ENVIRONMENTAL IMPACT ASSESSMENT: PROPOSED EXPANSION PROJECT FOR RÖSSING URANIUM MINE IN NAMIBIA: PHASE 1

APPENDIX A: DRAFT SOCIAL AND ENVIRONMENTAL MANAGEMENT PLAN

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ACRONYMS

EMS	International Standards Organisation 140001 Environmental Management System
GHG	Greenhouse gasses
H_2S	Hydrogen sulphide gas
I&APs	Interested and affected parties
MET:DEA	Ministry of Environment and Tourism: Department of Environmental Affairs
RU	Rössing Uranium
S&EP	Social and Environmental Policy (Contractor)
SEIA	Social and Environmental Impact Assessment
SEMP	Social and Environmental management Plan for the phase 1
SO_2	Sulphur dioxide

1 INTRODUCTION AND BACKGROUND

Rössing Uranium (RU) 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, RU is able to consider the possible financial benefit from an expansion of its operations. The first phase of the proposed expansion project for the Rössing uranium mine comprises three components, namely, the establishment of a sulphuric acid production plant with associated sulphur storage, the establishment of a radiometric ore sorter plant with associated reject rock disposal facilities and the opening of a new pit mine in the area known as SK4.

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 authorisation for RU's proposed expansion project is concerned, the Ministry of Environment and Tourism's Directorate of Environmental Affairs (MET;DEA) would need to issue such an authorisation or clearance.

A Social and Environmental Impact Assessment (SEIA) was commissioned by RU for their proposed expansion project, as required by the Environmental Assessment Policy (MET 1995) but also informed by the principles of the 1998 draft of Namibia's Environmental Management Bill[1], as well as the internal standards and guidelines prescribed by Rio Tinto, RU's parent company. MET;DEA's decision would be based on the outcomes of this SEIA process and the relevant report is due to be submitted to the MET:DEA in February 2008.

The purpose of the Social and Environmental Management Plan (SEMP) is to ensure that the key social and environmental aspects and mitigatory measures identified or recommended during the SEIA process, and conditions of authorisation from the relevant authorities, are carried forward meaningfully and implemented during the construction, operation and decommissioning phases of the proposed project. It is therefore recommended that this SEMP be read in conjunction with the SEIA Report and the conditions of the clearance[2] from the relevant authority for full effect. In addition to the key aspects stemming from the SEIA process, the SEMP is informed by industry best practice for environmental management. These considerations are fused together with a management system, the result being a working document that can be used as a management tool to ensure responsible environmental management on a daily basis. This SEMP is presented in draft format, to assist in the decision making process and to provide the foundation for continued development of a final SEMP. In the event that the project is authorised, the SEMP will need to be further expanded and updated in line with specific design issues and incorporate the conditions of authorisation.

[1] Gazetted as the Environmental Management Act (Act No. 7 of 2007) on 27 December 2007, Gioverment Gazette No. 3966.
[2] Such conditions to be included in the final version of this draft.

The objectives of the SEMP are:

- to establish a management framework to monitor and ensure compliance with the various social and environmental mitigation measures and conditions stemming from the supporting documentation;
- to provide tangible and measurable targets;
- to establish standard operating procedures for activities that may impact on the social and biophysical environment;
- to establish an effective communications, reporting and record keeping procedure;
- to establish an effective and meaningful environmental compliance auditing programme;
- to ensure that contractors, and operational and supervisory staff are well informed and trained on general and task specific environmental considerations;
- to provide a mechanism of recourse in the event of non-compliance; and
- to ensure that *ad hoc* social and environmental issues not addressed explicitly in the SEMP are identified and addressed effectively.

The SEMP has been structured according to the phase of operation, starting with construction phase aspects and then dealing with operational and finally decommissioning phase environmental management. A subsidiary structure exists in that each of the project components is dealt with separately within the respective phase of operation. Figure 1 illustrates the framework and places it in context with the SEIA process and other key supporting documentation.

Section 2 of the SEMP focuses on the management of environmental impacts associated with the construction of the Acid Plant and Ore Sorter. The section describes the use and implementation of the Project Environmental Specifications (Project Environmental Specifications) and an example of the content of a Project Environmental Specifications is provided. The expansion of mining operations into the SK4 open pit area will not require substantial preparatory work and is thus deemed to commence at the operational phase. The Project Environmental Specifications will deal with general environmental issues typical of construction projects as well as those environmental issues specific to the respective component.

The Project Environmental Specifications will be written in a form and language that is consistent with tender and contract documentation typical of engineering contracts, thus allowing for integration into the tender documents and technical specifications. The integration of the environmental specifications into the tender and technical specifications is of crucial importance, since environmental compliance with the conditions of the authorising authority as well as the various non-statutory mitagation measures and environmental best practice becomes contractually binding on the successful contractor. By entering into contract with RU, the contractor agrees to comply with the various obligations of the Project Environmental Specifications, as well as including the necessary budgetary provisions in achieving such compliance in the tendered amount.

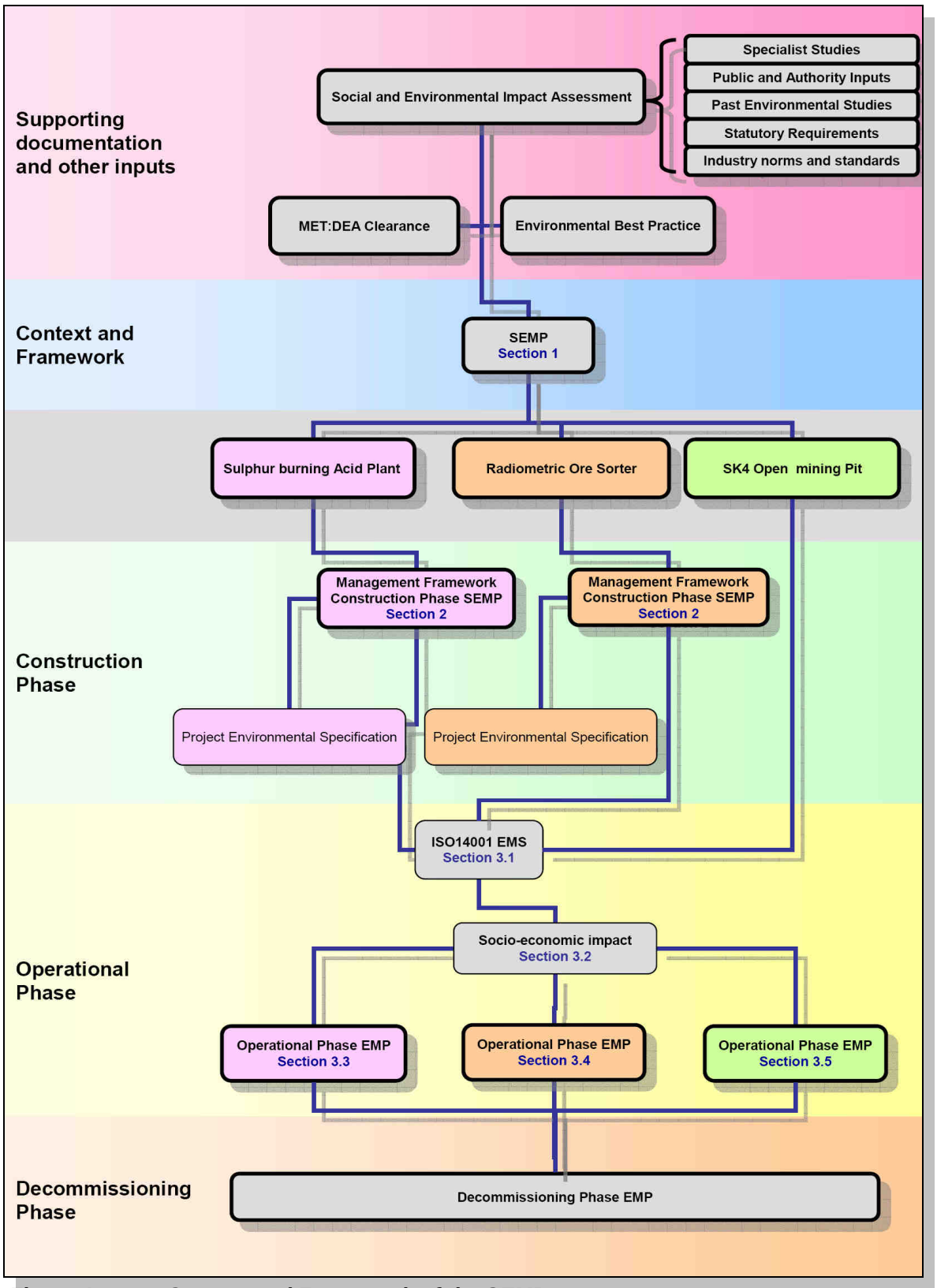

Figure 1: Context and Framework of the SEMP

Section 3 of the SEMP deals with environmental management aspects associated with the operation of each of the three components. This section aims to establish an effective compliance monitoring structure to be integrated into RU's existing Occupational Health, Safety and Environment (OHS&E) management structure, of which their ISO:14001 Environmental Management System is a part. The objective is to measure, record and demonstrate ongoing compliance with relevant legislation and RU company policies regarding social and environmental management. The section is divided into three subsections dealing with the operation of each of the components respectively.

Section 4 of the SEMP discusses potential social and environmental considerations that should be revisited at the decommissioning phase for each of the various components. This section is not prescriptive due to there being no absolute certainty regarding the future time of the decommissioning phase and a Closure Management Plan is in place. The latter will require updating to address RU's expansion project.

2 CONSTRUCTION PHASE SEMP

This section relates to establishment of the organisational framework necessary for the later compilation of the Project Environmental Specifications. The SK4 mining operation is not seen to have a construction phase since the commencement of activities will be operational in nature. However, it should be noted that some preparatory work in the SK4 mining area will be required before mining activity commences.

2.1 ORGANISATIONAL FRAMEWORK

The construction phase for the various components will be administered though an Engineering Contact, in which the Project Environmental Specifications shall form part. To ensure that environmental considerations receive appropriate attention it is recommended that an organisational framework be established and that duties and responsibilities for environmental aspects of the contract be delegated to specific individuals, thereby ensuring due diligence, capacity and accountability. To this end, the organisational framework presented in Figure 2 is proposed.

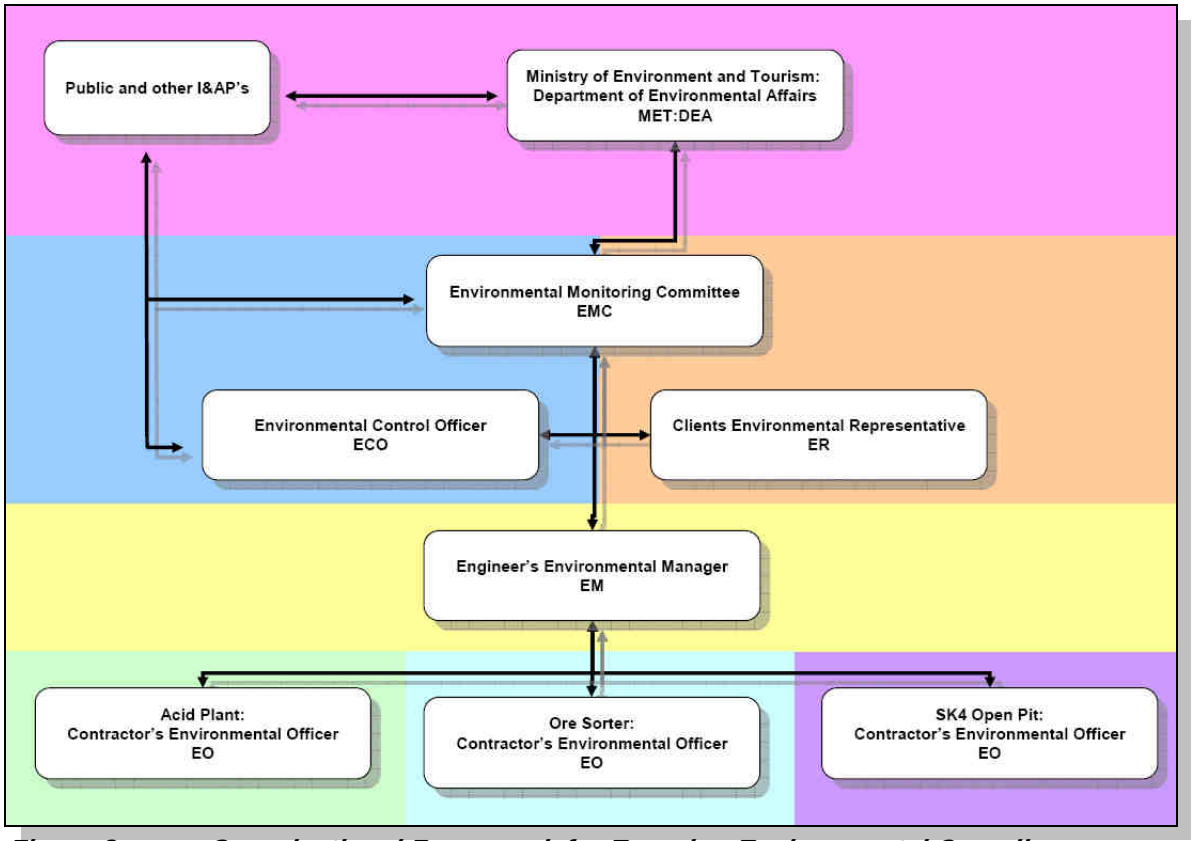

Figure 2: Organisational Framework for Ensuring Environmental Compliance during the Construction Phase

Environmental management of a construction site remains highly fluid and thus the Project Environmental Specifications will not be able to cover every eventuality. It is therefore important that a well-defined organisational framework exists to make decisions on *ad hoc* situations and to adapt the Project Environmental Specifications or management strategies to a changing situation. The environmental organisational framework and RU's OHS&E management system also provides an opportunity for co-operative management and sharing of resources between the various contractors, the client (i.e. RU) and any other parties, directly or indirectly involved in the construction phase. To this affect the contractors and client should be encouraged to pool their resources to save time and cost expended on environmental management issues.

2.1.1 ROLES AND RESPONSIBILITIES

Table 1 provides an overview of the key roles and responsibilities of the various appointments discussed in this section, which are depicted in Figure 2.

Post / body	Affiliate	Key Role
Environmental Monitoring Committee	Independent chairperson, MET:DEA Representative, Rössing Foundation Representative, Arandis Town Council Representative Environmental Control Officer, Environmental Representative, Environmental Manager, Environmental Officers,	Decision making, issuing directives and public relations
Environmental Control Officer	Independent environmental scientist	Monitoring and auditing the implementation of the SEMP systems and functioning of the various appointments
Environmental Representative	RU environmental designation	Facilitation between RU and various Contractors on social and environmental matters
Environmental Manager	Qualified environmental / construction supervisor	Day-to-day monitoring and reporting on compliance of the various Contractors in terms of the Project Environmental Specifications
Environmental Officer	Suitably senior, designated contractor employee	Planning and implementation of the Project Environmental Specifications, statutory requirements and *ad hoc* directives

Table 1: Key Roles of the Various Environmental Posts

2.1.1.1 ESTABLISHMENT AND BRIEF OF THE ENVIRONMENTAL MANAGEMENT COMMITTEE

The purpose of the Environmental Management Committee is to provide a forum for decision-making and the review of environmental performance and compliance with regard to the environmental specifications, authorising conditions and prevailing legislation. The Environmental Monitoring Committee provides a platform for continued strengthening of capacity and input by the authorities, the public and stakeholders with regard to the environmental aspects relating to the construction phase of RU's expansion project.

It is recommended that the Environmental Monitoring Committee meet quarterly, with the inaugural meeting occurring one month prior to the commencement of construction. The Environmental Control Officer shall present to the Environmental Monitoring Committee the relevant monitoring and compliance records, incident reports and any other information deemed to be of significance. The Environmental Monitoring Committee should then determine at the

close of each session whether the construction activities have been carried out in compliance with the various social and environmental requirements.

It is recommended that the Environmental Monitoring Committee, amongst others, include the following members:

- A Chairperson;
- A representative from MET:DEA;
- A representative from the Rössing Foundation;
- A representative of the Arandis Town Council;
- The Environmental Control Officer;
- RU's Environmental Representative;
- The Engineer's Environmental Manager; and
- The Contractors' Environmental Officers.

The key responsibilities of the Environmental Monitoring Committee should be to:

- Issue a statement regarding the level of compliance of each of the respective Contractor's with regard to their environmental performance after each quarterly meeting;
- Mediate between the Client, the Engineer, Contractors, the public and the authorities with regard to matters of dispute of a social or environmental nature and relating to the implementation of the various construction Contracts;
- Make recommendations with regard to the issuing of penalties, in terms of the Project Environmental Specifications, in the event of a non-compliance and to clearly define the measures that need to be taken to remedy the non-compliance; and
- Adjudicate on and issue directives relating to additions or changes to the Project Environmental Specifications and other *ad hoc* environmental management issues.

2.1.1.2 APPOINTMENT AND BRIEF OF THE ENVIRONMENTAL CONTROL OFFICER

The appointed Environmental Control Officer should be a duly qualified, independent, environmental practitioner with the necessary experience in the construction industry. The Environmental Control Officer's responsibilities should include the following:

- Compile weekly reports for each of the Contracts, based on~
    - Physical observations during weekly site inspection,
    - Environmental Manager's daily reports;
- Liaise with the Environmental Monitoring Committee members, the general public, the Client's Environmental Representative, the Engineer's Environmental Manager and the Contractors' Environmental Officers on *ad hoc* environmental matters;
- Undertake quarterly environmental compliance audits in terms of the SEMP on the various Contracts and present a report to the Environmental Monitoring Committee;
- Have sight of and make recommendations to the Environmental Manager and Environmental Representative with regard to the Contractors' key environmental method statements; and
- Present technical matters and arguments requiring Environmental Monitoring Committee adjudication and directives to the Environmental Monitoring Committee.

2.1.1.3 APPOINTMENT AND BRIEF OF THE CLIENT'S ENVIRONMENTAL REPRESENTATIVE

A suitably senior member of the Client's staff should be appointed to the position of Environmental Representative. It is recommended that this individual be otherwise affiliated with the administration of the construction contracts and should have a good aptitude for construction activities and the principles environmental management, as well as being intimately familiar with RU's ISO:14001 Environmental Management System. The Environmental Representative is likely to be one of RU's Environmental Coordinators or OHS&E Officers.

The Environmental Representative responsibilities should include the following:

- Review and comment on Contractors' method statements;
- Liaise with the Environmental Monitoring Committee members, the general public, the Engineer's Environmental Manager and the Contractors' Environmental Officers on *ad hoc* environmental matters;
- Advise the Environmental Control Officer, Environmental Manager and Environmental Officers on RU's ISO:14001 Environmental Management System, policies and procedures on environmental management to ensure continuity;
- Assist in the facilitation and accommodation of the Contractors' needs on matters relating to compliance with the Project Environmental Specifications; and
- Make recommendations to the Environmental Control Officeron technical matters requiring the Environmental Monitoring Committee's attention or directive.

2.1.1.4 APPOINTMENT AND BRIEF OF THE ENGINEER'S ENVIRONMENTAL MANAGER

The appointed Environmental Manager should be an appropriately qualified environmental practitioner with the necessary experience in construction supervision and the implementation of environmental monitoring programmes. The position should be a dedicated responsibility and should be limited to the supervision, monitoring and reporting on social and environmental matters of the various construction Contracts. The duties of the Environmental Manager should include:

The establishment and implement of an environmental monitoring programme for the monitoring and recording of construction related impacts;

The recording and reporting on environmental performance of the various Contractors against predefined standards;

The undertaking of a daily site inspection of each of the contract areas and compilation of an all-encompassing daily environmental report for submission to the Environmental Control Officer, Environmental Representative and the respective Contract Environmental Officer;

The photographing, investigation and compilation of reports on any environmental incidents, forming part of the daily report, that may occur, and to notify the Environmental Control Officer and Environmental Representative thereof;

Liaising with the Environmental Representative and Environmental Control Officer regarding the review and approval of the Contractor's method statements;

Liaising with and advising the Environmental Officers on day-to-day environmental management issues; and

Making recommendations to the Environmental Control Officer on technical matters requiring the Environmental Monitoring Committee's attention or directive.

2.1.1.5 APPOINTMENT AND BRIEF OF THE CONTRACTOR'S ENVIRONMENTAL OFFICER

A suitably senior member of the Contractor's staff should be delegated the responsibilities of the Environmental Officer. The role of the Environmental Officer is to ensure the physical implementation of the Project Environmental Specifications. The duties of the Environmental Officer should include:

- Compiling the required method statements, or the environmental section of the technical method statements, for approval by the Environmental Manager;
- Establishing and maintaining appropriate management systems for routine environmental management tasks, which may include but will not be limited to the following~
    - Waste collection, handling, storage, transport and disposal, including sewerage, domestic, construction and hazardous wastes,
    - Dust control within the area of activity,
    - Noise control within the area of activity,
    - Handling, storage, distribution and storage of hazardous materials, including fuels and lubricants,
    - Establishing and maintaining a program for the maintenance of housekeeping at each of the works areas,
    - Establishing and maintaining a system for the handling and treatment of contaminated water from construction activities,
    - Acquiring and maintaining the necessary fire, spillage and other accident and emergency response materials that may be required to deal with and contain the damage caused by such accidents;
- Notifying the Environmental Manager of environmental incidents and initiating appropriate response actions to such incidents;
- Initiating and supervising any remedial environmental actions;
- Establishing a program and undertaking or ensuring that staff receive regular environmental awareness training as part of tool-box talks;
- Making recommendations to the Environmental Control Officer on technical matters requiring Environmental Monitoring Committee directive; and
- Furnishing the Environmental Manager each week with the necessary information required for compliance monitoring, which may include certificates of waste disposal, public complaints, incidents and accidents, labour statistics, etc.

2.2 MANAGEMENT TOOLS

The key to effective environmental management during the construction phase is to ensure that the requirements of the SEMP, specifically the Project Environmental Specifications, are adequately and appropriately implemented on site. The OHS&E management system provides an organisational framework that ensures that there is sufficient capacity for environmental management and that the roles and responsibilities have been defined to ensure accountability. It should be noted that the roles of these various positions will redefine themselves to an extent as the construction phase becomes established and the primary focus of each of the designated

positions may shift as the project progresses. Sufficient flexibility must be allowed for this adaptation and redirection. To ensure that these designated positions operate effectively in establishing and maintaining compliance with the Project Environmental Specifications, the following management tools are prescribed.

2.2.1 CONTRACTORS' ENVIRONMENTAL POLICY

All Contractors should compile a Social and Environmental Policy (S&EP) in line with RU's policy, statutory requirements and the Project Environmental Specifications. The S&EP should be compiled and submitted as part of the tender documentation and must be considered as part of the tender adjudication process. The S&EP of the successful bidder will, upon award of the contract, form part of the SEMP and the Contractor's performance in relation the S&EP should be evaluated as part of the Environmental Control Officer's quarterly environmental audit.

2.2.2 METHOD STATEMENTS

To ensure that adequate forethought is given to the rollout of the construction operations and the implications thereof, the compilation, review and approval of method statements is a well-demonstrated means of ensuring that adequate risk identification and aversion, resource allocation and general planning are in place ahead of the commencement of any major construction task. Once approved, a method statement is to be issued to the Contractor's staff responsible for the implementation, to serve as a work procedure. A method statement should supply a suitably qualified reader with sufficient information regarding the task to allow for implementation without further instruction; in essence the method statement should answer the typical "what? why? where? how? who? when?" questions. Whilst several environmental method statements are prescribed from the outset, each of the technical method statements should contain a subsection that deals with environmental, health and safety considerations specific to that task.

The Contractor shall submit the prescribed method statements within one month after commencement. All *ad hoc* method statement shall be submitted to the Engineer or Environmental Manager at least two weeks prior to the commencement of the task, to allow sufficient time for the review and approval process to occur. Except for emergency works, the Contractor shall not commence any activity until the respective method statement is finalised and approved.

2.2.3 ENVIRONMENTAL AWARENESS

To encourage compliance with the Project Environmental Specifications and other statutory requirements, it is essential that all construction workers are made fully aware and continually reminded of these obligations. In order to achieve this, the following mechanisms are prescribed. The Contractor may wish to, at his/her own discretion, institute additional measures to enforce the requirements of the Project Environmental Specifications.

2.2.3.1 ENVIRONMENTAL INDUCTION TRAINING

It has become common practice to include the environmental aspects of the project as part of the standard worker health and safety induction programme that accompanies the recruitment

of new staff, provided that environmental aspects are not overshadowed by the health and safety aspect.

It is recommended that the Contractor submit an Environmental Induction Training syllabus to the Environmental Manager and Environmental Control Officer for approval before the course is delivered to the worker contingent. The Environmental Officer shall present the approved course to all construction staff under the supervision of the Environmental Manager and Environmental Control Officer. All attendees shall sign an attendance register, which will serve as evidence that the individual is aware, understands and accepts that fines may be issued in the event of non-compliance with the requirements of the Project Environmental Specifications.

2.2.3.2 TOOL-BOX TALKS

To ensure that the level of environmental awareness amongst the construction staff remains high, pertinent, task-related, environmental considerations shall be presented as an aspect of the toolbox talks or task briefing sessions, at least once a week. Topics shall be relevant to the type of work, and areas or aspects of poor performance may include handling of certain hazardous materials, housekeeping, dust suppression, water and electricity usage, discussions around recent incidents or issued fines, etc.

2.2.3.3 SIGNAGE AND INFORMATION POSTERS

Posters and signage depicting the environmental “do’s” and dont’s” should be erected at prominent locations throughout the site. A large signboard should be erected at the entrance to the Contract area to ensure that all visitors and day-workers are made aware of their environmental obligations whilst on the site.

The Contractor shall be held accountable for any environmental transgressions of the Project Environmental Specifications within his/her Contract area, whether by his/her personnel or not. It is therefore up to the Contractor to ensure that all persons entering his/her site are authorised to do so and are aware of the various environmental controls in effect.

2.2.4 ENVIRONMENTAL MONITORING

The organisational framework discussed in Section 2.1 and the posts and briefs of the appointments discussed in Section 2.2 shall be the means by which responsibilities for the monitoring of construction activity in terms of this SEMP occur. The key roles of the various posts are summarised in Table 1.

The pivotal environmental monitoring role rests with the Environmental Manager, who, by virtue of daily reports per Contract, will record the actual physical performance of each of the Contractors in terms of the Project Environmental Specifications on a near real time basis. The Environmental Manager shall also be responsible for monitoring that work is carried out in terms of the approved method statements and that any deviations or non-compliances are captured in the daily reports. The Environmental Manager’s daily reports shall be copied to all the environmental posts, except to the Environmental Officers representing the other Contractors.

The Environmental Control Officer's efforts shall be more focused on the implementation and functioning of the various environmental posts, systems and their functions, with lesser effort being dedicated toward the resolution of the minor technical/environmental site problems.

2.2.5 ENVIRONMENTAL REPORTING

It is essential that the performance or level of compliance of the Contractors' in terms of the Project Environmental Specifications and other statutory requirements are meticulously recorded to allow RU to demonstrate compliance in terms of the SEIA, SEMP, statutory requirements and conditions of authorisation. The reporting structure also serves as a management tool in that, in particular the Environmental Manager's daily reports, will ensure that all levels of environmental responsibility are kept equally well informed of the Contractors' activities and performance, including the Contractor. Table 2 shows how environmental reporting responsibilities should be allocated.

Report Title	Compiled	Author	Distribution	Content / description
Contractor's Submissions (Per Contract)	Weekly	Environmental Officer	Environmental Manager Environmental Control Officer	• Labour statistics • Water Usage volumes • Public complaints • In house environmental fines issued • *Ad hoc* environmental performance related items, to be requested by the Environmental Manager
Daily Report Per Contract	Daily	Environmental Manager	Environmental Officer Environmental Representative Environmental Control Officer	• Site conditions • General progress description • Description of specific environmental problem areas • Description of remedial action requests • Description of progress of remedial work • Receipt, review and approval of method statements • Incident, accident and event reports • Public complaints • General comments
Weekly Report Per Contract	Weekly	Environmental Control Officer	Environmental Manager Environmental Representative	• Response letter to the Environmental Manager's daily reports for that week, highlighting areas of concern and making recommendations where appropriate • Key observations made during a weekly site inspection
Quarterly Audit Per Contract	3 Months	Environmental Control Officer	Environmental Monitoring Committee	• Evaluation of the performance of the Environmental Manager • Evaluation of the performance of the Environmental Officer • Compliance audit of the Contractor in terms of the requirements of the Project Environmental Specifications • Scoring on the level of performance,

Report Title	Compiled	Author	Distribution	Content / description
Performance Statement Per Contract	3 Months	Environmental Monitoring Committee	All, this may include the public and officials	• A brief statement in response to the Environmental Control Officer's audit report remarking on the performance of the various contractors. Describing significant problems areas, and issuing directives to resolve these areas.

Table 2: Environmental Reporting Responsibilities

2.2.5.1 ENVIRONMENTAL AUDITS

The Environmental Control Officer should undertake an environmental audit of each of the Contracts, every three months, to be presented to the Environmental Monitoring Committee. The objective of the audit is to ensure that various posts comprising the environmental organisational framework are functioning effectively in terms of their brief, that compliance with the Project Environmental Specifications is being achieved, that *ad hoc* decision making on environmental matters and the response to any incidents are appropriate and executed effectively. The Environmental Control Officer shall score the Contractor's performance in each audit report. Once the audit report is in the hands of the Environmental Monitoring Committee, the Environmental Monitoring Committee will consider whether the Contractor's performance in relation to the Project Environmental Specifications is at an acceptable standard. In the event that the Environmental Monitoring Committee judgement is that the level of performance is not up to standard, the Environmental Monitoring Committee will make recommendation for penalties for non-compliance.

2.2.6 PENALTIES FOR NON-COMPLIANCE

The Engineer, on recommendation of the Environmental Manager, Environmental Control Officer and Environmental Monitoring Committee, shall be the implementing agent with regard to the application of penalties. It should be recognised that when deciding on punitive measures, effective implementation of the Project Environmental Specifications is highly dependent on the maintenance of a good working relationship between the Environmental Officers, the Environmental Manager and the Environmental Control Officer. An ill-considered or negative response to non-compliance, particularly minor or unintentional transgressions, may cause a breakdown in these relationships, which in itself could lead to increased environmental degradation over the long term. It is therefore recommended that the following penalties only be considered when the non-compliant Contractor demonstrates apathy in response to a non-compliance, or is found to be repeatedly or deliberately not meeting his/her obligations.

2.2.6.1 WITHHOLDING PAYMENT

Certain aspects of complying with the Project Environmental Specifications will have been priced in the tender documentation. In the event that a Contractor underperforms with regard to a priced item, the Engineer shall withhold payment on such item until such time as the non-compliance has been rectified.

2.2.6.2 REMOVAL FROM SITE

In the event that a certain individual or particular plant or machinery is determined to be problematic and the cause of recurring environmental degradation, the Engineer may issue an instruction to have such person or plant or machinery permanently removed from the site.

2.2.6.3 MAKING GOOD ON ENVIRONMENTAL DAMAGE

Where the Contractor has not complied with the requirements of the Project Environmental Specifications, statutory requirements or Environmental Monitoring Committee directives, all remedial work shall be to the cost of the Contractor and shall be carried out to the satisfaction of the Environmental Control Officer and Environmental Manager.

2.2.6.4 SUSPENSION OF WORKS

In the event that the above punitive measures are not having an adequate effect on the environmental performance of the Contractor or where environmental incident or degradation as a result of the construction activity is severe, the Engineer may suspend the works until such matters have been resolved to the satisfaction of the Environmental Control Officer, Environmental Manager, Environmental Representative and Environmental Monitoring Committee. The costs associated with such a work stoppage shall be to the account of the Contractor.

2.3 EXAMPLE OF CONTENT OF A PROJECT ENVIRONMENTAL SPECIFICATION

The content of a typical Project Environmental Specifications is provided below. The compilation of such a Project Environmental Specifications will follow as the details of site layout and engineering design become available for each component of RU's expansion project.

Scope and interpretations	General	
	Environmental policy	
	Interpretations	Supporting specifications
		Applications
Definitions		
General requirements	General and legal obligations	
	Environmental monitoring	
	Site meetings	
	Environmental induction	
	Environmental method statements	
	Interface with local communities and RU	
	Public safety	
	Protection of natural features and heritage resources	
	Protection of drainage lines	
	Prevention and control of fires	
	Emergency procedures	Fire
		Accidental leaks and spillages
	Temporary site closure	
Plant and materials	Plant and materials handling, use and storage	
	Hazardous substances	Fuels

		Oils and curing compound
		Paints, solvents and other chemicals
		Herbicides and pesticides
Equipment	Workshop, maintenance and storage	
	Batching plants	
	Dust and emissions	Dust control programmes
		Vehicle emissions
	Noise	Noise control
	Lighting	
Site establishment	Site layout	
	Site demarcation	Exclusion areas
	Site clearing	Demolition and removal of existing structures
		Stripping and stockpiling of topsoil
		Erosion and sedimentation control
	Temporary services and facilities	Site structures
		Accommodation of site staff
		Services
		Stockpiling and stockpile areas
		Access roads
		Ablution facilities
		Eating areas
		Water use
		Solid waste management
		Contaminated water management
	Access to site	
	Accommodation of traffic	
Surface excavations	Site preparation	
	Dust and noise	
	Stabilisation	
	Trenching	
	Treatment of spoil	
Landscaping and rehabilitation	Scope	
	Demolition and removal of structures	
	Shaping	
Tolerances	Compliance	
	Cost of non-compliance	
	Penalties	
	Removal from site and suspension of works	
Measurement and payment	Schedules items	

Table 3: Typical Project Environmental Specification Contents

3 OPERATIONAL PHASE SEMP

The operational phase SEMP aims to present the key management strategies identified through the SEIA process in a manner that allows for implementation and further development. RU has an Occupational Health, Safety and Environment (OHS&E) management system in place, of which an ISO:14001 Environmental Management System (EMS) forms part, and it is recommended that the management strategies identified hereunder be integrated into the EMS component of the OHS&EMS, In terms of the EMS structure, this operational phase SEMP would serve as the identification of the key environmental aspects and will serve to guide RU in the formation of a suite of suitable Standard Operating Procedures. This SEMP must be continually amended through the design and construction phases of the project as and when more detailed information becomes available and potential limitations or hazards are identified.

Due to the scale and complexity of RU's operations, the use of a formalised EMS is essential in allowing the company to optimise, coordinate and manage the various operations, personnel, plant, equipment and their interactions in a manner that demonstrates consistent application of environmental best practice and thereby efficiently detect and minimise the potential impact of its activities on the environment.

A brief overview of an ISO 14001 EMS is now provided. An ISO 14001 EMS aims to develop a systematic management approach to the management of environmental concerns of the organization. One of the key principles of this approach is the idea that continual improvement in the organisation's environmental management can be achieved and demonstrated.

Commencing with an environmental policy, then identifying the environmental concerns of the firm (Aspects) and defining what measures can be implemented to control or mitigate these (Objectives and Targets), planning is accomplished. An organizational structure, and system of personnel responsibilities, competency and training, are then developed and implementation begins. Communication lines, documentation control and procedural documents, operational control and emergency preparedness define the operational portion of the program. These items are usually included in an EMS Manual, which is used to document a program so as to accomplish the Objectives and Targets established at the outset. The organization's methods for measuring and monitoring its environmental impacts are also included in the Manual, along with practices for identifying non-conformances and for implementing corrective and preventive actions. This monitoring, along with routine systems audits and record keeping, constitute the EMS checking and corrective action program. The final stage in the program is a routine management review of its activities, and improvements to the system based on the performance observed during the previous cycle are effected. Figure 3 depicts the sequencing of the implementation of an EMS as well as the structure of a typical EMS.

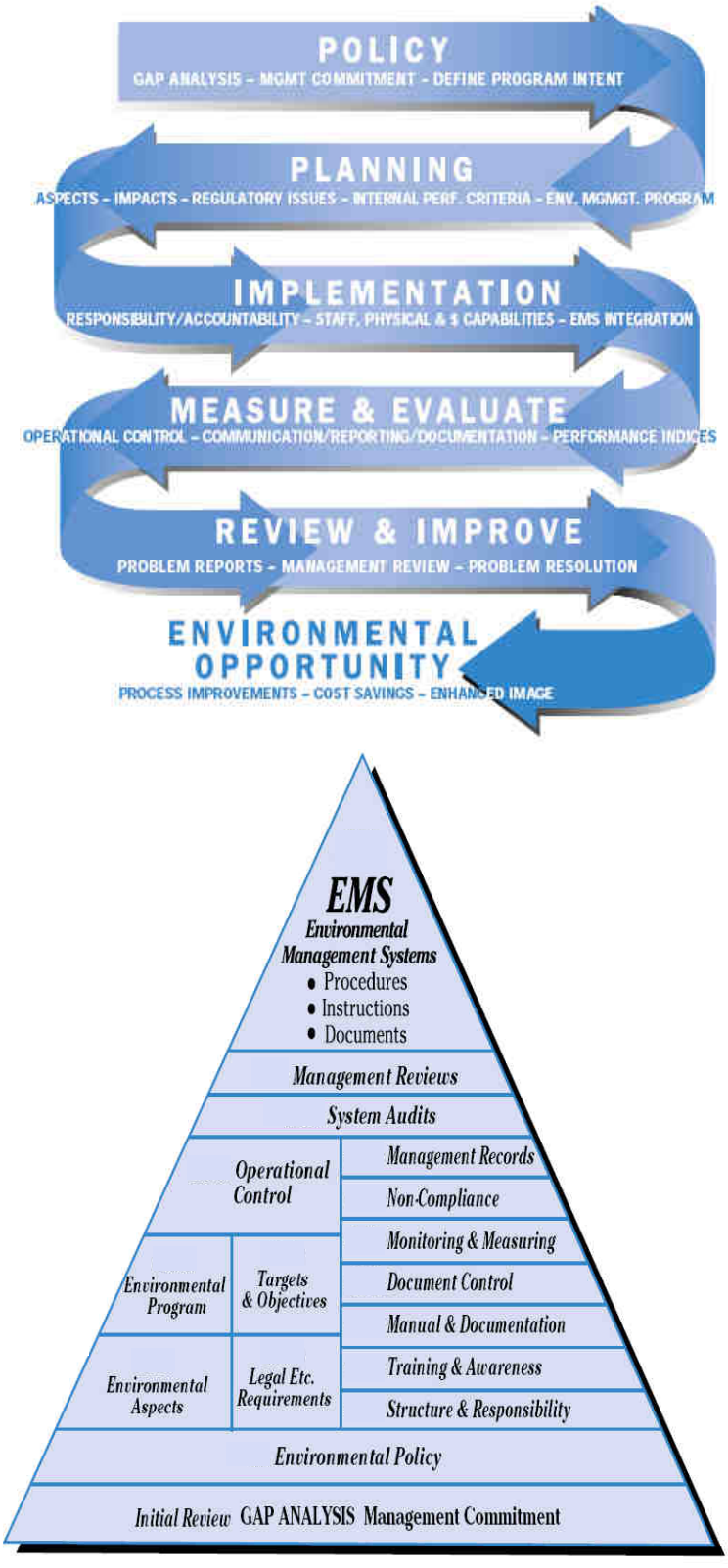

Figure 3: Sequencing and Structure of an ISO 14001 EMS
(Source: Modified from NCEDR. 1998)

3.1 OPERATIONAL SEMP AND RU'S EMS

This section is largely informed by RU's Environmental Management System Code of Practice (Revision No. 7: April 2006), which is currently under review due to a change in RU's management structure.

It is recommended that RU's EMS be extended and upgraded to include the various components forming part of the present phase of the proposed expansion project. The mitigation measures proposed in the SEIA and the SEMP should be interrogated and carried forward into RU's existing EMS. The nature of the activities of the proposed expansion project are mostly congruent with activities already occurring as part of RU's operations and thus the control procedures utilised to address generic environmental impacts associated with RU's activities can for the most part be adopted and modified for management of the proposed new activities. The recommendations put forth in this operational phase SEMP should be utilised as an informant in the review RU's EMS. The SEIA and SEMP together assist in the identification of aspects and the development of procedures and operational controls normally undertaken as part of the planning phase. Figure 4 depicts the current EMS in place at RU. Key impacts and mitigation measures identified in the SEIA and SEMP can be incorporated into this system, to accelerate the formulation of EMS requirements from the planning stage into the implementation phase.

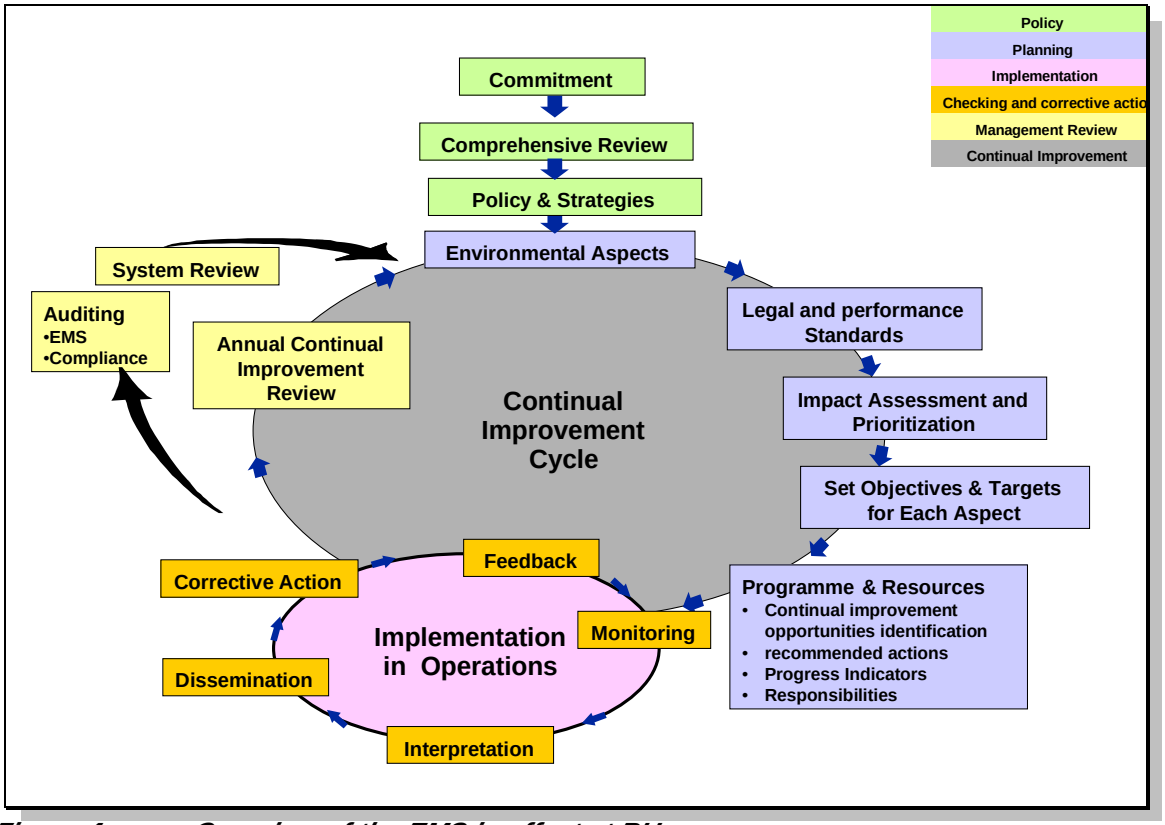

Figure 4: Overview of the EMS in effect at RU

3.1.1 RU'S HSE POLICY

The RU HSE Policy is the overarching and guiding document that informs the manner in which the company conducts its business activities and manages impacts on the environment, the health and safety of its employees and on the public at large. RU's HSE Policy is attached here as Appendix B.

3.1.2 KEY STAGES IN THE EMS

The information contained in the SEIA and SEMP will assist in the operational review process, as they forego the need to undertake the initial stages of the EMS; namely, the identification of environmental aspects and impacts and the prioritisation thereof, where high priority aspects can be identified as those assessed as having a medium or high significance. The mitigation measures and recommendations proposed in the SEIA and the various specialist reports, which are carried through into the SEMP, can be used to inform the development of objectives and targets as well as offer direction in the formulation of the Environmental Management Programmes (EMP) and Operational Controls.

An EMP is the all-important product of the EMS system and is vital in ensuring that the management strategies are implemented and that the effectiveness of such strategies is monitored. For each priority environmental aspect, a series of mitigation actions and an implementation programme are identified by the Environmental Coordinator, in certain cases with the assistance of the line manager, OH&E Management specialists or specialist outside consultants. Progress and shortcomings in the implementation of the various EMPs are reported on by the Environmental Coordinator during monthly HSE meetings.

3.1.3 COMPETENCE, TRAINING AND AWARENESS

All employees and contract works under RU's employment should posses the necessary knowledge and competence to carry out their delegated tasks in compliance with RU's EMS, especially those appointed to tasks that have the potential to inflict significant environmental damage. Both Environmental Coordinators and the H&E officers should identify training requirements for the various departments and work areas and undertake training of employees and contract workers in the respective areas. A generic HSE Induction Training Course should be delivered to all new employees, which can deal with overarching health, safety and environmental issues on the RU premises. Task-specific training can take place in the various departments and sections on an *ad hoc* basis. Records of all training courses should be kept on the EMS register.

3.1.4 COMMUNICATION AND REPORTING

To ensure that all levels of management are kept abreast of the performance in terms of the EMS, it is recommended that reporting occurs in a frequent and formalised fashion. The existing EMS reporting structure is adequate and should be expanded to incorporate the operational phases of the expansion project. RU should ensure that sufficient capacity exists within the Environmental Management and Health Management sections to ensure that the various roles and responsibilities of the respective sections can be fulfilled.

Figure 5 below represents the reporting lines used to inform the Department Managers and the General Manager of EMS performance and *ad* hoc health, safety and environmental matters.

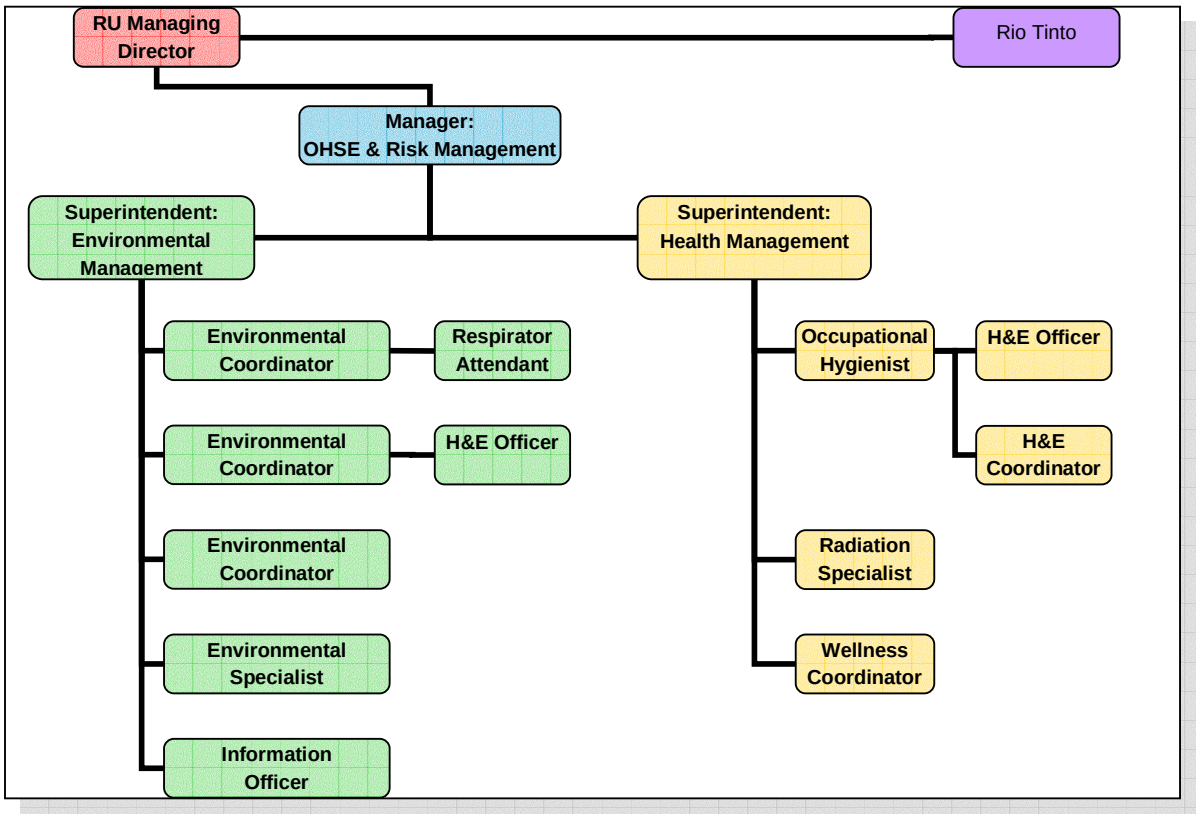

Figure 5: EMS Reporting Structure

The H&E officer is responsible for the collection and recording of data, which is collated into a weekly report and submitted to the relevant Environmental Coordinator. The collected data in the weekly reports is then collated by the Environmental Coordinators into a monthly OH&E report which is interrogated and interpreted by the Environmental Management and Health Management sections and collated into a single OHSE & Risk Management month-end report. This report is distributed to the Superintendent: Environmental Management, who is required to review and verify the content and quality of the environmental reporting. The Superintendent: Environmental Management, when satisfied, then approves the report and distributes it to all the Departmental Managers. The Manager: OHSE & Risk Management is responsible for generating an annual environmental report which is a key informant in the annual review of the company's environmental policies and strategies.

The Manager: OHSE & Risk Management is responsible for compiling data on the environmental performance of RU for the corporate report, which is reviewed by the Managing Director before being forwarded to Rio Tinto. The Manager: OHSE & Risk Management is also responsible for facilitating communication between the various levels and functions of the RU organisation in response to customer, investor, stakeholder and authority requirements. The Environmental Management section is responsible for all ongoing formal and informal

communications with the various regulatory agencies regarding environmental matters and RU operations.

Effective communication and reporting on environmental monitoring data and performance is key to the effective management of environmental aspects of concern and central to the EMS objective of continual improvement.

All new reporting resulting from the expansion projects shall be subject to the document control procedures in effect at RU. The document control procedures must be reviewed to ensure that provision is made for the incorporation of the expansion projects into the EMS. All new EMS operational procedures, environmental data, audit reports and Standard Operating Procedures resulting from the expansion projects must be effectively captured, distributed and controlled in terms of the EMS by the Environmental Management Section.

3.1.5 OPERATIONAL CONTROLS

Operational controls are essential for the management of specific activities that may impact on the environment. The Environmental Management section is responsible for the generation of procedural documents for specific operations and activities where environmental management and mitigation measures are a priority. The Environmental Management section is responsible for monitoring performance against the operational procedures and reporting on non-conformances during the monthly OHSE meetings. Departmental Managers are responsible for the rectification of any such non-conformances and the implementation of any corrective actions defined by the Environmental Coordinator. Contractors are required to abide by RU's health, safety and environmental operational controls and procedures as well as the rectification of any non-conformances and implementation of any corrective actions deemed necessary by the Environmental Management section.

3.1.6 ORGANISATIONAL FRAMEWORK

The various appointments and their associated roles and responsibilities identified as being central to the adoption and implementation of this SEMP are discussed under the respective heading to follow and are derived from RU's existing EMS.

3.1.6.1 MANAGING DIRECTOR

The Managing Director is accountable to the Board for all environmental matters and is the custodian of the HSE Policy.

3.1.6.2 GENERAL MANAGERS

General Managers are responsible for ensuring that the HSE Policy is implemented and are responsible to the Managing Director for ensuring that the necessary reporting procedures and structures are in place and that the annual environmental targets are met.

3.1.6.3 MANAGER: OHS&E AND RISK MANAGEMENT

The OHS&E and Risk Manager is the custodian of the EMS and is responsible for the implementation of the strategic aspects of the EMS. The strategic portion of the EMS determines the overall direction, priority, time frame and resources allocated to Environmental

Management at RU. The OHS&E and Risk Manager reports directly to the General Manager: Operations.

The Manager: OHS&E and Risk Management is responsible for establishing procedures for internal communication on environmental issues between the various levels and functions within the organisation. The Manager: OHS&E and Risk Management is also responsible for the procedures for external communications on environmental issues whereby customer/investor/stakeholder requirements, changes in legislation, changes in business objectives etc. are recognised, internalised and transformed into changes in the operations. The Manager: OHS&E and Risk Management is thus responsible for ensuring that the current interface between RU, its stakeholders, shareholders, interested and affected parties and the authorities, incorporates environmental issues and that any issues identified are communicated to the organisation.

The implementation of the operational EMS in each department is the responsibility of the individual departmental manager. They do, however, work according to the guidelines (environmental programme) maintained by the Manager: OHS&E and Risk Management.

3.1.6.4 DEPARTMENTAL MANAGER

The Departmental Manager for each department is responsible for the implementation of the EMS within the department (allocation of resources in the form of training and awareness, finance and operational control e.g., corrective actions, continual improvement, etc.).

3.1.6.5 SUPERINTENDENT: ENVIRONMENTAL MANAGEMENT

The Superintendent: Environmental Management is the appointed management representative of the EMS at RU.

The Superintendent: Environmental Management is responsible for the overall implementation of the EMS at RU and it is this person's responsibility to coordinate implementation efforts throughout all departments. The Superintendent: Environmental Management liaises closely with the departmental managers, superintendents and the Environmental Coordinators in order to ensure that the programme is correctly managed and maintained. The Superintendent: Health Management facilitates and co-ordinates specialist environmental projects, should they be required.

The Superintendent: Environmental Management is also responsible for reporting on the performance of the EMS to top management for review.

3.1.6.6 LINE SUPERINTENDENT

The Line Superintendent is responsible for all environmental aspects as a line function and is tasked with ensuring that the objectives and targets as stipulated for each environmental aspect in his/her area are met. The Line Superintendent should therefore ensure that all target dates stipulated in an Environmental Management Programme are met.

3.1.6.7 ENVIRONMENTAL COORDINATOR

The Environmental Coordinator assists the Departmental Manager and Superintendents with the implementation of the EMS in their respective work areas. The Environmental Coordinator facilitates:

Internal communication on environmental issues on a departmental level between the various levels and functions within the department;

Collation and interpretation of monitoring results based on the objectives and targets identified for each environmental aspect;

Setting up and the updating of Environmental Management programmes (EMPs); through the annual EMS reviews; and

Identification of training requirements.

The Environmental Coordinator ensures that the operational EMS is aligned with the Environmental Management Programme for RU and fulfils a facilitation/communications and monitoring function.

3.1.6.8 H&E OFFICER

The H&E Officer is responsible for the monitoring of those aspects within the department that are stipulated in the monitoring programme.

3.2 MANAGEMENT OF SOCIO-ECONOMIC IMPACTS

RU produces a Community Plan every three years, consistent with Rio Tinto's community standards. This is integrated into RU's mine and operational plans and social issues are addressed in this way. The RU expansion project will result in the need for a substantial increase in employment. This workforce increase has the potential to cause significant positive and negative impacts to the social-economic environment on both and local and regional scale. The mitigation and management strategies proposed here are largely derived from the specialist study undertaken by Marie Hoadley, titled *Socio-economic Component of the Social and Environmental Assessment Report for the Rössing Uranium Mine Expansion Project*.

3.2.1 MANAGEMENT OF THE ECONOMIC SUSTAINABILITY OF ARANDIS

The town of Arandis is still largely dependant on the economic support of RU, with one in three households directly supported by mine employees and more than 50% of the economic input into the town being derived from RU. This dependency makes the town of Arandis extremely vulnerable to changes in the socio-economic environment and ultimately mine closure. Arandis has not been successful in diversifying its economy and broadening its sources of income, and an intensification of the economic dependency of Arandis on RU is thus not desirable.

The following recommended management strategies are proposed to minimise negative and maximise positive socio-economic impacts of the RU expansion project on the sustainability of the town of Arandis:

RU should actively discourage and gradually reduce Arandis' dependency on RU's economic inputs. To achieve this, RU must phase out property ownership and rentals in Arandis and not acquire any additional property in the town. Other towns and communities in the Erongo Region should benefit equally from RU's Corporate Social Investment and Arandis should no longer be prioritised;

RU's Corporate Social Investment in Arandis should be aimed at achieving a satisfactory infrastructure condition to ensure effective service delivery;

RU should continue its support of local service providers in Arandis through its local procurement policy and encourage and assist with their growth in capacity and diversification. RU should also support initiatives by other development agents to assist in the diversification of the local economy and decrease the dependence on the mineral sector;

All new developments in Arandis should have sustainability before and after mine closure as a key objective;

A monitoring programme with key performance indicators for monitoring the progress of Arandis toward sustainability should be developed;

The Arandis community should be notified of the possibility of downscaling or closure at the earliest opportunity;

Post-closure retention of skills in Arandis should be promoted by aligning training and skills development with local economic development;

Achieving sustainability of Arandis will require concerted effort from all stakeholders and RU should maintain open and regular communications with these, and develop a commonality in vision and actions in the pursuit of sustainability for Arandis;

When the Rössing Foundation receives significant support from other development agencies, it is recommended that the foundation's name be changed to avoid the close association in the public mind between RU and Arandis; and

RU should investigate opportunities and mechanisms to facilitate the participation of women in the local economy.

3.2.2 PERMANENT EMPLOYMENT CREATION

RU should maximise permanent employment by ensuring that not only are all positions filled but that employees continue to develop skills that will increase their employability after mine closure. The following management strategies are recommended to minimise negative and maximise positive impacts in this regard:

RU should continue with its ongoing workforce training and should introduce training courses in alternative economic sectors and self employment. Training in alternative economic sectors should be aligned with the other major economic sectors in the Erongo Region;

RU's recruitment policy should ensure equitable employment opportunities for marginalised groups. All RU contractors should be required to adopt RU's recruitment policy. Civil contractors commissioned during the construction phase should also be required to implement the RU recruitment strategy and RU should, upon completion of the construction phase, recruit suitable personnel if required from the contractor's workforce, to continue their employment in

the operational phase of the expansion projects. RU should therefore assist the civil contractor in the suitable training and development of the construction workforce for later absorption into the RU workforce;

RU should expand its skills and capacity development programme to address the disadvantages of low skills and experience in the labour pool. Such a programme should be extended to the contractors' workforce as well; and

RU should supply start-up funding to small and medium enterprises that could render services to the company. Priority should be given to companies that would contribute to economic diversification.

3.2.3 PUBLIC HEALTH AND SAFETY

RU should continue to develop and improve on its stringent Occupational Health, Safety and Environment programmes and policies relating to management and monitoring of dust, noise, radiation and water, vehicle maintenance, driver training and emergency response plans. RU should fully investigate any incidents involving the public and use the findings to inform policy and procedure.

3.2.4 EMPLOYEE HOUSING AND ACCOMMODATION

The following management strategies relating to the accommodation of additional workforce are recommended:

RU should open negotiations with local authorities in Swakopmund and Walvis Bay to establish what options are available to the company for accommodating the workforce in the two towns;

The cumulative impact of RU and other mining companies competing to accommodate their workforces in these towns could result in the destabilisation of the property market in leading to property price inflations. RU should approach the matter collaboratively, by negotiating with the authorities and other mining houses to develop appropriate mitigation measures to address this issue;

Housing projects should be designed to maximise the possibility for post closure use, i.e. for occupation by groups other than mine employees;

RU should use the following avenues for the purchase of houses/erven, in order of preference: local authorities, property developers and estate agents; and

RU should make public its housing policy as soon as possible so as to manage expectations and curtail developments which are being undertaken in anticipation of housing the RU workforce.

3.2.5 MIGRANT WORK SEEKERS

With the prospect of employment associated with RU's expansion projects, migration of work seekers into the area is expected. Controlling such migration is exceedingly difficult. However, the following management strategies are recommended in response to this potential impact:

RU should contribute to the prevention of backyard dwelling, informal housing and the attendant health and social problems by promoting home ownership and ensuring, as far as feasible, that

the workforce is accommodated in formal housing. RU owed or leased premises should be monitored to ensure that no backyard dwelling or illegal sub-letting of the premises is occurring;

RU should support the Arandis Town Coucil in its efforts to upgrade the state of the health services so that these can cope with the inward migration of unemployed work seekers;

RU should extend its workforce health programmes to all the company's communities of interest. The health programme should be specifically extended to include tuberculosis; and

Programmes addressing social ills, such as alcohol abuse and violence against women and children, should be developed and extended to all the company's communities of interest through the Peer Educator Programme.

3.2.6 SCHOOLING IN THE SURROUNDING AREAS

The influx of new workers into the area will exert additional pressure on the schools in the region. The following management strategy is recommended to mitigate the incapacitation of the local schools:

RU should enter into negotiations with the Ministry of Education, through the mechanisms provided by the Chamber of Mines of Namibia, for the building of additional schools in areas where the workforce will reside.

3.3 OPERATIONAL PHASE SEMP FOR THE ACID PLANT

This section of the SEMP covers activities related to the operation of the Acid Plant, commencing with the loading of sulphur onto the purpose built railway wagons at the Walvis Bay storage facility, RU's management of the transportation to and offloading of sulphur at the storage facility located on the mine and the management of the Acid Plant operations and associated activities, terminating with the transport via a pipeline of sulphuric acid to the two existing storage tanks. Note that the area surrounding the two sulphuric acid storage tanks is presently not bunded and satisfactory environmental controls must be installed here. The transport, storage and handling of elemental sulphur within the port of Walvis Bay is not addressed by the present SEMP, since these did not form part of the scope of the SEIA process However, another SEIA process will be undertaken as required to address this aspect.

3.3.1 RISKS ASSOCIATED WITH SULPHUR AND SULPHUR DERIVATIVES

The transportation, handling, storage and processing of sulphur and sulphur derivatives present numerous health, safety and environmental risks. All design aspects of the tasks, the plant and the equipment must ensure that these risks are effectively mitigated. The predominant health, safety and environmental risks associated with sulphur are described as follows:

3.3.1.1 SULPHUR FIRES AND SULPHUR DUST EXPLOSIONS

Apart from the risks associated with the outbreak and spread of fire, burning sulphur emits large quantities of SO_2 gas, a highly toxic respiratory irritant that can be lethal at sufficient quantities. SO_2 is also highly corrosive and will accumulate in the headspace of sulphur storage vessels where it can form sulphurous acid when coming into contact with water. Whilst sulphur fires are not violent they can achieve incredible combustion temperatures that can easily damage the mechanical integrity of the plant and storage vessels in which the fire is contained.

Of greater concern is the potential for a sulphur dust explosion whereby excessive sulphur fines accumulate because of poor quality prills and their excessive or rough handling, and become mobilised into the air around handling operations or in storage vessels. With an electrical or static discharge or any other form of ignition, a violent explosion can result. Care must be taken to ensure that a high quality, low-dust elemental sulphur product is procured. Low speed conveyor belts and appropriate transfer point design and operation, reducing product fall heights and generally cautious handling of the sulphur will further minimise the build up and mobilisation of sulphur dust.

All areas where sulphur will be handled are to be built with the necessary fire prevention mechanisms and systems in place and fitted with adequate fire-fighting equipment that can effectively extinguish a worst-case scenario fire that may occur there. Other combustible installations, materials and/or sources of ignition must be kept well clear of areas where sulphur handling or storage operations are occurring. Sulphur handling and storage areas, plant and equipment must be purpose-designed and operated in a manner that reduces the build up and potential ignition of sulphur dust, including the appropriate use of grounding or earthing systems, and the use of appropriate corrosive resistant, non-sparking or non-static conducting construction materials.

3.3.1.2 CORROSION

A reducing, wet sulphur-rich atmosphere can lead to severe corrosion of carbon steel and even stainless steel components typically used in sulphur handling systems. This can cause damage to storage vessels and general plant and equipment used in the proximity, which apart from the irritation and costs associated with deteriorating of equipment, can lead to a loss of containment and risk of exposure, resulting in any number of potential incidents.

Plant layout, design and construction materials must take into consideration the corrosive effects of sulphur and, where necessary, sulphur handling equipment should be constructed from aluminium which resists erosion and does not form pyrophoric iron sulphide that can initiate fires, explosions and generate SO_2. Elemental sulphur should also be treated with an anti-bacterial solution to prevent biological decomposition and the resulting formation of sulphuric acid. To minimise the build-up of sulphuric acid in storage area as a result of biological decomposition, all storage areas should work on a first-in-first-out system, ensuring that no “dead” zones occur within the storage facility.

3.3.1.3 TOXIC H_2S AND SO_2 GAS

The concentrations of H_2S may vary considerably from source to source and from time to time in the elemental sulphur received, due to the variance in the degassing process applied during primary processing. Apart from the odour nuisance, hydrogen sulphide gas is highly toxic, even at low concentrations, is flammable and even explosive under the right conditions.

The potential for the build up of H_2S and SO_2 in smaller storage holds means that such storage facilities must be designed to prevent the build-up of these toxic gasses and possible worker exposure.

To minimise the risk associated with the presence of these sulphur derived gasses, RU should ensure that a high quality, effectively degassed sulphur product is procured and that limits are set with regard to the moisture content and H_2S content of the sulphur received. All sulphur handling and storage areas throughout the supply chain should be equipped with the appropriate personal protective and emergency equipment, to ensure that employees are adequately safeguarded from the potential health effects of these deleterious gasses. All personnel working within the sulphur supply chain should be specifically trained and regularly assessed for competence with regard to safety, leaks, spills and emergency procedures. All sulphur handling facilities or areas should have adequate access control measures to prevent untrained, unsupervised persons gaining access to such facilities and exposing themselves, other employees or the facilities themselves to unnecessary risks.

All sulphur handling facilities should also be constructed with mechanisms to limit spills and leaks, including sulphuric acid transmission pipes, potentially resulting in the contamination of the environment. All facilities should be equipped with an impervious surface to prevent soil contamination, as well as a bund system and associated collection sump and contaminated water treatment systems should be utilised around facilities to prevent the migration of liquid chemicals and or contaminated storm water into the surrounding environment. All sulphur stockpiles and handling areas should be adequately buffered from the wind to ensure that it is not blown into the surroundings.

3.3.2 OPERATIONAL CONTROLS

The following environmental strategies and mitigation measures are proposed for the Acid Plant and associated operations. In reiteration, it is recommended that the following management strategies be carried forward into RU's EMS control procedures.

3.3.2.1 HEALTH AND SAFETY CONSIDERATIONS

Prior to the commencement of operations, RU should ensure that all health and safety procedures relating to the handing and storage of sulphur and the operation of the various plant and equipment have been developed and fully integrated into the existing health and safety management framework. A comprehensive health and safety risk assessment of all new operations should be carried out prior to commencement of operations and protocols to minimise the identified risks should be developed and implemented.

i) Worker competence, training and awareness

All new and existing staff that will work in the sulphur handling and storage areas as well as the Acid Plant itself should undergo an intensive induction course in health, safety and environment. All workers should undergo a medical examination to ensure that they are physically fit and mentally capable and are assessed as being competent to undertake the tasks to which they have been assigned.

Each staff member should also receive task-specific instruction and will be issued with a booklet that includes a terms of reference, which clearly outlines their duties and responsibilities as well

as other pertinent health, safety, environmental and general protocols, as well as any EMS control procedures that have direct bearing on the area of operation.

Teams working in these areas should also receive *ad hoc* health, safety and environment training in the form of toolbox talks to be held at least once a week. Topics shall be based on upcoming operations or addressing areas of underperformance.

All facilities should also to be fitted with the required health and safety warning and information signage that is required for such installations.

ii) Emergency and evacuation procedures

Induction training should include detailed coverage of the emergency response and evacuation procedures. An evacuation plan should be developed and presented to the staff at each work station that will clearly identify the protocols to be followed in the event of an emergency, the location and functioning of the emergency escape routes and doors, and the emergency assembly areas.

All emergency equipment and personal protective equipment should be pointed out and staff should be trained in their use. Induction training should include basic first-aid and fire-fighting training. Each work station should have a staff member that is trained in first-aid and another as a fire officer.

Environmental risks and potential impacts associated with the loading and railing of elemental sulphur from the Walvis Bay storage facility to the mine are related to accidental spills, fire on the wagons and sulphur dust explosions. RU in association with TransNamib should develop an emergency response plan to attend to spillages and fire at loading areas as well as minor and major spillages along the railway line route. Adequate resources to respond to, contain and recover such spillages and fires should be available and should be able to be readily mobilised.

The train should be fitted with the necessary communications systems allowing the operator to notify TransNamib, RU and the relevant governmental emergency services in the event of a rail accident or product spillage. Procedures to isolate the incident area and rapidly contain and/or neutralise any spillages should be in place and sanctioned by the relevant authorities. All railway wagons, engines, railroad crossings and the railway tracks should receive regular inspections and maintenance where required. Such inspections and any resultant repair work should be appropriately documented. All statutory requirements and best practice should be observed.

iii) Medical and first-aid provisions

First aid actions should be co-ordinated with the mine's Medical Centre which is in close proximity to the proposed acid plant site.

iv) Work environment

Requirements for suitable work environments (ablutions, lighting etc) are in place at RU and new installations will be integrated with these.

3.3.2.2 WASTE MANAGEMENT

RU's existing waste management systems should be expanded to cater for the expanded operations.

i) Domestic waste

Requirements for proper domestic waste management are in place at RU and new installations will be integrated with these.

ii) Hazardous waste

Spent vanadium pentoxide catalyst used in the sulphuric acid production process would be returned to the supplier and filter cake from the sulphur filter would be disposed of in the hazardous waste disposal area on the tailings dam.

iii) Sewage

Sewage would be treated at the existing sewage treatment plant and the treated effluent should be reused in mine processes.

iv) Scrap metal

Scrap metal arising from repair and maintenance work would be collected by the on-site waste management contractor for sorting and recycling.

v) Recycling hydrocarbons

RU's existing ISO procedure should apply to the reuse and disposal of hydrocarbons from the acid plant and associated areas. Suitable, leak-proof drums for the disposal of oils and greases should be positioned at areas where such materials are likely to be generated. Drums should be marked according to the type of hydrocarbon being deposited, namely, synthetic oil, mineral oil or grease. RU has a hydrocarbon product supply contractor who will deal with the management of such materials.

3.3.2.3 DUST SUPPRESSION

The Acid Plant and acid storage areas should be designed with concrete bunding and flooring and thus dust from these areas is not expected to be problematic. Areas where elemental sulphur is stored should have adequate protection measures against exposure of the stockpiles to the effects of the wind, so as to prevent the mobilisation of sulphur dust and its possible accumulation that could result in sulphur dust explosions. An open storage area for sulphur is planned and the risk of sulphur dust explosions is thus minimal.

3.3.2.4 NOISE MANAGEMENT

The operation of the Acid Plant, particularly the blower and turbine generation units, will contribute to the total mine noise level. ,

The following recommendations are proposed to manage noise levels at the Acid Plant and associated facilities:

All plant and equipment should receive regular maintenance and should be operated in accordance with their design specifications. All mechanically powered equipment should be fitted with appropriate silencing devices which are to be inspected and repaired when necessary;

Equipment noise audits should be carried out on all new plant and equipment upon delivery to site. These records should be used as a reference to monitor the potential deterioration of equipment noise levels during operation;

Environmental noise monitoring should be carried out regularly to detect deviations from predicted noise levels and enable corrective actions to be implemented where necessary;

All potential excessive sources of noise from plant or operational areas should be considered in the layout and design of the facilities. Where appropriate, such areas or equipment should be designed and/or fitted with suitable noise dampening devices or enclosures; and

Where noise levels pose a health and safety risk, demarcate noise zones will be instituted and affected staff should wear the appropriate hearing protection equipment.

3.3.2.5 VISUAL IMPACT MANAGEMENT

The only operational phase visual impact associated with the Acid Plant that requires management pertains to the use of lighting. Lighting of the facility should be kept to the efficient minimum. Aircraft warning lights on the Acid Plant stack are a prescribed requirement. Lighting in and around the facility should adopt the principle of downward facing, task-specific lighting with limited spillage of light into the surrounding areas. Flood lighting of extensive outdoor areas and up-lighting of vertical structures or topographical forms shall not be permitted.

Sound housekeeping practices in material lay-down areas and stockpiles, litter control and general facility maintenance should be undertaken to ensure that the visual appearance of the facility does not deteriorate and become visually offensive with the passing of time.

3.3.2.6 WATER MANAGEMENT

i) Storm water controls

All facilities where sulphur and its derivatives are handled should be designed with an appropriate storm water control system that would ensure that such facilities are not susceptible to flooding, even during episodic flooding events. Suitably sized cut-off drains and berms, along with the concrete containment bunding and flooring should ensure that surface flows are prevented from entering the facilities. Storm water collecting within the containment bunding of any given facility that may have been contaminated with sulphur or sulphur derivatives, hydrocarbons and other potentially hazardous chemicals should be collected in an appropriately designed drainage network and collection sump. It should then be pumped to the mine spillage collection system at the processing plant for treatment.

ii) Process water

It is intended that the Acid Plant makes use of water based cooling and will require approximately 2 500 m^3 of fresh water per day. It is envisaged that the increased regional

supply of water in bulk from NamWater's desalination plant will become available before the Acid Plant becomes operational and an adequate water supply will thus be available for this purpose.

iii) Industrial effluent

It is probable that acids spills and leaks will occur occasionally, and thus the Acid Plant facility should be fitted with purpose-designed, acid resistant concrete floors and a containment bund draining to an acid collection sump. Effluent from the sump should be pumped to the mine spillage collection system at the processing plant for treatment.

iv) Water conservation

RU should continue to monitor water usage and will identify, assess and implement feasible measures to reduce, reuse and recycle water as part of the water management strategy. The management of water related to the Acid Plant operation should be integrated with RU's existing water balance system.

3.3.2.7 ENERGY USE AND GREENHOUSE GAS EMISSIONS

The Acid Plant would require an electricity supply of 4.5 MW for its operation. However, the production of sulphuric acid is an exothermic process and RU will utilise the excess heat to generate an estimated 7 MW (net) of electricity and as such the overall energy balance of the plant is positive. The energy consumption of the Acid Plant process is designed to operate at an optimum and therefore there are few additional mitigation measures in this regard.

3.4 OPERATIONAL PHASE SEMP FOR THE ORE SORTER

The scope of this SEMP will cover the following components associated with the ore sorting operation; four pre-screening units, various conveyor systems between the plant, the two Radiometric Ore Sorter clusters and the disposal of reject rock stream. The processing stages up- and downstream of the ore sorting plant are deemed to be operated at an acceptable standard with all mitigations and environmental procedures being observed and that the implementation of the ore sorting component will have little impact on the operation of these existing process components.

3.4.1 OPERATIONAL CONTROLS

3.4.1.1 HEALTH AND SAFETY CONSIDERATIONS

Prior to the commencement of operations, RU should ensure that all health and safety procedures relating to the operation of the Radiometric Ore Sorter plant and its associated equipment have been developed and fully integrated into the existing health and safety management framework. The Pilot Plant should serve as a good informant for the development of procedures and health and safety mechanisms for implementation at the proposed production Radiometric Ore Sort plant. A comprehensive health and safety risk assessment of all new operations should be carried out prior to commencement of operations and protocols to minimise the identified risks should be developed and implemented.

i) Worker competence, training and awareness

All new and existing staff that will work at the Radiometric Ore Sorter plant should undergo intensive induction training in health, safety and environment. All workers should undergo a medical examination to ensure that they are physically fit and mentally capable and are assessed as being competent to undertake the tasks to which they have been assigned.

Each staff member should also receive task-specific instruction and should be issued with a booklet that includes a terms of reference, which clearly outlines their duties and responsibilities as well as other pertinent health, safety, environmental and emergency procedures, and any EMS control procedures that have a direct bearing on their area of operation.

Teams working in these areas should also receive *ad hoc* health, safety and environment training in the form of toolbox talks to be held at least once a week. Topics should be based on upcoming operations or addressing areas of underperformance.

All facilities should also to be fitted with appropriate health and safety warning and information signage that is required for such installations.

ii) Security and access control

The Ore Sorting Plant should have adequate access control and security measures in place to ensure only authorised, trained or supervised individuals gain access to the facility.

iii) Emergency and evacuation procedures

RU's existing procedures in this regard will be extended to incorporate the new ore sorter facilities. Induction training should include detailed coverage of emergency response and evacuation procedures. An evacuation plan should be developed and presented to the staff at the Ore Sorter Plant that should clearly identify the protocols to be followed in the event of an emergency, the location and workings of the emergency escape routes and the emergency assembly areas.

iv) Medical and first-aid provisions

RU's existing procedures in this regard will be extended to incorporate the new ore sorter facilities. The Ore Sorter Plant should be fitted with a first-aid station and should have a trained first-aider on duty during each shift. The first-aid station should be equipped with adequate resources required to treat and stabilise a patient ahead of transportation to the mine Medical Centre.

v) Work environment

All workers should have access to a sufficient quantity of safe potable water, and ablution and washing facilities within a reasonable distance of their working area. All working areas should have sufficient ventilation and lighting to ensure that workers can undertake their task in safety. Personal protective equipment appropriate for the minimisation of occupational hazards of the task should be provided by RU and the use thereof by the employee should be mandatory. All employees working outdoors and within the vicinity of the Ore Sorting Plant should wear

suitable dust masks to limit the inhalation of respirable dust as well as hearing protection to avoid exposure to high noise levels arising from the plant operation. All equipment, plant and facilities should be fitted with appropriate safety demarcations, warning and information signage to ensure that an employee can avoid foreseeable risks and navigate to safety in the event of an emergency.

3.4.1.2 WASTE MANAGEMENT

RU's existing waste management systems, including environmental monitoring should be expanded to cater for the expanded operations.

i) Waste rock

Reject ore from the ore sorter should be transported to existing waste rock dump sites. The waste rock dump site should be equipped with the necessary seepage control systems to recover potential leachate from the waste rock dumps and prevent surface and ground water pollution.

ii) Domestic waste

All facilities and works areas should be allocated sufficient rubbish bins for the receipt of domestic waste and litter. Rubbish bins should be collected at regular intervals and disposed of at the RU landfill site on the mine.

iii) Hazardous waste

Any hazardous waste generated by the ore sorter would be disposed of in the hazardous waste disposal area on the tailings dam.

iv) Sewage

Sewage would be treated at the existing sewage treatment plant and the treated effluent should be reused in mine processes.

v) Scrap metal

Scrap metal arising from repair and maintenance work would be collected by the on-site waste management contractor for sorting and recycling.

vi) Recycling hydrocarbons

RU's existing ISO procedure should apply to the reuse and disposal of hydrocarbons from the acid plant and associated areas. Suitable, leak-proof drums for the disposal of oils and greases should be positioned at areas where such materials are likely to be generated. Drums should be marked according to the type of hydrocarbon being deposited, namely, synthetic oil, mineral oil or grease. RU has a hydrocarbon product supply contractor who will deal with the management of such materials.

3.4.1.3 DUST SUPPRESSION

Although the radiological assessment of proposed RU expansion projects indicates that public radiation doses will not exceed the 300 µSv/a dose constraint, the Ore Sorter plant and associated disposal of waste rock would contribute to the emissions of radioactive dust and

radon. Nevertheless, a precautionary approach, based on the principle of "As Low As Reasonably Achievable" (ALARA) as promoted by the International Atomic Energy Association, should be adopted in the management of radiological issues related to the ore sorting and associated operations. Of prime importance from a radiological perspective is the control of the silica in the dust.

The following management strategies are recommended for implementation for the prevention and suppression of fugitive dust emissions from the transport of reject rock from the proposed ore sorting:

All access and haul roads should be planned and designed to minimise the total road surface area;

Speed limits on all gravel roads should be limited to 15 km/h and speed limits should be enforced through regular monitoring. RU should also ensure that unnecessary traffic is minimised;

The build up of fines on road surfaces should be prevented or addressed. Dump trucks entering or leaving the ore sorter premises should not be overloaded, minimising potential spillages and the accelerated build up of fines on the road surfaces. Road surface should be maintained in a good state of repair and where necessary, the wearing course should be replaced and sufficiently compacted;

All high traffic roads should be wetted regularly. Chemical dust suppressants (Dust-a-side®, Dustex® or similar product) should be added to increase the efficacy of water and assist in binding the dust. Hard surfacing or stabilising of problem areas or very high traffic zones should be considered. Barricades maybe erected along problem areas to reduce cross winds and shade road surfaces to reduce water evaporation;

Fall heights from earthmoving equipment and transfer points on conveyors should be kept to the minimum;

All transfer points on the conveyor systems, as well as the ore sorter air blast chambers should be equipped with suitable dust extraction or dust suppression systems. All filter bags at the various bag-houses at the ore sorter should receive regular maintenance in order to reduce dust emissions form the facility; and

Automated or manual clearing of accumulated fines around conveyor transfer points, loading areas and around the ore sorter's air blast chambers or other areas where spillages may occur should be undertaken regularly to prevent a build-up of fines that may be susceptible to wind dispersion.

3.4.1.4 NOISE AND VIBRATION MANAGEMENT

The ore sorting plant is expected to operate at a noise level of between 81.0 dB(A) and 88.5 dB(A) and is thus comparable to the noise generated by surface mining operations in the proposed SK4 open pit area. Due to the ore sorter not being exposed to public receptors, it is unlikely that this noise pollution will pose a nuisance value. The impact of high noise levels relates to the potential health and safety implications for the workforce.

The following recommendations are proposed to manage and minimise noise levels at the ore sorted plant and associated facilities:

All plant and equipment should receive regular maintenance and should be operated in accordance with their design specifications. All mechanically powered equipment should be fitted with appropriate silencing devices which are to be inspected and repaired when necessary;

Equipment noise audits should be carried out on all new plant and equipment upon delivery to site. These records should be used as a reference to monitor the potential deterioration of equipment noise levels during operation;

Environmental noise monitoring should be carried out regularly to detect deviations from predicted noise levels and enable corrective actions to be implemented where necessary;

All plant staff should be instructed in the need to minimise operational noise as part of the induction training course;

All potentially excessive sources of noise from the plant or operational areas should be considered in the layout and design of the facilities. Where appropriate, such areas or equipment should be designed and/or fitted with suitable noise dampening devices or enclosures; and

Where noise levels pose a health and safety risk, demarcate noise zones will be instituted and affected staff should wear the appropriate hearing protection equipment.

3.4.1.5 VISUAL IMPACT MANAGEMENT

Visual impact mitigations are primarily design considerations and are thus mostly dealt with under the construction phase SEMP. The operational phase visual impact associated with the ore sorter relates to the effective minimisation of dust by day and illumination of the facility at night. Lighting of the facility should be kept to the efficient minimum. Lighting in and around the facility should adopt the principle of being downward facing and task-specific, with limited spillage into the surrounding areas. Flood lighting of extensive outdoor areas and up-lighting of vertical structures or topographical forms should not be permitted.

Sound housekeeping practices in material lay-down areas and stockpiles, litter control and general facility maintenance should be undertaken to ensure that the visual appearance of the facility does not deteriorate and become visually offensive with the passing of time.

3.4.1.6 WATER MANAGEMENT

i) Storm water controls

The ore sorting plant should be designed with an appropriate storm water control system that will ensure that the facility is not susceptible to flooding, even during episodic flooding events. Suitably sized cut-off drains and berms should ensure that surface flows are prevented from ingression into the facility. Storm water collecting within the facility that may have been contaminated with radioactive fines, hydrocarbons and other potentially hazardous chemicals, should be collected in an appropriately designed drainage network and collection sump. From

here, it can should be pumped to the primary crusher spillage collection system for treatment and reuse.

ii) Process water

The ore sorter is expected to use 72 m^3 of water for dust suppression per 24 hour cycle. The majority of the dust suppression water adheres to the ore rock and thus there is limited runoff. However, a collection sump and associated drainage network is still required for the collection of wash-down water.

iii) Industrial effluent

The ore sorter is not expected to generate any point source effluent discharges. However, the accumulation of runoff from the various dust suppression spraying points which may have minor radioactive dust and hydrocarbon contamination, should be directed to a collection sump via the drainage network from where it should be pumped to the primary crusher spillage collection system for treatment and reuse. .

iv) Leachates from waste rock dump

Reject ore waste rock dumps will be comparable in composition to the existing waste rock dumps around the open pit, where it has been determined that leachates containing sulphate, nitrate and uranium can form after intense rainfall events of 20 mm or more. Due to this potential leachate formation, waste rock dumps should preferably be situated where ground contamination has or is already occurring and where seepage control systems are already in operation or can be upgraded to meet the additional capacity requirement.

v) Water conservation

RU should continue to monitor water usage and will identify, assess and implement feasible measures to reduce, reuse and recycle water as part of the water management strategy. All site staff should be made aware of the need to use water conservatively and are to report any wastage or leakages to their supervisors immediately. All water pipes, faucets and water dependant processes should be monitored for water use efficiency. Repairs, reconfigurations or recalibration should take place promptly to ensure optimum water efficiency is realised. Treated effluent, as opposed to fresh water, can be used for the purposes of ore sorter plant wash-down.

3.4.1.7 ENERGY USAGE AND GREENHOUSE GAS EMISSIONS

The ore sorter plant would require an electricity supply of 4.3 MW for its operation. Two scenarios were investigated for transporting reject rock to the waste rock disposal sites. GHG emissions and energy usage associated with both are fairly similar and would result in a 14% to 15% increase in the former and a 16% to 17% increase in the latter, when compared to 2006, pre-expansion figures. RU should continue to explore, investigate and implement options such as energy efficient motors and natural lighting to reduce GHG emissions and energy usage throughout the operational phase of the project.

3.5 OPERATIONAL PHASE SEMP FOR THE SK4 OPEN PIT

3.5.1 PRE-COMMENCEMENT OPERATIONS AT SK4 OPEN PIT

Prior to the commencement of mining activities in the SK4 area, pioneering work in the form of establishing access roads and ramps would need to be undertaken.

3.5.1.1 SEARCH, RESCUE AND TRANSPLANTING OF PLANTS

With the assistance of a recognised botanist, RU should conduct a search and rescue operation for plants that are of significance in all areas that will be disturbed as part of the expansion operation into the SK4 mining area, including haul roads. The botanist should assist with the identification of other significant species over and above the *Adenia perchuelii* and *Lithops ruschioruml*, and oversee the extraction of the plants and assist in the identification of a suitable area to receive the transplants.

3.5.1.2 MAIN HAUL AND ACCESS ROAD

A single two lane haul and access road between SK4 and the Primary Crusher is to be installed. The primary design criteria for the route of the road should be to ensure that it takes the shortest, flattest alignment, so as to maximise the long term efficiency of the mining operation by minimising the fetch distances and the effort expended by the various transport and earthmoving equipment traversing the route. The road should be fitted with a suitable wearing course, be stabilised or hard surfaced to meet the requirements of the volume and nature of traffic that it will accommodate. Sufficient provision should be made for the control and discharge of storm water arising from the presence of the road in the landscape. The road should be of sufficient width to accommodate two lanes of traffic and it should be fitted with appropriate traffic control and warning signs to regulate the traffic in a safe manner. Traffic management systems such as signage and movement planning should be integrated into the existing system applied for the SJ pit operation.

3.5.1.3 SERVICES

Water supply lines should be installed alongside the main access road, so as to restrict the disturbance brought about by installation and maintenance work to a limited area alongside the road.

3.5.1.4 STORM WATER CONTROLS

Cut-off drains should be instated on the upslope sides of the SK4 open pit area where drainage lines are intersected to protect the open pit against the ingress of storm water, as well as limit such storm water from contamination by in-pit contaminants. Cut-off drains should ensure that water is diverted around or prevented from entering the open pit and is redirected into adjoining drainage lines where it can discharge freely into the natural systems.

3.5.1.5 ACQUIRING PERMITS FOR THE DESTRUCTION OF ARCHAEOLOGICAL SITES

According to a study undertaken by Quaternary Research Services in January 2007 in terms of the National Heritage Act (Act No. 27 of 2004), three archaeological sites were identified and

documented within the greater SK mining area that would be disturbed by mining activities. RU has already acquired the necessary permits for the destruction of these sites, although these sites do not occur within the proposed SK4 mining area. All three sites were assessed as having a low significance and have been documented according to acceptable standards.

3.5.1.6 SINKING WATER MONITORING BOREHOLES

The following recommendations made during the previous assessments of the expansion of mining activities into the SK4 area remain valid. Recommendations for the expansion of the hydrological monitoring system include the following actions:

Drilling of an additional five to ten boreholes;

Taking monthly water level readings from each of the boreholes; and

Quarterly water quality analysis of the new boreholes as well as the existing borehole DG1 at the mouth of Dome Gorge. (The first water quality analysis shall occur before the commencement of mining activities in the area and data will be retained for comparative purposes).

3.5.1.7 SITE CLEARANCE

Once the access/haul road is in place, water supply has been installed and the search and rescue operation is complete, an excavator will prepare a blasting platform. Thereafter, the drill-blast-load-haul operation will commence.

Overburden material won during site clearance can be utilised in the construction of the storm water cut-off drains and berms around the SK4 mining allotment.

3.5.2 OPERATIONAL CONTROLS

To minimise the environmental impacts associated with the mining of the SK4 area, the following measures are recommended. To ensure that these recommendations are effectively instituted and monitored, they should be incorporated into a new set of operational procedures contained in RU's EMS. In line with the ISO objective of continual improvement, the procedures should also be revised and updated regularly to ensure that industry best practise and the best available technologies are being utilised and effectively implemented.

3.5.2.1 WATER

i) Water demand and use

Due to the extremely arid climate in which RU conducts its mining activities and the demand for water in the mining and processing operations, water conservation is at the forefront of the environmental issues at RU. Expansion of the mining operations into SK4 will exert additional pressure on water supplies. These circumstances have enabled RU to develop a comprehensive water management system to effectively manage the quantity and quality of their water resources.

The expansion of mining operations into SK4 and SJ will require an estimated 700-800 m^3/day of water for dust suppression and drilling purposes. RU's current water demand for dust

suppression and drilling purpose is 600-700 m^3/day and thus the proposed expansion of operations will double the water demand. The Khan River can supply a maximum of 500-600 m^3/day, which is pumped from the reservoirs at the toe of Waste 7 rock dump to the Waste 4 pond. The deficit will be made up from the Mine Pond, receiving treated effluent from the existing sewerage plant and recycling dam, which are capable of supplying an additional 400-500 m^3/day and 400 m^3/day respectively, thus satisfying the demand. The reticulation of the required water to locations where water tankers would be filled is presently being designed.

The proposed expansion of mining operations does push the mine's water demand very close to the supply capability and thus all water conservation and recycling initiatives should be identified, implemented and effectively managed to safeguard against possible shortfalls. RU has an action plan for the evaluation, design and implementation of various water management initiatives and have identified several options to offset the additional demand through the reduction in consumption or losses, which could amount to approximately 2 000 m^3/day. Additional fresh water required would be from the increased bulk supply due to be received from NamWater's desalination plant. The priority projects include the following:

Tailings paddy double deposition to reduce evaporation losses;

Replacing hydraulic gland seals on slurry pumps with mechanical seals; and

Supplying recycled water for dust control purposes at the fine crusher and leach tanks.

The dust suppression operations should be carefully managed and continually optimised to ensure that water is used efficiently and that spraying regimes are modified according to climatic conditions and seasonal variances. RU should continue to increase the efficacy of the water used for dust suppression purposes through the use of chemical dust suppressants.

ii) Water quality management

RU's policy is to accept responsibility for the quality of surface and groundwater within the mining grant and for the prevention of mine-induced water quality deterioration in the Khan River, downstream of the mine. RU's water quality management strategy is to maintain suitable ground water quality for the highest beneficial use to which the groundwater resources or occurrences can presently or potentially be put, which is identified as being industrial, ecological and, to a lesser extent, agricultural purposes as a result of the naturally high salinity levels.

Water used for dust suppression spraying will be comprised of various wastewater effluents, potentially containing varying levels of contaminants. It is expected that seepage water arising form dust suppression spraying will have no significant affect on the groundwater quality, since the water mostly evaporates shortly after application. RU should however ensure that dust suppression spraying is optimised and effective, thus minimising the volume of water infiltrating the ground.

Storm water coming into contact with waste rock also presents a potential contamination problem. The SK4 pit should be designed with sufficient storm water controls and retention

areas in place, to ensure that storm water is prevented from coming into contact with such sources of contamination; that water that is potentially contaminated is prevented from being released into the Khan River; and that seepage control and recovery systems in Dome Gorge are adequate in collecting the potentially contaminated seepage before it reaches the Khan River. Downstream monitoring of groundwater quality should continue.

3.5.2.2 DUST AND RADON EMISSIONS

Three sources of fugitive dust emissions associated directly with the expansion of operations into SK4 can be identified, namely; dust from heavily used gravel roads (treated and untreated); dust arising from drilling, blasting, excavation and loading operations within the SK4 pit; and wind blown dust from waste dumps and other material stockpiles.

Fallout dust meters should be established in addition to the existing meters located at the East of the Fine Crushing Plant; at the Processing Plant and at the Arandis residential area to assess the effect of the expansion of the operations in to the SK4 mining area. Dust samples should be collected at monthly intervals and data capture shall be as per RU's ISO procedures.

RU has systems and procedures in place to limit the respirable dust volumes to make sure that the silica content of the dust is maintained to the adopted standard, thus providing adequate protection for employees against radioactive silica dust hazards. Assuming the dust suppression program utilised elsewhere on the mine is effectively carried over to operations in the SK4 open pit, no dust issues can be expected. The SK4 ore body is a higher grade than the currently mined areas and as such a new personal and area radiation monitoring program will be established for the SK4 area.

The following management strategies are recommended for the management of these dust sources.

i) Dust from gravel roads

Management strategies to minimise the extent of fugitive dust arising form gravel roads should include, but not be limited to the following:

Minimise the total road surface area. This entails optimising the road network by installing the minimum number of roads and minimising the length and breadth of the roads;

Limiting the speed for heavy equipment on gravel roads to 15 km/h, so as to reduce the disturbance and entrainment of dust from road surfaces, and minimise unnecessary traffic;

Preventing build up of fines on road surfaces. Haul trucks should not be overloaded and will therefore not cause spillages en route to the Primary Crusher. Road surfaces should be maintained in a good state of repair and where necessary, wearing course should be replaced and properly compacted. Where a build up of fines on the road occurs this should be cleared manually; and

Binding of dust on gravel road surface. All high traffic roads should be wetted regularly. Chemical dust suppressants (Dust-a-side® or Dustex®) should be added to increase the efficacy of the water and assist in binding the dust. Particular problem areas should be hard

surfaced or stabilised. Barricades could be erected along problem areas to reduce cross winds and road surfaces shaded to reduce water evaporation.

ii) Dust from drilling, blasting, excavation and loading operations

Management strategies to minimise dust in the SK4 pit resulting from the various mining activities occurring include the following:

Dust from drilling. All drilling rigs should be fitted with suitable water or pneumatic dust suppression devices. All dust suppression mechanisms should be maintained in a good state of repair. Where dust suppression mechanisms on the drilling rigs are insufficient, water should be continually sprayed into the drill hole; and

Dust from blasting. Where possible blasting should be carried out in the early mornings before sunlight enters and warms the open pit. Lower wind velocities and thermal stratification in the pit should limit the movement of dust from the pit and assist in allowing the dust to settle quickly.

3.5.2.3 NOISE AND VIBRATION

A public concern exists related to the effects of blasting. Mitigation measures should be applied, in the form of ensuring that blasting patterns, charge calculations, early pre-blast warnings and correct stemming of blast holes are implemented optimally to reduce potential negative noise and vibration impacts. RU employees are provided with and make use of suitable personal protective equipment and follow the appropriate health and safety procedures to limit their exposure to both noise and vibration within the SK4 mining area.

3.5.2.4 VISUAL ASPECT

The visual impact resulting from the expansion of mining operations into the SK4 area, the haul road and the resultant additional increase in the waste rock dump size at Waste 7 rock dump is assessed as being of medium negative significance. Although the operation as a whole does not lend itself to any alternatives, there are certain measures that can assist in mitigating the visual impact associated with SK4 mining activities, as follows:

An effective dust control program should ensure that the attention of nearby receptors, i.e. neighbouring landowners, is not drawn to the activities of the mine;

Litter should be strictly controlled;

Lighting of the pits and roads should be kept to the minimum required to allow for safe operation and down lighting is encouraged;

No further dumping of waste rock should occur on the elevated portions of Waste 7 rock dump until further assessment can be undertaken on the visual impact to the Welwitschia Flats. Such assessment needs to inform the most suitable and attainable final form and shape for the dumps. Thus, dumping should occur in the lower lying, already impacted areas outside the view of significant receptors;

Suitable cover material should be sourced to cover the rock dumps on completion to ensure visual homogeneity with the surrounds. In this regard, topsoil and suitably coloured overburden from the commencement of operations in the SK4 mining area should be stockpiled for later use in shaping and rehabilitation; and

All substantial man-made structures should be painted a similar colour to the surrounding landscape, so as to minimise visual contrast.

3.5.2.5 BIODIVERSITY

The RU mining area lies along a rainfall/fog incidence cline that gives rise to extreme climatic conditions which characterises the habitat as having a high level of biodiversity and endemism. Sixteen biotopes were delineated within the RU mining area. The SK4 area intersects one of these, namely the eastern hills biotope.

The expansion of mining activities in the SK4 area will impact on a critical biotope and thus minimising of the mining footprint in this area is considered of high importance.

Of the two Red Data species identified in the area, namely *Adenia perchuelii* and *Lithops ruschioruml*, several large specimens of *Adenia perchuelii* were found, some of which might be directly affected or destroyed through the mining area expansion. RU should acquire the necessary permits as well as expertise so as to undertake a test transplant of these plants. Once the areas to be disturbed have been fenced off, *Adenia perchuelii* specimens that will be directly affected are to be marked and a suitable transplant location identified with the assistance of an appropriately qualified botanist.

Apart from minimising environmental impacts, special measures to facilitate the recovery of critical biotopes are required. Rehabilitation practices such as preserving and re-spreading topsoil, reseeding and replanting with indigenous species should be tested and site-specific protocols developed for particular habitats. Presently very little is known about appropriate practices in this arid environment and setting up trials will be an essential part of RU's biodiversity strategy.

Although more intensive collecting over the past growing seasons have greatly improved overall plant data coverage, most parts of the extension area have only been surveyed once. Repeated sampling will be necessary, particularly in those mapping units that were only accessed along their margins, such as the Khan River Mountains and the south-east gneiss hills. Work to improve the understanding of other biodiversity components such as invertebrates, birds and reptiles is in progress. A systemic approach to selecting faunal indicator species and to link these assessments to the derived biotopes is required.

4 DECOMMISSIONING PHASE SEMP

RU have been planning for mine closure since 1991. A comprehensive Closure Management Plan, updated in 2005, is in place that considered two closure scenarios, i.e. an extended mine life to 2016 or a 2009 closure. Besides being guided by Rio Tinto standards, the closure plan was also informed by technical studies and incorporates a strategy to deal with the related social issues.

The 2005 Closure Management Plan describes RU's vision for mine closure and identifies the critical areas that would require specified management. These refer to the condition of the pit void, consequences for employees and the community, the status of contaminated processing and waste sites, and plant and infrastructure implications. Stakeholder consultation is recognised as vital in finding the most sustainable post-closure situation.

Using the approach of risk identification and mitigation, the Closure Management Plan addressed social and environmental risks as well as business risks. In developing the mitigation measures required to manage the identified risks, the financial and human resources needed to achieve such mitigation were defined and quantified. The further studies that would be required to allow for comprehensive planning for decommissioning are described.

The 2005 closure management plan makes provision for the decommissioning of the mine's original acid plant mothballed in 2000, the existing pilot ore sorter and pre-screening plants and the current open pit, rock dumps and tailings facility. It therefore already covers to a large extend the requirements for decommissioning of the projects evaluated during the phase 1 assessment of expansion projects.

The present SEIA process is part of RU's evaluation of extending the life of the Rössing mine beyond 2016. The specific components being assessed, i.e. the sulphuric acid production plant, the radiometric ore sorter and the mining of the SK4 ore body, would become integral parts of the entire mine operation and subject to common operational procedures.

It is recommended that, should MET:DEA issue the necessary clearance for the acid plant, ore sorter and SK4 mine, their specific characteristics needing a modified closure strategy or decommissioning plan should be incorporated into a revision of the already existing Closure Management Plan.

This draft SEMP should be seen as the precursor to a more comprehensive plan that will follow as the approval process continues and the specifics of the engineering design become available.

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APPENDIX A: CONDITIONS OF AUTHORISATION

To follow once MET:DEA clearance is issued.

APPENDIX B: RÖSSING'S HSE POLICY

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

30 YEARS OF PRODUCTION 2006

HEALTH, SAFETY AND ENVIRONMENTAL POLICY
August 2006

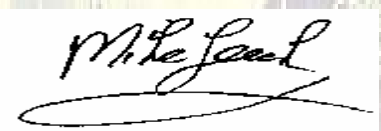
Excellence in Health, Safety and Environmental (HSE) management is one of the foundations of Rössing's vision to be a safe, long-term supplier of U_3O_8 to the nuclear power industry around the world. This is in line with our commitment to corporate citizenship, social responsibility and sustainability.

To accomplish this, Rössing will:

- Recognise that nothing is more important than the protection of the Health and Safety of our stakeholders, specifically, our employees, contractors, host communities, clients and shareholders
- Commit to operate our business with respect and care for both the local and global Environment in order to prevent and mitigate residual pollution
- Be in full compliance with all applicable legal, standards and requirements
- Seek continual improvement in HSE performance and adopt leading practice where applicable and feasible
- Provide adequate training and resources to employees, contractors and visitors.
- Identify and assess hazards arising from our activities and manage associated risks to the lowest practical level
- Enhance biodiversity protection by assessing and considering ecological values and land-use aspects in investment, operational and closure activities
- Continue in our efforts to raise the awareness of HSE issues to our host communities
- Regularly review our performance and publicly report our progress
- Communicate our commitment to this HSE policy to all our stakeholders and ensure that this policy is readily available to all our stakeholders

In implementing this Policy we will engage in constructive dialogue with our employees, contractors, host communities and all other stakeholders in sharing relevant information and responsibilities for meeting our requirements.

The HSE policy document is complimented by the HSE strategy document which is readily available to all our stakeholders.



MIKE LEECH
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