a case myself.

MH How does alcohol abuse contribute to crime?

Alcohol abuse contributes mainly to domestic crime. We have never arrested anyone involved in armed robbery or stock theft or those crimes who was drunk.

MH Poverty and poor living conditions frequently contribute to domestic violence. Do you think that it is under-reported?

FS Communities around Swakopmund and Walvis Bay – The white community in Swakopmund and Walvis Bay keeps very quiet about domestic violence, possibly because of the stigma attached to it. We hear from colleagues, or from community talk, that it is happening. It is better reported from the informal settlers. There is also the aspect that some women, particularly those who have good jobs, are proud of their status and see this as undermining it.

MH How much sexual abuse is taking place? For instance, against minors.

FS Rape is a matter of concern, and happens quite frequently, and abuse of under-age children does occur. We also experience cases of older boys abusing minors, and physical assault between partners.

MH Has there been any conflict based on ethnic differences?

FS No.

MH What is the current capacity of NAMPOL in the region with regard to manpower, vehicles, equipment?

FS I cannot give you the figures of manpower, but we do have the capacity to stop crime. We certainly need more cars. For example, the Coast Guard Unit, which is responsible for the entire coastline, including the Skeleton Coast, has five cars for the whole area. If one of those cars has to come in for maintenance, there is no backup vehicle.

MH What are your main problems with regard to traffic control?

FS Speeding is a concern. The MVA is helping out a lot, and companies like Shell and Rössing are helping with roadblocks and campaigns to prevent road deaths. We have enough traffic officers, but we don't have enough cameras.

MH How many cases are reported to the police each month?

FS For many years this figure was low because influx was low. Last year the monthly reported cases averaged 640, this year the figure to date is about 645. There has been a drop in the reported cases and increase in prevention and detection.

MH That is a very slight increase. Is this the result of higher visibility – an increase in prevention and detection?

FS Yes. To conclude, if the mining get involved in fighting crime together with the police we can go very far.

MH The statistics that you said you can let me have during the first week in October, can those be sent electronically?

FS We don't have email. This makes our life very difficult. You need to phone me and then we can make arrangements. I also have a last appeal – the waiting area in the charge office is very unwelcoming, the sofas are broken and the chairs are too high for elderly people. We really need something to make the area more comfortable for those who are waiting to be attended to. Maybe Rössing can help with this?

END MEETING

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a meeting held in Walvis Bay on 20 September 2007 between Marie Hoadley and K Asino, Town Planner, R Archer, Inspector Hazardous Waste, Walvis Bay Town Council. The meeting was preceded by a courtesy call on Clr DJK Klazen, Mayor of Walvis Bay. The Mayor was gratified at the visit, and appreciated the engagement with Rössing.

MH Introduced the MEP and the purpose of the visit: to gather baseline information on Walvis Bay and get perceptions of possible impacts of increased mining.

MH What is the current population of Walvis Bay and the unemployment rate?

WBTC The population is about 61000 and unemployment is in the region of 25-30%.

MH The economy of Walvis Bay is largely built on the fishing industry. What other economic activities contribute significantly to the economy of the town?

WBTC Yes, the fishing industry is the most important, but there are also the salt works, which are much bigger than people think. They provide significant input into the economy. Currently the fishing industry is in a bit of a downturn. The concessions have impacted negatively, the pilchards were arrived late and the hake has moved to the Cape. It is not a crisis, but it is not good. Tourism is a sector which is picking up well. We have a number of bed and breakfasts, also at Langstrand, and a great deal for eco-tourism. We have twelve boats taking people out on sea trips every day. And the port is a big part of our economy.

MH Housing – what do you have available, either accommodation or serviced erven?

WBTC There is no accommodation available, the local authority is not really a provider of housing and we have a shortage of housing and land. Hopefully by July next year about 200 erven will be released. An area of 100+ stands is being developed by a private developer near the prison. There is also the old army camp, about 300 stands should become available within 2-3 years.

MH Can you define the socio-economic status of the suburbs for me?
Kuisebmond low income, Narraville low/medium and Meersig upper.

MH What are your short/medium term plans for developing land?

WBTC For the next five years we will be focussing on residential land and business erven. We have a shortage of business erven in the suburbs. We are also looking at an area of heavy industry behind Dune 7. Some interest has been expressed, but nothing has come of it. Aquaculture is another land use we will be looking at.

MH What is the town's situation with regard to water? Availability and reticulation?

WBTC You should speak to Andre Brummer. The reticulation system is fine. Purified effluent to a quality set by Namwater is used for irrigation of public places such as parks and sports fields, and we pump the excess to the wetland to the east, which is developing into a birding site. We are planning a birding trail there.

MH Electricity?

WBTC You need to speak to Gert Killan. Yesterday we discussed the erection of a coal-fired power station because the supply from South Africa is not dependable. There is also a Belgian company looking at wind turbines.

MH Waste disposal?

WBTC Currently we have five compactors. Each household's waste is removed once a week. We also remove industrial waste. We have a landfill site with a lifespan

of about 36 years. We also dump in the desert, where the sand quickly covers the material. We have recyclers for plastic, paper and metals. We don't recycle much glass – it is not economic.

MH How do you deal with hazardous waste?

WBTC We have an incinerator at the landfill site for the whole region. The hazardous waste site complies with SABS and international standards. From time to time we get waste from industries in town. The problem is that we have no control inside the harbour. There is a big shipyard with a synchro lift. Last year all the ground around it was brought to the landfill site. If hazardous waste from foreign ships is mixed with general waste, we have no way of telling. With the increase in industries in Walvis Bay, the government will start tightening up on legislation, which is not monitored strictly enough at the moment.

MH Sewage systems – are these adequate and in good condition?

WBTC We had 176 kilometres of reticulation in 2005. The system works well, but we have a problem with salt.

MH I have heard reports of plans for a new sewage system?

WBTC We have not heard of these, not for Walvis Bay. Possibly they were talking about Langstrand/Dolphin Park.

MH Informal settlements – how large is your informal settlement, how is it managed, and what are your particular concerns?

WBTC We do not have designated areas for informal settlements. Inward migration of job seekers is a problem. According to a survey in 2004/5 there were about three thousand backyard shacks, and that number has increased tremendously. We are addressing the problem of housing.

MH How are you approaching the problem of backyard shacks?

WBTC It is very difficult, because the issue is sensitive and has become politicised. Some people let out multiple shacks, and this becomes their livelihood. We rather try to address the problem of housing. At the Thuthuleni settlement we divide one site into four squares, lay a concrete foundation and provide basic services. Yes, like the "site and service" stands of South Africa. The Council is also working with groups of people, associations like "Build Together" where the land is not sold to an individual but to an association, and there is a communal responsibility for repayment.

MH Roads?

WBTC The coast road is in a good state, but very busy, especially during holidays and commuter times. The road behind Dune 7 has been improved, and Langer Heinrich works on keeping this in good condition. Increased traffic will not present a problem. We are looking at making the coastal road safer with overtake sections, so that you don't get stuck behind a truck all the way from Walvis Bay to Swakopmund.

MH To what extent do the mines use Walvis Bay for accommodation?

WBTC Rössing has some workers living here, and Langer Heinrich, but not many. They mainly live in Swakopmund. We have people coming in on a seasonal basis for the fishing industry. They stay mostly in the hostel in Kuisebmond.

MH Before we close the meeting, do you have any insights about the impacts that the MEP could have?

WBTC The moment the mine starts to recruit, there will be a major impact, especially with regard to inward migration. Why doesn't the mine look at Arandis for

accommodation? It seems to be the logical place.

WBTC Arandis is really seen as a ghost town with nothing much more than a few shebeens.

END MEETING

BASELINE QUESTIONNAIRE
COTTAGE MEDI-CLINIC, SWAKOPMUND

Questionnaire submitted to and completed by P Sander, Hospital Manager, Cottage Medi-Clinic.

1.	What is the current bed capacity of the facility?	Operational Beds = 55 Available Beds = 72 Current Capacity = 82
2.	What other facilities are available – e.g. operating theatres, casualty, out-patients, etc.	2 Operating Theatres, 24 hour Casualty Unit, High Care Unit, Neonatal ICU, Day Ward, Surgical, Medical and Paediatric Wards
3.	Do you have an ambulance?	No. We make use of E-Med or iSOS.
4.	What is the professional staff complement?	Nursing and Pharmacy = 45 Total Staff = 70
5.	Are all professional positions filled?	98%.
6.	How many patients do you see (average daily, weekly or monthly, whichever is easier for you to use)?	Inpatients = 270 per month (Theatre cases = 172 Medical cases = 98) Outpatients = 180 per month
7.	What are the main causes of admission?	Theatre cases, mainly day ward.
8.	What % (approximate) of your patients are from mining companies?	
9.	What expansion plans are in place?	A general upgrade of the hospital and the establishment of a medical village.
10.	Over what time period will this expansion take place?	1-3 years.
11.	How many new patients could you handle? a) With current facilities? b) With expanded facilities?	 300. 300.

E-mail submission from P Sander, (peter.sander@mediclinic.co.za) dated 2 October 2007.

We are currently trying to assess the impact that the uranium mining boom may have on the region and specifically on Swakopmund as it will ultimately affect our hospital as well. Up until the end of 2006 we have been running on an average hospital occupancy of approx 30% which is a relatively low figure. Although this figure remained relatively constant throughout a 3 year period, there seems to be an improvement in the first half of this year. This may be indicative of a growing workforce in our area as no new services (specialities) have been established. As indicated we have a total capacity of 82 beds but are only operating 55 beds. With an approximate bed occupancy of a little more than 30% (based on 55 operational beds) we

therefore have sufficient capacity to be able to accommodate many more patients. Similarly our two theatres are running at an 8 % utilization time. The norm for a "busy" hospital is 20%. From this it should be clear that the hospital has the capacity for substantial growth without having to create new beds and theatres.

At this very moment I am in the process of finalizing a project motivation for a general upgrade of the hospital. The rationale for this is to stimulate growth in the business by attracting additional new medical specialists to Swakopmund and to upgrade the hospital to conform with Medi-Clinic standards. In our world we are totally dependant on doctors who ultimately make the decision on when a patient will be admitted to a hospital. This will include additional consulting rooms, general upgrades of our pharmacy, casualty department, theatres and ICU, and a general facelift of the patient rooms and other facilities. Current assessments indicate a capital outlay of approx. N$ 15 million but I believe this may still be a bit conservative. This does not include additional beds or theatres. The hospital has recently purchased an additional 17 000 m² of undeveloped property which will be consolidated to the hospital erf and will probably be utilized for the development of a "Medical Village". In addition we have also secured the purchase of the "parking area" in front of the hospital which can be utilized to expand the facilities (beds and theatres) should this become necessary.

A bit of a concern to me is that I cannot really establish how many people will be employed eventually. We believe that Rossing mine will eventually employ more than 2000 people with the establishment of the new pit. Langerheinrich has not had a huge impact yet and we have no real idea how many workers will be involved in Trekkopje (Uramin), Valencia (Forsys) and Bannerman.

RÖSSING URANIUM

MINE EXPANSION PROJECT

Telephonic interview with Florida Cloete, CEO Arandis Town Council, 3 October 2007. The faxed questions were completed in the telephonic interview. Purpose: Update of baseline information.

The following are mostly updates on the baseline study. Are the statements correct and/or could you fill them in please?

Q Due to the reluctance of community to pay for services, Arandis was unable to meet its commitments to Namwater. Accordingly, Namwater took over management of the water supply to Arandis in?

R This is correct. The date is June 2007 and it is a loss of potential revenue to the Arandis Town Council.

Q Has the local economic development plan been developed? Is any documentation available on it, and on the town-planning exercise?

R Town planners are currently busy developing the town plan, which will be linked to the Local Economic Development Strategy. They are concentrating on making the town visible, and on overall development. It is too early to talk about development plans.

Q The Town Council of Arandis is currently lacking in skills, capacity and resources? Its service recovery does not cover the costs of maintenance and there is no funding for capital expenditure?

R The first part is still correct. However, this year the MLRGH will help with funding in the sum of N$ 1.6 million to replace the water reticulation system and the Regional Council will contribute N$1.5 million for an SME park.

Q The TCA also struggles to maintain existing infrastructure, such as the central business division, parks and vacant houses?

R Correct.

Q The TCA has no waste management equipment, and Rössing Uranium supplies such equipment on an ad hoc basis?

R Yes.

Q What is the current water loss from the water reticulation system?

R 52%.

Q The residents in Arandis have experienced serious adjustment difficulties with regard to rental costs? They used to pay a monthly rental of N$ 5.00, but since the advent of the TCA these costs have increased to approximately N$ 300/month? 1.2 million debt at end of September 2007?

R Rental is now N$ 400 per month, and the community's debt at the moment is N$ 1.2 million.

Q Also please review the following paragraph - Development is also constrained by a lack of co-operation and trust between the town management and the Town Councillors?

R Fine.

Q Do you have a Local Economic Development Officer?

R No, but we are contracting a liaison officer for the Sustainable Development Project.

RÖSSING URANIUM

MINE EXPANSION PROJECT

Minutes of a focus group meeting held in Swakopmund 19 September 2007 between Dr Tshiteta (Chief Medical Officer and Acting Regional Director, Health, Erongo), Sr Rosie Palmer, Dr Wotan Swiegers (Chamber of Mines of Namibia) and Marie Hoadley.

MH Introduced the project. Explained the reasons for the meeting: to establish the current capacity of health services in Erongo, and to get perceptions of potential impacts and ways to deal with them.
Workers will be cared for, as they will be on medical aid. We need to look at the capacity to deal with a possible influx of unemployed people looking for work. These are taken care of by the government services.
We have already noticed an increase in people coming in. In Walvis Bay there are about one hundred new people coming in every month. Over a three-year period, the number of in-patients regionally has increased from 6 to 8 thousand per year. They are largely living in informal settlements and in backyard shacks. The health services are taking strain, and the OPD is overcrowded. In addition, the army is going to station 3000 men in Karibib, and the town has no hospital.

MH What is your current capacity – beds, facilities and staff?
State facilities are one hospital, a clinic at Tamariska and a feasibility study being done on another between Mondesa and DRC. We have 100 beds with an occupancy rate of about 60%. Staff, we have 69% of the full complement and 72% of the full complement of registered nurses.

MH What is the current rate of TB infections?
For the first time, we have seen a stabilization of the Notification Rate this year. The notification rate in Erongo is around 800-1000 per 100 000, one of the highest rates in the world. Most of those infected are from informal settlements and Mondesa.

MH Causative factors?
Ignorance, Poverty, poor living conditions.

MH I have heard that the prevalence rate in Swakopmund has dropped.
We are somewhat uncertain of the conclusions we reached. We do a sentinel survey every two years. In 2002-2004 there was an increase in prevalence at the coast and a decrease in the North. The majority of people who test positive are from the north. In 2006 there was a slight decrease at the coast, but not much change in the north.

MH Swakopmund seems to have commercial sex well under control, and that not many sex workers operate in the town. Is that correct?
No, it is significant, but it is not stigmatized.

MH Do the sex workers participate in the HIV programmes?
We have difficulty getting them on board. We usually see them at the end of the road, when the disease is far advanced.

MH In your experience, what kinds of impacts would you expect if there was a large inward migration into Swakopmund?
The prevalence rates would go up, and there would be an assortment of social ills associated with unemployment, poverty and poor living conditions.

MH Can you give some examples of the social ills?

Crime, alcohol abuse. When people can't find jobs, they turn to crime to get money. Much of the crime we can expect will be alcohol related. Alcohol abuse is a problem, particularly at the end of the month.

MH I believe the number of street children is increasing. For these, and orphans, what strategies do you have in place. Orphans – house of safety run – emergent need that can be addressed need for a hostel.

We have a house of safety for orphans, but we really need a hostel for them – this is where funding from private sector would really help.

MH What sector of the population makes the most use of state health services?

The informal settlers and the unemployed are our clients.

MH What emergency services do you have?

Emergency services are a problem, particularly with regard to staff. We have trained staff, but not enough, they are thinly spread. We also have problems with ambulance services. However, there are initiatives which are very positive for an improvement in this situation and we are optimistic that the situation will improve.

MH If there was a major influx of people into Swakopmund, say about 5 000, would the services you offer be able to cope?

Yes, they would.

END MEETING

RÖSSING URANIUM MINE EXPANSION PROJECT – STAKEHOLDER CONSULTATION – COMMENTS AND RESPONSES – SCOPING PHASE PUBLIC PARTICIPATION - SHEET 1

Issues/ questions/comments	Comment by:	Event/Communication	Response
WATER			
How will the increase in water requirements be dealt with now, and later with closure?	Joh Henschel/Gobabeb	Public Participation Meeting, Walvis Bay. 21 August 2007	Rössing cannot expand without water and the current extraction from the aquifers is at a maximum. Rössing is in discussions with Namwater who intend building a desalination plant. There is waste water recycling within the plant and reuse of water from the tailing dams. Currently there is seepage control in the form of active water abstraction to prevent contaminated water entering the surrounding environment and this will be extended with the expansion. Rössing continues to look at alternative ways and innovative methods to reduce water usuage eg. dry stacking of tailings is currently being investigated.
How does Rössing monitor underground water?	Wotan Swiegers, Chamber of Mines of Namibia	Public Participation Meeting, Swakopmund 20 August 2007.	Groundwater is monitored at a number of sites within the mine lease and down stream of the Khan River. Currently ground water moves towards the Khan River and lies about 50m below surface. Given the pressure gradient, some water ingresses into the pit. As a result of the low precipitation in the area, there is very little ingress of contaminants (nitrous byproducts from blasting) into the groundwater.
What happens if there is an increase in rainfall/flash flooding?	André Burger, Walvis Bay Municipality	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	If there is more than 5mm of rainfall, the trucks are stopped as a safety precaution and to prevent damage to road surfaces. During flash floods, water is captured in the recycling circuit

Issues/ questions/comments	Comment by:	Event/Communication	Response
			and stored in the tailings dam.
Water use – why is desalination not being investigated?	Jonker	Arandis Public Participation Meeting 22 August 2007	RUL is working with NamWater on a desalination plant intended to improve regional supply (as opposed to Uramin who are pursuing their own plant).
How is resource use going to be affected?	Rod Braby and Nathalie Cadot, Nacoma.	Key Informant 24 August 2007	Rössing already has programmes in place to reduce water consumption, but the solution seems to be desalination. The acid plant will produce 1/3rd of the energy requirements of Rössing. An increase in resource use caused by inward migration will be addressed in the SEIA.
We are concerned about the number of desalination plants that are being talked about. There is an impact on the coast, but also a growing band of high impact along the coast towards the interior. Water is our hot issue.	Rod Braby and Nathalie Cadot, Nacoma.	Key Informant 24 August 2007	Comment - noted
Will Rössing join in with the Wlotzkas Baken desalination plant?	Guido Van Langenhove, Dept. Of Water Affairs	Written communication 28 August 2007	Rössing Uranium, together with a group of other mines, and Namwater will be looking at various desalination options.
HEALTH & SAFETY			
I am concerned about the safety of contract workers	Fransiska Gamases	Arandis Public Participation Meeting 22 August 2007	Noted for further attention
What is the effect of calcine and manganese on human health	Mesach Guriras	Arandis Public Participation Meeting 22 August 2007	Calcine is no longer in use at RU. Fine dust from the manganese stockpile must be managed. A new manganese plant is being planned.
BIODIVERSITY			
What are you doing about biodiversity issues?	Thabo Tshepau	Arandis Public Participation Meeting 22 August 2007	Studies undertaken over the last two years have identified conservation-worthy plants. Less sensitive areas are tackled first and rescue and replanting of particular species are undertaken. The issue receives considerable attention.
NOISE AND VIBRATION			
How will the increase in noise and vibration resulting from expansion of the ore sorter plant be managed?	Daniel Amaambo	Arandis Public Participation Meeting 22 August 2007	Feasibility studies are currently underway that specifically address these potential impacts. These should result in a design that will mitigate such impacts.
The houses in Arandis are cracking as a result of vibration from blasting operations. RUL should inspect the houses.	Bertha	Arandis Public Participation Meeting 22 August 2007	Noted for later investigation

Issues/ questions/comments	Comment by:	Event/Communication	Response
WASTE MANAGEMENT			
What happens to the waste on-site?	André Burger, Walvis Bay Municipality	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	Some recycling of hydrocarbons occurs on site, otherwise they are removed, transported and stored at the hazardous waste storage facility in Walvis Bay.
TRAFFIC			
The expansion of mining operations is likely to result in increased demand on local infrastructure and capacity, especially with respect to road usuage, water availability, power. Has Rössing considered these impacts?	Günther Hülsmann, Swakopmund Municipality	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	These impacts will be considered as part of the SEIA for the expansion.
SOCIO-ECONOMIC			
Is there any possibility of collaboration between the different mining operations on socio-economic issues?	Marie Hoadley	Public Participation Meeting, Walvis Bay. 21 August 2007	Rössing Foundation has done some good work in Arandis and collaboration with stakeholders has become a guiding principle. Collaboration with other mines has been occuring and Rössing welcomes it. A Mining Desalination Forum has been established to develop a desalination plant in the region. Critical mass allows for developments that assist the entire Erongo Region.
How will Rössing deal with the socio economic issues on closure?	Joh Henschel/Gobabeb	Public Participation Meeting, Walvis Bay. 21 August 2007	The sustainability assessment for the life extension of Rössing obtained input from key stakeholders, including Arandis, and identified issues. Similarly, a closure plan for the mine looks at the effects of closure on surrounding communities.
What is the effect of the expansion on the younger generation?	Cletius Maketo, Ministry of Environment and Tourism	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	The higher grade uranium ore from SK4 will provide sufficient cash reserves to cover the anticipated drop in uranium prices over the medium term. Rössing considers the welfare of its employees to be very important and will look at all opportunities to maintain jobs in the long term.
Will the expansion project result in the need for another Arandis?	Cletius Maketo, Ministry of Environment and Tourism	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	A housing strategy is currently being undertaken to determine the needs and alternatives for housing, schools and transport.
Could RUL offices not be located in Arandis rather than in Swakopmund or Walvis Bay	Bertha	Arandis Public Participation Meeting 22 August 2007	Noted that RUL offices in Arandis would have local economic benefits.
We need better health services in Arandis	Francisca ???	Arandis Public Participation Meeting 22 August 2007	Comment - noted

Issues/ questions/comments	Comment by:	Event/Communication	Response
Is it not possible to help young work seekers from Arandis in obtaining drivers licenses. This would improve their chances of finding employment.	Francisca ???	Arandis Public Participation Meeting 22 August 2007	Noted
There is the possibility of a Traffic Department being established in Arandis.	Patrick Haushone	Arandis Public Participation Meeting 22 August 2007	Comment - noted
Could local small business enterprises have the opportunity to access construction contracts during RUL's expansion project. It is very important to develop entrepreneurial skills.	Daniel Amaambo	Arandis Public Participation Meeting 22 August 2007	Noted and to be followed up
With all these mines opening, we are going to have a problem with schools. All the schools are full to overflowing. There are three hostels and they are all full.	Freddy Kaukungua Town Council of Swakopmund	Key informant Meeting 21 August 2007	The issue of schooling is something that will be considered in the SEIA
There is very little capacity in Swakopmund schools. These schools are full	J Awaseb, Regional Director of Education, Erongo Region.	Key Informant Meeting. 18 September 2007	Comment - noted
With central government funding we can only build two classrooms a year in Erongo, and that money is already committed to Walvis Bay for the next three years to 2010.	J Awaseb, Regional Director of Education, Erongo Region.	Key Informant Meeting. 18 September 2007	Comment - noted
If you compare the Swakopmund, Walvis Bay and Arandis, and accommodation, it would make sense to put up a new school in Arandis.	J Awaseb, Regional Director of Education, Erongo Region.	Key Informant Meeting. 18 September 2007	The issue of schooling, and the various options, are critical consideratios for the SEIA.
A hostel in Arandis could be considered, but the government is not keen on building hostels.	J Awaseb, Regional Director of Education, Erongo Region.	Key Informant Meeting. 18 September 2007	Comment – noted
We have one state hospital, one private and one state clinic. I would not say we have a shortage of staff, but rather a shortage of capacity. Unfortunately the DRC people have to use the clinic in Tamariskia.	Freddy Kaukungua Town Council of Swakopmund	Key informant Meeting 21 August 2007	The potential impacts on health services will also be considered in the SEIA
How many jobs are we looking at, and where will the workers be housed?	Rod Braby and Nathalie Cadot, Nacoma.	Key Informant 24 August 2007	Decisions about housing, and the avoidance or mitigation of impacts, are among the critical areas of socio-economic

Issues/ questions/comments	Comment by:	Event/Communication	Response
.			impacts that will need to be carefully assessed. These will be addressed in the SEIA report
What about people with disabilities? We also need employment on the mine.	Collin Haoseb	Arandis Public Participation Meeting 22 August 2007	Comment - noted
How many women are driving haul trucks?	Talitha??	Arandis Public Participation Meeting 22 August 2007	Comment - noted
The current government directive is for employers to move away from the use of contractors towards the employment of permanent staff. How will this be managed under the SK4 scheme?	Maryke Kröhne, HR Manager, Rössing	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	Currently the plan is to use mining contractor personnel in the SK4 area. The proposed goverment directive will be noted when personnel requirements are being finalised.
ENERGY			
Why is solar energy not being used?	Jonker	Arandis Public Participation Meeting 22 August 2007	Regarding electricity solar energy from photovoltaic panels is not presently cost-efficient but advances in such technology are being monitored.
Is RUL planning increased transport capacity for additional workers rather than constructing more houses at Arandis?	Patrick Haushone	Arandis Public Participation Meeting 22 August 2007	These matters are all currently being considered and will be reflected in the SEIA.
AIR QUALITY			
What is the impact of the catalysts used in the acid plant on air quality. Do they contribute to air pollution?	Vastoria ???	Arandis Public Participation Meeting 22 August 2007	Sulphur dioxide is the only pollutant emitted to the air. The catalyst used in the acid plant is sealed and poses no risk. Ammonia is used elsewhere at RUL but is well managed and no incidents have been recorded to date.
ACID PLANT			
What is the acid from the proposed acid plant going to be used for?	Susanna Petrus	Arandis Public Participation Meeting 22 August 2007	Details of past and future use of acid were provided.
SK4			
How will the water inflow into the SK4 pit be managed?	Cletius Maketo, Ministry of Environment and Tourism	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	The inflow is slow and generally most of the water evaporates on rock surfaces. Any water that does form at the base of the pit will be used for dust supression.
How big is the proposed SK4 and will this have an impact on Arandis economy?	Günther Hülsmann, Swakopmund Municipality	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	190 personnel are required to mine SK4. 150 will be supplied from other areas of the operation by our contractor, so only an anticipated 40 additional persons will need to be employed. Mining of the SK4 should be completed within 3 years. However, these additional personnel will be incorporated into

Issues/ questions/comments	Comment by:	Event/Communication	Response
			the overall expansion plan and no redundancies are anticipated.
What will the visual impact of the SK4 operations be?	André Burger, Walvis Bay Municipality	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	There will be an impact from blasting, in the form of dust. However, given the distance and location of the SK4 pit from key viewers, this is not likely to be significant. Similarly, the pit occurs within a rugged terrein and is not likely to be seen from the Khan River or the main road.
What is the future landuse for the SK4 pit and how will it be rehabilitated?	Cletius Maketo, Ministry of Environment and Tourism	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	Rössing intends to keep the SK4 pit open and will follow the same closure plans as for the current open pit.
Will a new plant be needed to process the SK4 ore?	Cletius Maketo, Ministry of Environment and Tourism	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	The current plant has sufficient capacity to process the ore from SK4.
What will happen to the open pit on closure	David Ingembo	Public Participation Meeting, Walvis Bay. 21 August 2007	Backfilling of the pit was considered, however it proved not viable as mining operations cannot continue under such an arrangement. Refilling on closure would require the double handling of material which is similarly not economically viable. Under the closure plan, the pit will remain open. In accordance with mining legislation, the area will be restricted through fencing and rock berms. Vantage points will be provided to allow people to view the pit and an awareness program will be established to dissuade people from accessing the pit for recreational or mining purposes.
GENERAL			
What mitigation measures will be implemented with respect to the archaeological sites that were identified in the surveys?	John Guittar/Gobabeb	Public Participation Meeting, Walvis Bay. 21 August 2007	Rössing invited comment by NHC and John Kinahan with respect to the appropriate measures. Based on their recommendations, an extensive sampling programme and analysis was undertaken. The most vulnerable sites will be rebuilt elsewhere. An extensive topographical and photographic exercise was also completed. Approval for the process was given by the NHC.
What are the differences in processing between the SJ and SH pits?	Brett Lawson, Ninham Shand	Public Participation Meeting, Swakopmund 20 August 2007.	The current SJ pit uses an acid leach process. The proposed SH pit is made up of betafite ore. This needs to be heated up to high temperatures for leaching. This is a change from the current process and Rössing will need to construct a new plant.

Issues/ questions/comments	Comment by:	Event/Communication	Response
Will a new plant be needed to process the SK4 ore?	Cletius Maketo, Ministry of Environment and Tourism	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	The current plant has sufficient capacity to process the ore from SK4.
Is the anticipated drop in uranium prices based on independent specialist predictions? Have the risks of the economics been considered?	André Burger, Walvis Bay Municipality	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	Prices are based on independent studies and prices will change as economists change their predictions. Rössing has taken the anticipated drop in uranium prices into their long term financial planning.
Will the SK4 pit be extended?	André Burger, Walvis Bay Municipality	Multistakeholder Risk Identification Workshop. Swakopmund. 14 June 2007	Depending on the outcome of the drilling programme, it is anticipated that the SK4 area will be extended to the east into the wider SK area.
How does Rössing feel about the increase in number of mines in the area due to increase in the uranium prices?	Richard Kavari, Gobabeb	Public Participation Meeting, Walvis Bay. 21 August 2007	Rössing welcomes all new players as its results in overall devlopment in the Erongo region and leads to technological advancements and improved safety. Currently Rössing provides 6% of world uranium production. Rössing cannot control the entry of new producers and free market forces like reduction in prices will control demand. Rössing has factored a reduction of price into its expansion plan.
How will Namport and TransNam deal with the two thirds reduction in volumes handled and could the excess capacity be used to bring people to the site?	Brent Johnson, CSIR	Public Participation Meeting, Walvis Bay. 21 August 2007	Rössing's overall expansion should result in an increase in train use, so in the long run the reduction associated with the acid plant will not be as low as a one third of current operations. Grindrod should expand their operations due to the development in the area. This and other developments in the region associated with acid/uranium mining could result in an increase in Namport and TranNam capacity requirements.
What happens to salts in the extraction process?	Tetuly Haimbodi	Arandis Public Participation Meeting 22 August 2007	Sulphuric acid is used at RUL and not hydrochloric acid. The consequent by-product is thus gypsum which is benign and stored at the tailings dam.
I am concerned about the danger of air and water pollution from the tailings facility.	Tethole	Arandis Public Participation Meeting 22 August 2007	Dust is managed by reducing wind speed over the tailings by means of rock rows; and water by means of pumps around the tailings that return groundwater to the processing plant.

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RÖSSING URANIUM MINE EXPANSION PROJECT – STAKEHOLDER CONSULTATION – COMMENTS AND RESPONSES – SCOPING PHASE PUBLIC PARTICIPATION - SHEET 2

Issues/ questions/comments	Comment by:	Event/Communication	Response
WATER			
With the current growth there will not be sufficient water, so desalination is becoming a reality. For those of us who get water from the Omaruru, the situation is stable for a few years, but the Walvis Bay water table is much lower than thought.	F Kaukungua, Office of the Mayor of Swakopmund	Key informant meeting, 22 August 2007	Comment - noted
Will fresh water be used at acid plant or brackish/desalinated water?	Mr Kriess	Focus Group Meeting 17 September 2007	No, fresh water has to be used to prevent scaling of the cooling tower.
Will Rössing extract more water from the Khan river?	Mr W van der Plas	Focus Group Meeting 17 September 2007	No, additional water will eventually come from seawater desalination plant. Explained desalination plans.
Is Namwater involved in the planned desalination plant by UraMin at Wlotzkasbaken?	Participant	Focus Group Meeting 17 September 2007	Yes. In addition, Rössing Uranium, together with a group of other mines, and Namwater will be looking at other desalination options.
How will the new acid plant affect the quality of underground water?	Mr W Ermann	Focus Group Meeting 17 September 2007	The acid plant itself does not produce any effluent and will thus not affect the groundwater quality. The impact of other new projects on water quality will be assessed as part of the current SEIA.
How do you control and prevent any impact on groundwater?	Mr Kriess	Focus Group Meeting 17 September 2007	Explained the existing seepage control system consisting of dewatering boreholes on and around the tailings facility, as well as cut-off trenches that collect groundwater flow in the tributaries of the Khan river. The pumped

Issues/ questions/comments	Comment by:	Event/Communication	Response
			water is returned to the mine and re-used in the process.
At the moment it is doubtful that Swakopmund has sufficient water availability. Firstly, there are problems with the reliability of the Omdel line, and secondly the availability of water. The Central Coastal Area's water allocation is probably going to be reduced by 4-5 million cubes annually. Namwater has not completed the remodelling of the Omdel aquifer as requested by Water Affairs yet. The principle of an own desalination plant is a fixed point on the agenda of the CBWUF.	Mr F Holtzhausen, Engineering Services, Town Council of Swakopmund	18 September 2007, Key Informan Meeting	Comment - noted
BIODIVERSITY			
Infrastructure affects game more than the mine does. Game crossings are not that effective. Game moves down these rivers for nourishment. The drier it becomes in the interior, the more animals start walking west towards the sea and down the rivers. The pipeline in the Namib Naukluft Park is close to the river. We are not sure if there are enough game crossings.	Danie van Niekerk, Coastal Tourist Association and Nathalie Cadot NACOMA	Key Informant meeting, 6 September 2007.	Comment - noted
NOISE AND VIBRATION			
On our farm we experience the effects of blasting. We feel vibrations and observe dust clouds moving over the farm. Plants, animals may die, people may die of cancer. What guarantee is there that people and their investments are not going to be affected by mining?	Mr Kriess	Focus Group Meeting 17 September 2007	Guarantees cannot be given until the extent of impacts is fully understood. These concerns will be included in the SEIA, e g measure vibrations, calculate radiation doses and assess impact of dust on plants etc. After that mitigation measures to reduce impacts will be developed.
SOCIO-ECONOMIC			
The biggest potential for addressing the schooling needs is in Arandis. The standards have improved remarkably and the pupil/teacher ratio is good.	Job Tjiho, Director, Lloyd Ulrich, Assistant Director Rössing Foundation	Key informant meeting, 5 September 2007	Comment - noted
With all these mines opening, we are going to have a problem with schools. All the schools are full to overflowing.	Freddy Kaukungua, Office of the Mayor of Swakopmund	Key informant meeting 21 August 2007	Comment – noted
We could immediately start a programme of dedicated classroom building in Walvis Bay, Swakopmund and Arandis. The problem is housing – affordable housing is not	Job Tjiho, Director, Lloyd Ulrich, Assistant Director Rössing Foundation	Key informant meeting, 5 September 2007	Comment - noted

Issues/ questions/comments	Comment by:	Event/Communication	Response
available in Swakopmund, and accommodation is not available in Arandis and Walvis Bay.			
People will come in to look for jobs. They need accommodation which is not there. That is the biggest challenge – many end up in backyard shacks.	M Ipinge, Gen Manager, Community Development Services Municipality of Swakopmund	Key informant meeting, 6 September 2007	Comment - noted
The capacity to mitigate the challenge is there in the municipality. It is in the position to try to provide services, but the challenge is that some of the people are not able to afford the services.	M Ipinge, Gen Manager, Community Development Services Municipality of Swakopmund	Key informant meeting, 6 September 2007	Comment - noted
All the developers much stay in touch with the municipality and inform it of their possible needs. We don't know what their needs are.	M Ipinge, Gen Manager, Community Development Services Municipality of Swakopmund	Key informant meeting, 6 September 2007	Comment - noted
Any development will change the face of an area. However, pre-plannning, EIAs and precautionary measures are crucial. One cannot take away the benefits that will accrue to the community and country from mines but we must take proper measures beforeheand, to assess the possible impact. You will find that benefits outweigh negatives.	M Ipinge, Gen Manager, Community Development Services Municipality of Swakopmund	Key informant meeting, 6 September 2007	Comment - noted
Mondessa cannot cope – every second house has a shack in the backyard. There are at least 4000 backyard shacks. The burning down of shacks is a big problem.	M Ipinge, Gen Manager, Community Development Services Municipality of Swakopmund	Key informant meeting, 6 September 2007	Comment - noted
You should look to housing in Arandis.	M Ipinge, General Manager: Community Development Services	4 September 2007, Key Informant Meeting	Comment - noted
Housing is a major concern.	Mr F Holtzhausen, Engineering Services, Town Council of Swakopmund	18 September 2007, Key Informan Meeting	Comment -noted
What I can guarantee is that the word of possible employment will spread like wildfire – in one day people will arrive very quickly. We need to watch out for tensions developing in the communities.	M Ipinge, Gen Manager, Community Development Services Municipality of Swakopmund	Key informant meeting, 6 September 2007	Comment - noted
Money could be a problem if there is a need to expand recreational facilities.	M Ipinge, General Manager: Community Development Services	4 September 2007, Key Informant Meeting	Comment - noted
The council is trying to limit shacks in back yards. It is a big problem. People renting shacks are paying excessive rental, so there is an economic impact. The social impacts	Clive Lawrence – General Manager, Health, Municipality of Swakopmund	Key Informant meeting, 6 September 2007.	Comment - noted

Issues/ questions/comments	Comment by:	Event/Communication	Response
are high on formal residential areas.			
The hospitals are not really our concern, but there is a shortage of ambulances, and we are also concerned about the way in which medical waste is discarded.	Clive Lawrence – General Manager, Health, Municipality of Swakopmund	Key Informant meeting, 6 September 2007.	Comment - noted
There is some informal settlement in the Swakop River. The Council moves them regularly, but they trickle back.	Clive Lawrence – General Manager, Health, Municipality of Swakopmund	Key Informant meeting, 6 September 2007.	Comment - noted
An increase in HIV prevalence will definitely be an impact. . We have sufficient resources in Swakopmund to cope with this problem. A lot of companies have their own workplace programmes.	Clive Lawrence – General Manager, Health, Municipality of Swakopmund	Key Informant meeting, 6 September 2007.	Comment - noted
Alcoholism is a big problem in the DRC. There are more than thirty illegal shebeens. There is also public concern about the number of shebeens in Mondessa.	Clive Lawrence – General Manager, Health, Municipality of Swakopmund	Key Informant meeting, 6 September 2007.	Comment - noted
A major impact of significant inward migration will be on waste removal. The current systems are not working well. We need a waste plant for Swakopmund instead of a solid waste dump. This will curb pollution in the desert and also stop the people in the DRC from scavenging on the dumps.	Clive Lawrence – General Manager, Health, Municipality of Swakopmund	Key Informant meeting, 6 September 2007.	Comment - noted
The impact of significant inward migration on the current sewage system will be huge. It will not be able to cope.The dry system (Jo-jo) in the DRC is not being used properly, so the Council still has to provide services.	Clive Lawrence – General Manager, Health, Municipality of Swakopmund	Key Informant meeting, 6 September 2007.	Comment - noted
There is only one primary health care clinic, and a great need for another one.	Clive Lawrence – General Manager, Health, Municipality of Swakopmund	Key Informant meeting, 6 September 2007.	Comment - noted
We have a tremendous problem with shacks burning down. In the DRC there is no electricity, so people use candles. In Mondessa, people in shacks overload the system and start fires that way.	Clive Lawrence – General Manager, Health, Municipality of Swakopmund	Key Informant meeting, 6 September 2007.	Comment - noted
Up to now we have had no problems from the mines. They are not situated in the area that we operate in. Our main fear is that, with all the development, the mines will start moving closer to Swakopmund.	Danie van Niekerk, Coastal Tourist Association and Nathalie Cadot NACOMA	Key Informant meeting, 6 September 2007.	Comment - noted
From the first viewing platform for the moonscape, you can already hear the noise of mining activities.	Danie van Niekerk, Coastal Tourist Association and	Key Informant meeting, 6 September 2007.	Comment - noted

Issues/ questions/comments	Comment by:	Event/Communication	Response
	Nathalie Cadot NACOMA		
The main reason people come to Swakopmund is for the desert. The economy depends on tourism – not only tour operators, but others, such as entertainers, as well.	Danie van Niekerk, Coastal Tourist Association and Nathalie Cadot NACOMA	Key Informant meeting, 6 September 2007.	Comment - noted
How will the housing situation be resolved?	Peter Tarr, Director SAIEA	Key Informant Meeting, 4 September 2007	An early take is that extra housing should be provided in towns with an already stable economy. They will be better able to withstand the impact of downscaling and closure and the subsequent loss of revenue. In smaller municipalities, with fragile economies, the dangers of creating dependency are great.
Are you looking at training as well as what would happen if mines closed unexpectedly?	U Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare	Key Informant Meeting, 4 September 2007	Yes, training is an important component of the SEIA.
How are you going to handle training?	U Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare	Key Informant Meeting, 4 September 2007	An obligation on the part of the contractor to give access to training will be recommended in the SEIA. Ideally, this training would put the workers in a position where they could be offered permanent jobs with the operation when construction is finished.
That would be good, but the contract between the contractor and his worker should clearly spell out the training benefits.	U Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare	Key Informant Meeting, 4 September 2007	Comment - noted
Are you looking at other types of skills?	U Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare	Key Informant Meeting, 4 September 2007	The provision of skills for alternative livelihoods will be proposed.
What are you doing about housing construction workers	U Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare	Key Informant Meeting, 4 September 2007	From the social aspect, we would like to see the construction workers housed in a construction camp. As many of them are migrant, they can impact severely on local communities, and it is better for both groups if there is not close contact. A management plan for a construction camp will be

Issues/ questions/comments	Comment by:	Event/Communication	Response
			proposed.
What will this include?	U Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare	Key Informant Meeting, 4 September 2007	It will aim to ensure that the contractors have a decent lifestyle, but also to mitigate any potential impacts arising from their presence. For instance, they will have to undergo an AIDS induction programme.
When you do that type of thing, be sure that you treat them as human beings, not just as a bunch of workers.	U Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare	Key Informant Meeting, 4 September 2007	That is inherent in the management plan. Contractors will, as an example, be required to have programmes that, where relevant, comply with Rössing's standards, and these are very highly regarded.
Are you aware that large-scale unemployment will also have a national effect. All those employed people are currently paying into the social grant fund. If they don't have work, they will be drawing from it. This could have a big impact on the budget.	U Hiveluah, Permanent Secretary, Ministry of Labour and Social Welfare	Key Informant Meeting, 4 September 2007	Yes, there are other impacts that go beyond the region as well, such as remittances. The SEIA will make proposals for avoiding or mitigating these impacts.
Erongo Region has been red-flagged for HIV/AIDS because of mines and the harbour.	Amanda Horn, Community Development Officer, Rossing Uranium	Key Informant Meeting, 6 September 2007	Comment - noted
Many investors are linking their investments to the mines. A major bank has taken over the Council's housing loans, but the repayment period is 13 years – the expected life of Rössing Uranium.	Florida Cloete, CEO, Arandis Town Council	Key Informant Meeting, 6 September 2007	Comment - noted
There is pressure on the LED strategy to de-link from the life of mine.	Florida Cloete, CEO, Arandis Town Council	Key Informant Meeting, 6 September 2007	Comment - noted
Rössing has taken a decision that all contractors must set up a base in Arandis – this is very positive, but also dependent on life-of-mine.	Florida Cloete, CEO, Arandis Town Council	Key Informant Meeting, 6 September 2007	Comment - noted
Employment is largely coming from contractors. Employment in Arandis is often a temporary alleviation. Skills development is important; skills for other sectors than just the mining sector should be developed.	Florida Cloete, CEO, Arandis Town Council	Key Informant Meeting, 6 September 2007	Comment - noted
Residents of Arandis already show an attitude of dependency towards new mines.	Florida Cloete, CEO, Arandis Town Council	Key Informant Meeting, 6 September 2007	Comment - noted
There is tremendous activity in the property market in Arandis. Over 200 erven have been sold, and there is a	Florida Cloete, CEO, Arandis Town Council	Key Informant Meeting, 6 September 2007	Comment - noted

Issues/ questions/comments	Comment by:	Event/Communication	Response
waiting list of 150.			
This sudden activity is definitely the result of all the mining going on. Everyone who comes in asks about the life of mine.	Florida Cloete, CEO, Arandis Town Council	Key Informant Meeting, 6 September 2007	Comment - noted
Economically, mining is very good, it will create employment and income. But there are many mines, and it comes to the need for housing, water, infrastructure, and also the impact it might have on the environment. We have well-protected dunes and plants. We don't want these destroyed.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	The purpose of the SEIA process is to avoid such impacts, and if we can't avoid them then to minimize and mitigate them. It also aims to maximize the benefits you mention.
All stakeholders should really be involved in mining developments that are coming up. There should be a conference where all the mines in the Erongo look at how we can get the best out of these benefits and minimse the negative impacts.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	Comment - noted
We already have problems with schools in Swakopmund and Walvis Bay. Especially with secondary schools, there is no place in their yards to put up extra classrooms. This is where mines come in with their social responsibility programmes. Look at Arandis as an alternative for good schooling. If you want people in a certain place, look at the schools, the health services and consumer services. We are pushing for more schools in Arandis and in Henties Bay. We have to look at Arandis.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	Comment - noted
There is a serious need for housing in all the towns. And they must be affordable. If people cannot afford the houses, they will squat, and we then have to cope with the social evils that result. If we do not plan proactively, then we have to expect all these evils. Municipalities have to be involved – we need to know what their future plans are. They must make erven available.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	Comment - noted
Infrastructure – when we talk about roads, there will be more pressure on our tarred roads. These roads were built at a specific time, nobody took the possibility of so many mines developing into consideration. Commuter traffic is already heavy. It will be advisable for all the role players to	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	Comment - noted

Issues/ questions/comments	Comment by:	Event/Communication	Response
come together to look at these aspects. The municipalities must come to us and tell us what they are planning and what they need. We must have a conference around mining development.			
There will be a real strain on service providers in Swakopmund. In Walvis Bay, they have requested funding to upgrade/replace the sewage system.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	One of the main objectives of consultation with key stakeholders during the SEIA process is to establish where the critical areas are for local services, and to address these in the final report.
Arandis needs businesses to persuade people to buy there. The mines need to get together with businesses and tell them how many people they are prepared to employ in Arandis, then investors can put up services for consumers, such as supermarkets.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	Comment - noted
To get other industries into Arandis, they should talk to relevant ministries. MTI can also be approached. International investors can also be advocated.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	Comment - noted
The health services in Arandis are very poor. This is because we depended on the mine in the past. We must not make the same mistake again.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	Comment - noted
Inward migration is going to have a huge impact on social life and criminal activities. We must not make the same mistake as Windhoek.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	Comment - noted
We want to protect Swakopmund and make sure that it stays a tourist destination.	Mr L Garoeb, Local and Regional Government and Housing, Erongo Regional Council	Key Informant Meeting, 6 September 2007	Comment - noted
How many jobs are we looking at, and where will the workers be housed?	Rod Braby and Nathalie Cadot	Key Informant Meeting, 24 August 2007	Decisions about housing are among the critical areas of socio-economic impacts that will need to be carefully assessed. These will be addressed in the SEIA report.
There will be a direct impact on tourism through visual impacts which will reduce the attractiveness of the area. Internationally, especially in Europe, people are wary of uranium and possible contamination. They could be reluctant to visit an area where the large number of mines	Helge Denker, Director Namibian Environment and Wildlife Society	Key Informant Meeting, 7 September 2007	This is a cumulative impact of mining, and as such it will be addressed in the SEIA. However, the solution will require co-operative action by a number of stakeholders and sectors.

Issues/ questions/comments	Comment by:	Event/Communication	Response
result in a cumulative impact. This could be addressed by alternative land-use. What impact does mining have on the long-term use of the area for tourism?			
How can we avoid these big operations and the numbers of them when the MME does not consider the impacts on tourism and the environment?	Roswitha Lowe, Tristan Cowley, Tour and Safari Association, Namibia	Key Informant Meeting, 7 September 2007	The Ministry of Environment and Tourism (MET) is the custodian of the Namibia's natural environment. It has environmental regulations in place. This Ministry is the lead agent for EIAs. MME can only consider mining authorisation once MET has approved an EIA and handed down a record of decision.
The number of mines is alarming. The only way we can deal with a potential alienation between mining and tourism is by consultation.	Roswitha Lowe, Tristan Cowley, Tour and Safari Association, Namibia	Key Informant Meeting, 7 September 2007	Comment - agreed
No idea should be a compromise or a trade-off for destroying the environment.	Roswitha Lowe, Tristan Cowley, Tour and Safari Association, Namibia	Key Informant Meeting, 7 September 2007	Comment - agreed
In the area that we use, the moon landscape Goinakontes the impacts would come from heavy vehicles and the visual impact of the actual mine. The site selection should be carefully made.	Roswitha Lowe, Tristan Cowley, Tour and Safari Association, Namibia	Key Informant Meeting, 7 September 2007	Comment - noted
It is important to see the benefits of the mine. The road in the Namib Naukluft Park is in a bad condition. The MET is supposed to maintain it, but this is not happening. Maybe the mines could take this over, as well as the signage in the Park. The dust-reducing tarred stretches are also very good.	Roswitha Lowe, Tristan Cowley, Tour and Safari Association, Namibia	Key Informant Meeting, 7 September 2007	Comment - noted
People come to Namibia for the unique nature of its environment. Every tourist who lands in Windhoek goes to Erongo.	Roswitha Lowe, Tristan Cowley, Tour and Safari Association, Namibia	Key Informant Meeting, 7 September 2007	Comment - noted
Where will Rössing accommodate all the new employees and their families?	Mr May	Focus Group Meeting 17 September 2007	Rössing is developing a housing strategy for the expansion project. A housing survey will be carried out and various options will be considered.
Where will the camps for temporary construction workers be placed?	Participant	Focus Group Meeting 17 September 2007	A number of options will be evaluated to establish which site would cause the least

Issues/ questions/comments	Comment by:	Event/Communication	Response
			social impact.
Rössing had a housing scheme for its workers in the past and then sold these houses to the occupants. Will the same approach be followed now?	Participant	Focus Group Meeting 17 September 2007	This depends on the housing strategy.
When is the influx of people expected to start and when do you foresee the peak?	Mr W van der Plas	Focus Group Meeting 17 September 2007	The influx might start immediately because there are a number of mines commencing operation. The peak is foreseen around 2010 to 2011.
Tourists/visitors from overseas are asking whether it is not risky to have a rest camp so near the mines.	Mr May	Focus Group Meeting 17 September 2007	There is scope for improvement in communication with people regarding the aspects of uranium and radiation. The research has been done, but information material needs to be made available to the public.
Since all the mining activity has started a lot of new people are coming into the town.	Officer WA Nghwaamwa, Officer in Charge, NAMPOL, Arandis	Key Informant Meeting, 17 September 2007	Comment - noted
Arandis people are getting jobs, but they drink their money out, so outsiders will get their jobs.	Officer WA Nghwaamwa, Officer in Charge, NAMPOL, Arandis	Key Informant Meeting, 17 September 2007	Comment - noted
There are large numbers of informal settlers living in shacks in back yards in Mondesa. We could see an increase of this, and I think we will see this develop in Arandis.	Lysias Uusika, Community development Officer, Rössing Foundation	Key informant meeting, 5 September 2007	Comment - noted
Housing is a huge problem in Arandis – there are no vacant houses.	L Uusika, Community development Officer, Rössing Foundation	Key informant meeting, 5 September 2007	Comment - noted
Inward migration of job seekers is a problem. According to a survey in 2004/5 there were about three thousand backyard shacks, and that number has increased tremendously.	Walvis Bay Municipality	Focus Group Meeting, 20 September 2007	Comment - noted
There is no accommodation available, the local authority is not really a provider of housing and we have a shortage of housing and land.	Walvis Bay Municipality	Focus Group Meeting, 20 September 2007	Comment - noted
A lot of investors are linking their investment to life-of-mine. The sudden activity is definitely the result of all the mining	F Cloete, CEO, Town Council of Arandis	Key Informant Meeting 5 September 2007	Comment - noted

Issues/ questions/comments	Comment by:	Event/Communication	Response
going on. Everyone asks about the life of mine.			
Employment often means a temporary alleviation – skills development is essential, and they should be skills for other forms of employment.	F Cloete, CEO, Town Council of Arandis	Key Informant Meeting 5 September 2007	Comment - noted
Dependency continues in Arandis. The arrival of new mines also creates and expectancy that they will get benefits such as houses for nothing.	F Cloete, CEO, Town Council of Arandis	Key Informant Meeting 5 September 2007	Comment - noted
We have no housing available and over 150 people on the waiting list.	F Cloete, CEO, Town Council of Arandis	Key Informant Meeting 5 September 2007	Comment - noted
State health services would not be able to cope with an influx of people. They would definitely have to improve.	F Cloete, CEO, Town Council of Arandis	Key Informant Meeting 5 September 2007	Comment - noted
The population in Arandis has increased from 4500 in 2005 to 5200 at the moment	F Cloete, CEO, Town Council of Arandis	Key Informant Meeting 5 September 2007	Comment - noted
NIMT is developing its own health centre/clinic because of the poor services in Arandis.	Edkhardt Muller, Director Namibia Institute forMining and Technology	Key Informant Meeting 17 September 2007	Comment - noted
There will definitely be an influx of people,and there will be an increase in crime.	Edkhardt Muller, Director Namibia Institute forMining and Technology	Key Informant Meeting 17 September 2007	Comment - noted
An increase in crime is our main worry with inward migration. Even if the public and the mining companies gave millions to train officers, crime would go up because of pressure of poverty. People need to live, and if they have no jobs so they turn to crime.	FK Shilongo, Regional Commander, Erongo Region, Ministry of Safety and Security	Focus Group Meeting, 20 September 2007	Comment - noted
We can't bring in more policemen because we don't have accommodation and we don't have enough holding cells in Swakopmund or Walvis Bay.	FK Shilongo, Regional Commander, Erongo Region, Ministry of Safety and Security	Focus Group Meeting	Comment - noted
AIR QUALITY			
Is there data available of the levels of material dispersed by wind to the coast?	Helge Denker, Director Namibian Environment and Wildlife Society	Key Informant Meeting, 7 September 2007	Yes, air dispersion modeling has been done for a few years and results indicate insignificant additions to ambient conditions. Modeling will be redone to take the new expanded scenarios into account.

Issues/ questions/comments	Comment by:	Event/Communication	Response
GENERAL			
The cumulative impacts are enormous. They have to be put into the SEIA.	Peter Tarr, Director SAIEA	Key Informant Meeting, 4 September 2007	Cumulative impacts are required to be addressed in the SEIA – the Terms of Reference include this aspect
There is a critical need for a Strategic Environmental Assessment. The possibility has been out there for a year now, and funding is available. Strong advocacy is needed to bring it back on the table, and it could be a mitigating factor for cumulative impacts.	Peter Tarr, Director SAIEA	Key Informant Meeting, 4 September 2007	Comment - noted
All aspects should be included in an integrated SEIA.	Peter Tarr, Director SAIEA	Key Informant Meeting, 4 September 2007	Comment - noted
There is an impact on the coast, but also a growing band of high impact along the coast towards the interior.	Rod Braby and Nathalie Cadot	Key Informant Meeting, 24 August 2007	Comment - noted
Radiation and ground water pollution – what area will be covered by the specialist studies (which coastal towns)	Helge Denker, Director Namibian Environment and Wildlife Society	Key Informant Meeting, 7 September 2007	The studies will cover the area of influence which will be determined through groundwater and air dispersion modelling.
Are you looking at both direct and cumulative impacts?	Helge Denker, Director Namibian Environment and Wildlife Society	Key Informant Meeting, 7 September 2007	Yes
Are we looking at the bigger picture? The period of benefit, are we looking at that in terms of the period of impact?	Helge Denker, Director Namibian Environment and Wildlife Society	Key Informant Meeting, 7 September 2007	Yes. Sustainability is a key component of the study, and in terms of that concept, the benefits need to be structures so that they outlast both the impacts and the mine itself.
One step bigger – there are two reasons for extracting uranium – nuclear power and weapons. Then there is the generation of waste. What is the standpoint of Rio Tinto with regard to these?	Helge Denker, Director Namibian Environment and Wildlife Society	Key Informant Meeting, 7 September 2007	Rio Tinto's statement of business practice, *The Way we Work*, applies to all Rio Tinto managed businesses and is further supported by specific guidance documents and codes of conduct. The mine's uranium is sold through Rio Tinto, which markets uranium for Rio Tinto from Rössing as well as from Energy Resources of Australia, Rössing's sister mine in the Northern Territories. Rössing's uranium is sold to European, United States, Japanese and Asia-Pacific nuclear power producers. Rössing sells uranium oxide only to power utilities in countries which are signatories of

Issues/ questions/comments	Comment by:	Event/Communication	Response
			the United Nations Nuclear Non-Proliferation Treaty. Namibia is a signatory to the Non-Proliferation Treaty and additional protocols signed by Namibia. These require reporting on the production and transport of radioactive materials leaving Namibia. The Treaty facilitates cooperation in the peaceful use of nuclear energy under IAEA safeguards, and signatories have to accept audits and on-site monitoring of their nuclear activities and materials to verify that they are not being used for nuclear weapons.
Too much planning is undertaken with hindsight. To what extent is there a strategic plan for addressing the use of uranium in Erongo?	Helge Denker, Director Namibian Environment and Wildlife Society	Key Informant Meeting, 7 September 2007	There is considerable advocacy for an SEA in the Erongo Region. This will need to be taken forward by a number of stakeholders.

For comments or queries on this information, please contact
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RÖSSING URANIUM MINE EXPANSION PLAN

REGISTERED STAKEHOLDERS – ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

SCOPING PHASE

Aiyambo	D	Student	Gobabeb
Amaambo	D	Prop.	Arandis Sheet Metal Manufacturers
Ambambi	B	Community member	Arandis
Andina	S	Community member	Arandis
Andowa	M	Community member	Arandis
Andreas	R	Community member	Arandis
Archer	R	Inspector Hazardous Waste	Walvis Bay Municipality
Asino	K	Town Planner	Walvis Bay Municipality
Atiogbe	Sr S	Matron	Walvis Bay Hospital
Avelinus	L	Community member	Arandis
Awaseb	J	Regional Director, Education	ERC
Awiseb	S	Community member	Arandis
Baron van Ginkel	P	Gen Manager	Baron Tours & Swakopmund Adventure Park
Batten	P	Exploration Manager	Bannerman Resources
Bell	M	Private	Swakopmund
Beukes	C		Bearings In
Beukes	E	MUN, Arandis Branch	
Bittner	A	Hydrogeology	BIWAC
Bonner	B	Exploration Manager	Valencia
Botha	AJ	Senior Manager Business Dev.	Namwater
Braby	R	Director	Nacoma
Breytenbach	FJ	Farmer	Namibfontein Owner
Brown	C	Director	Namibia Nature Foundation
Buck	W	Gen Manager	Langer Heinrich
Burger	L	Air dispersion	Airshed
Charnock	L	Farmer	Farm Namib Plains (Plaas)
Cloete	F	CEO	Arandis Town Council
Coetzee	B		Onguta, Arandis
Collins	D	Media/Journalist	Informat
Cowley	T	Chairman	TASA
De Klerk	W	Farmer	Villa Rosa Owner
de Kock	J	Bus Dev Manager	Namwater

De Man	P	Farmer	Bloemhof Owner
de Waal	G	Tech Assistant	Ninham Shand Consulting Services
Demasius	E	CEO	Swakopmund Management Board
Denker	H	Director	NEWS
Diergaardt	D		Arandis Services
Dierkes	K	Stubenrauch	
Eelu	K		Gobabeb
Eiman	T	Co-ordinator (EMS & QMS)	Namport
Ellitson	F	Community member	Arandis
Ellmies	Dr. R	Division of Engineering and Environmental Geology	Geological Survey of Namibia
Els	AP	Chief Health Services	Walvis Bay Municipality
Endjala	B		Onguta, Arandis
Engelbrecht,	M	Farmer	
Enkono	N	Community member	Arandis
Erasmus	A	Media/Journalist	Republikein
Erasmus	D	Media/Journalist	Republikein
Forbes	A	Risk Assessment	Rio Tinto
Frielingsdart	K		Reptile Uranium
Gamases	F	Community member	Arandis
Garoeb	L	Chief Regional Officer	ERC
Garoeb	M		ECS
Garrard	S	Adviser	Rio Tinto
Garrard,	D	Manager Value Planning	Rössing Uranium,
Gaseb,	Chief I# Nu-Axa	Oe#Gan Traditional Authority	
Gawanas	S	Community member	Arandis Youth
Geingob	F		Khori, Arandis
Goagoseb	E	Geologist	Rössing Uranium
Gonseb	M		Basil Read, Arandis
Gossow	RW	Farmer	Namibfontein Owner
Gowaseb	G		Major Drilling, Arandis
Grinyer	C		Grindrod
Guittar	J	Student	Gobabeb
Guriras	M		ECS, Arandis
Gweja	Dr M		Walvis Bay Hospital
Haimbodi	T		Arandis
Hall	J	Hydrogeology	Aquaterra
Halmeendo	A	Community member	Arandis
Hamukanda	S	Community member	Arandis
Hamutoku	F		NIMT
Hango	H		Orion Financial Aid, Arandis

Haoseb	D	Community member	Arandis Youth
Hartman	A	Media/Journalist	Namibian
Hartmut	F	Farmer	Haigomkab
Haushone	P	Customer Care	Arandis Town Council
Hawaseb	B		NEC, Arandis
Hefikwa	G		Arandis Services
Heibeb	E		NIMT
Hendrikse	A		Hytec
Henning	R	Man Bus Dev	Extract Resources
Henschel	J	Director	Gobabeb Training and Research Centre
Hiveluah	U	Permanent Secretary	Ministry of Labour and Social Welfare
Hoabeb	H		Arandis Services
Hoabes	R	Mayor	TC Swakopmund
Hoadley	M	PP and Social Impact Assessment	
Hoars	P		Arandis
Hoases	C	Community member	Arandis
Hoebeb	E	Community member	Arandis
Holthausen	F	Town Engineer	Swakopmund Municipality
Holtz, u & M.M. Engelbrecht		Farmer	Farm Namib Plains (Plaas)
Holtzhausen	F	Town Engineer	TC of Swakopmund
Hoon	M	Farmer	Bloemhof (Owner's daughter)
Horn	A	Community Dev Officer	Rössing Uranium
Horn	JG	Farmer	Valencia Owner
Hoveka	R	GM Corporate Services	Rössing Uranium
Huseman	A		APS
Iita	A		Rössing Uranium
Ipinge	M	Gen Manager, Com Dev. Services,	Municipality Swakopmund
Jacob	F	Community member	Arandis Services
Jairus	T		Dantago, Arandis
Johnson	B	Technical Mining and Environmental adviser	CSIR
Kairaratso	D		Rossing Uranium
Kangandi	R	Community member	Arandis Youth Group
Kapere	A	Chairman	National Council
Kapiye	E	Community member	Arandis
Karl-Heinz	F	Farmer	Plot Godewind
Karob	M		Arandis
Kashuupulwa	O	Station Commander, Swakopmund	Ministry of Safety and Security
Kavari	R	Sudent	Gobabeb
Kavela	J	Community member	Arandis
Kharob	I	Community member	Arandis
Kinahan	J	Archaeology	Quaternary Research
Klazen	Clr DJK	Mayor,	Walvis Bay Municipality

Kleeman	G	Farmer	Nellsville, Konigsberg & Vlakteplaas Owner
Kluft	J		Arandis
Kohrs	B		Earthlife Namibia
Kovendjii	V	Deputy Director, Planning	ERC
Kraft	K	Media/Journalist	AZ
Kriess	H	Farmer	Hans Kriess Holdings
Kriess	J	Farmer	Hans Kriess Holdings
Kriess	HA	Farmer	Wolfkoppe Owner
Kriess	HJ	Farmer	Wolfskuppe
Kuushomwa	B		ECS, Arandis
Lawrence	C	General Manager Health	Municipality Swakopmund
Lawson	B	Associate: Environment Discipline Group	Ninham Shand Consulting Services
Leathley	B	Country Manager	Uramin
Leech,	M	MD	Rössing Uranium
Leippert	M	Chair	Coastal Tourism Association
LeitZ	J	ISO Standards Consultant	Namport
Liebenberg	Q	Farmer	Bergrus Owner
Likando	J	Community member	Basil Read
Limpitlaw	D	Principal Eng	Turgis Consulting
Louw	C		Hytec
Lowe	R	Africa Calls	
Lubbe	A	Corp Comm	Rössing Uranium
Lyners	C	Immersion	Rössing Uranium
Maartens	L	Environmental Officer	Valencia
Maggs-Kohling	G	Head of Institute	National Botanical Research Institute
Makambe	I		Siemens
Maketo	C	Warden	MET Swakopmund
Makina	E	Community member	Arandis
Malango	V	Gen Manager	Chamber of Mines of Namibia
Mangundu	O		Basil Read, Arandis
Maritz	N	Farmer	Tsawisis Owner
Mavenjowo,	GU	Border and Coastal Guard Unit Commander	Ministry of Safety and Security
May	H & B	Farmer	Sophia Dale Rest Camp
Mbarandongo	S	Community member	Arandis
Mbwale	M	Member	Arandis Youth Association
McClune	J		NEC, Arandis
Meyer	EF	Farmer	Namib Plaas Owner
Mostert	T	Farmer	Tsawisis (Swartberg) Owner
Mouton	J		Namport
Mpangela	M	Community member	Arandis Youth Group
Mueller	EDG	Director	NIMT
Muhuura	D	Mayor	Arandis Town Council

Mutrifa	M		Rössing Uranium
Mwenyo	E		Namport
Mweshininga	E	Community member	Arandis
Naanda	H	Community member	Arandis Youth Academy
Nambahu	E		Walvis Bay Municipality
Naule	A	Community member	Arandis
Nepela	S	Gen Manager	Swakop Uranium
Nghitila	T		MET
Nghwaamwa,	WA	Officer in Charge	NAMPOL, Arandis
Nkuvi	V	Media/Journalist	NBC
Nomashana	E	Community member	Arandis
Nuuyoma Hon	S	Governor	Erongo Regional Council
Nyambe	R	Sup. Projects	Rössing Uranium
Ochurub	A		JJD, Arandis
Pallett	J	Biodiversity	DRFN
Palmer	R	Matron,	Swakopmund Hospital
Petrus	S	Community member	Arandis
Pjtandi	C		Erongo Trading Enterprises
Podewitz	S	Small miner	Arandis
Potgieter	B	Environmental Health Officer	Municipality Swakopmund
Przybylski,	R	Supt. Value Planning, Mining	Rössing Uranium
Rapp W/F Rapp		Farmer	Bergrus Owner
Reunard	C	Community member	Arandis
Ruswa	Dr N	Medical Doctor	Walvis Bay Hospital
Sakaria	H		Sakaria Bar, Arandis
Sander	P	Manager	Cottage Medi-Clinic
Schneeweiss	R	Supt Sustainable Development	Rössing Uranium
Schneider	G	Director	Geological Survey
Scholtz	R	ECO	Reptile Uranium
Shangongo	S	Community member	Arandis
Shikangala	J	Student	Gobabeb
Shilongo .	FK	Regional Commander	Ministry of Safety and Security
Shiluama	E		Namwater
Shirera	C		Nampol, Arandis
Shivena	S		Rossing Uranium
Shivolo	E	Mining Commissioner	MME
Sikabonga	F	Head, Environmental Unit	MET
Simon	E	Community member	Arandis
Simon	A		ECS, Arandis
Smit	J	Media/Journalist	Namibian
Smit	B	Farmer	Vergenoeg Owner
Sneddon	S	IAP	

Sooabeb	J	Farmer	Trekkopje Owner
Southworth	D	Community member	Rossmund Golf Course
Sr AC Slinger	Sr AC	Registered Nurse	Walvis Bay Hospital
Stead	S	Landscape impacts	VRMA
Steenkamp	F	Editor	Namibian
Stefanus	S	Community member	Arandis
Stubenrauch	G	Director	Stubenrauch Town Planners
Swiegers	W	Adviser	CoM
Tarr,	P	Director – ESIA Reviewer	SAIEA,
Thomas	P	Community member	Arandis
Thomas	N	Community member	Arandis
Tjiho	J	Director	Rossing Foundation
Tjipute	P	Dept Health, Safety and Loss prevention officers	Swakopmund TC
Tshiteta	Dr	Regional Director Health	ERC
Tyers	A	Community member	Arandis
Uiseb	J	President	Arandis Youth Association
Uiseb	N		Arandis Town Council
Ulrich	L	Assistant Director	Rössing Foundation
Uusiku	L	Community and Sustainable Development	Rossing Foundation - Arandis
Van Den Plas	W	Farmer	Farm 181
van der Bank	AR	Pit Manager	Basil Read
van der Walt	V		Wesbank Transport
van Jaarsveld	R		Arandis Services
Van Langenhove	G	Hydrology Division	Dept of Water Affairs
van Niekerk	D	Abenteuer Afrika Safari	Coastal Tourism Association
Van Nooten	P	Community member	Arandis
van Rooyen	M		Wesbank Transport
van Wyk	P		Langer Heinrich
Visagie	R		Namport
Vorster	F		Basil Read
Wadile	R	Community member	Arandis
Wermer,	E	Farmer	Shalom Farming
Wipprich	M	Farmer	Sophia Dale Rest Camp
Yatekoleni	N	Student	Gobabeb
Yellasius	S	Community member	Arandis
Zwar	T	Farmer	Vlakteplaas Owner