

VOLUME 3: AN ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR THE MADAOUELA WEST PROJECT, ARLIT, NIGER

Prepared For
GoviEx Niger Holdings Limited

Report Prepared by



SRK Consulting (UK) Limited

UK5618

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version: Jan2015

SRK Legal Entity:	SRK Consulting (UK) Limited	
SRK Address:	5 th Floor Churchill House 17 Churchill Way Cardiff, CF10 2HH Wales, United Kingdom.	
Date:	January 2015	
Project Number:	UK5618	
SRK Project Director:	Fiona Cessford	Corporate Consultant (Environment)
SRK Project Manager:	Carl Williams	Senior Consultant (Environmental Engineering)
Client Legal Entity:	GoviEx Niger Holdings Limited	
Client Address:	PO Box 805 Road Town, Tortola, British Virgin Islands	

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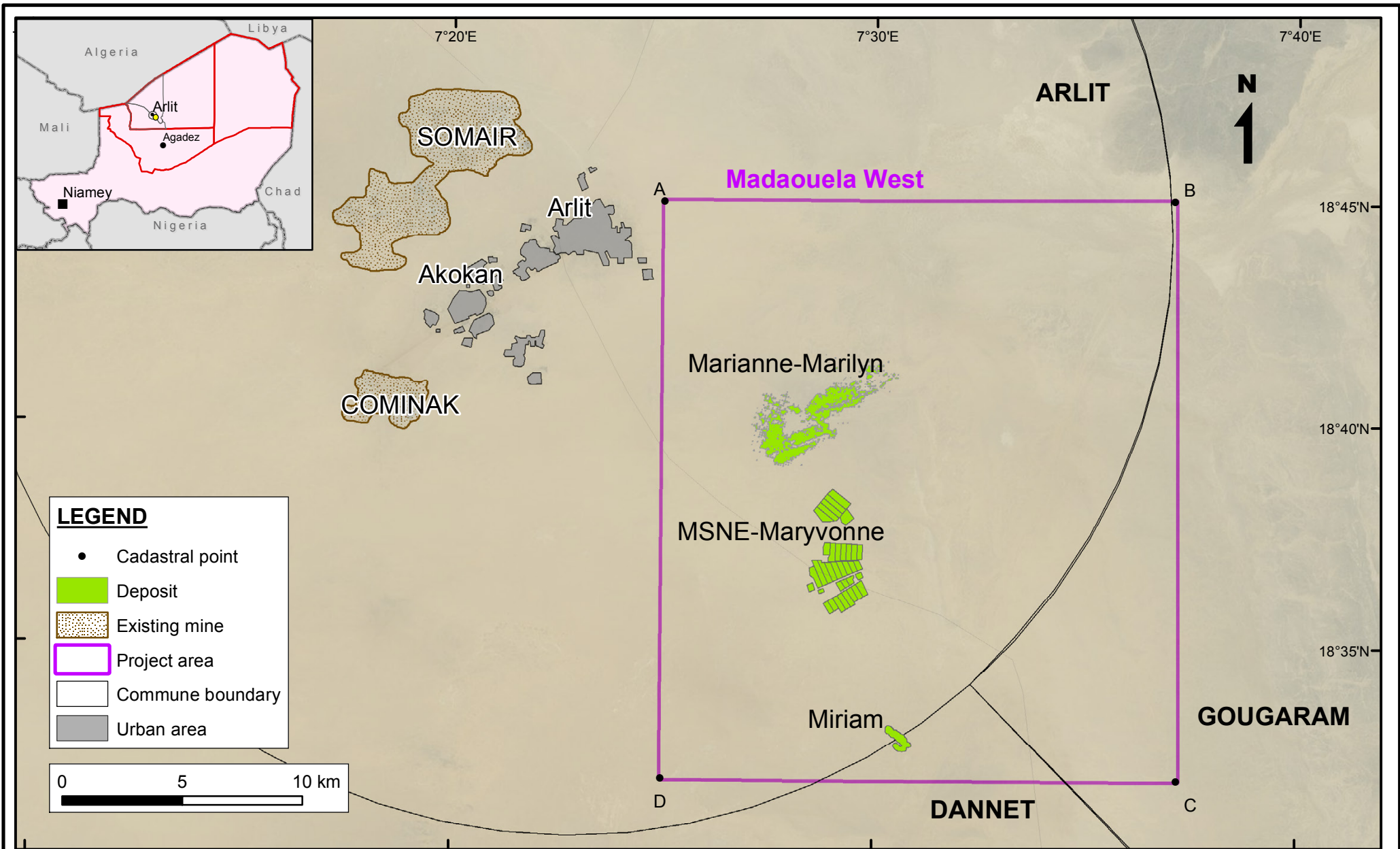
1 INTRODUCTION

This document forms part of the Environmental and Social Impact Assessment (“ESIA”) that has been undertaken for the Madaouela Uranium Project (“Project”). The Project proponent is GoviEx Niger Holdings Limited, a wholly owned subsidiary of GoviEx Uranium Inc., a company listed on the Canadian Securities Exchange; collectively referred to herein as “GoviEx” or the “Proponent”. GoviEx appointed SRK Consulting UK Limited (“SRK”) and LEGENI S.A. (“Legeni”), a Niger based consulting company, to undertake the ESIA for the Project. This volume constitutes the environmental and social management plan (“ESMP”), which was developed based on the outcome of the ESIA. It should be read in conjunction with Volume 1: Executive Summary, Volume 2: Main Environmental and Social Impact Assessment and Volume 4: Supporting Appendices.

The Project is located southeast of the town of Arlit, the capital city of the Arlit Department, in the Agadez Region of the Republic of Niger (“Niger”). Arlit was founded as a mine town when the first uranium deposits were discovered by the French Commissariat à l’Energie Atomique (“CEA”) in the 1960’s. Arlit is about 200 km north of Agadez town, 800 km northeast of the capital Niamey and 170 km southeast of the Algerian border (Figure 1-1).

1.1 Overview of the Proposed Operation

The Project is an advanced stage property, for which five deposits have been historically been extensively studied (Marianne, Marilyn, Miriam, MSNE and Maryvonne). Underground and open pit mining methods are proposed to be used. The combined ore production would be 4,020 tonnes per day (tpd) for 25.3 million tonnes (Mt) of ore run of mine (“RoM”) over the life of the mine. Processing is proposed to be by radiometric ore sorting, ablation and two-stage tank acid leaching, solvent extraction, with dry stack disposal of tailings. Utilizing Cyanex 600 solvent both uranium oxide (U_3O_8) yellowcake and a by-product of molybdenum oxide (MoO_2) can be produced as commercial products with acceptable quality for sale. An average 2.53 million pounds (Mlb) per year U_3O_8 yellowcake production rate over eighteen years, with an 83.0% ultimate recovery of uranium is expected. In addition, recovery of approximately 590 t of MoO_2 per annum is expected.



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MADAOUELA ESIA

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Deposits and Tenement Locations of Madaouela West

Figure
1-1

1.2 Background to the ESMP

The ESIA process involved the following key activities:

- Stakeholder engagement, in particular with government and local communities, to share Project information and identify issues and concerns regarding the Project;
- Specialist studies to characterise the pre-mining baseline bio-physical and social setting of the project;
- Summarising the Project description based on technical engineering studies undertaken in 2013/4;
- Use the baseline information, stakeholder views and Project description to determine the positive and negative impacts likely to arise from the proposed Project and assess their significance;
- Identify any additional management measures, over and above those inherent in the Project description, required to enhance positive impacts and mitigate negative impacts.

The management measures presented in the Project description and identified as part of the impact assessment have been used to develop the ESMP presented in this document. In addition to the ESMP, a framework environmental and social management system (“ESMS”) has been described in Section 2 with the aim of facilitating the implementation of the management measures by GoviEx and its sub-contractors during construction and operation.

1.3 Regulatory and other Drivers for the ESMP

This ESMP and framework ESMS have been drafted taking cognisance of legal regulatory requirements and good international industry practice (“GIIP”) as outlined below. They will form part of GoviEx’s overall business management system. The ESMS is the principal means by which GoviEx’s Environmental and Community Policies will be implemented at the proposed mine.

1.3.1 Regulatory framework

The Nigerien legislation has two key controls driving the need for environmental and social management commitments and these have been considered in the preparation of the ESMP and the framework ESMS presented in this volume:

- The ESIA report submitted to the Minister in charge of mining for the exploitation permit application needs to include an environmental protection program (this document) and a conceptual mine closure strategy (presented in Appendix R) together with the environmental compliance certificate issued by the Minister in charge of environment.
- Art. 8 of the ESIA Decree No. 2000-397/PRN/ME/LCD of 20 October 2000 requires the ESIA report to identify and describe measures to prevent, control, avoid, mitigate and compensate negative impacts resulting from the ESIA process. Art. 9 also states a framework to maintain environmental and social monitoring and control of the Project activities is required.
- Before the Project construction phase, a detailed environmental and social monitoring and control plan including a budget for environmental and social measures has to be submitted to the ESIA office (Bureau d’Evaluation Environnementale et des Etudes d’Impact - “BEEEE”).

The BEEEE is the authority responsible to assess, control and monitor the plans resulting from the ESIA (Art. 4 of the Decree No. 2010-540/PCSRD/MEE/LCD of 8 July 2010). The BEEEE

will prepare and sign the environmental and social terms of reference requiring GoviEx to comply with the mitigation measures presented in the various management plans discussed above, along with the partnership convention between the proponent and the BEEI to maintain the environmental monitoring and control of the Project activities.

1.3.2 Good international industry practice

For the purposes of this document GIIP is considered to be represented by the International Finance Corporation (“IFC”) Performance Standard (“PS”) 1 (IFC, 2012) and the International Standards Organisation (“ISO”) 14001:2004. These both require the establishment and implementation of an ESMS to manage environmental and social impacts over the life of the project from construction through to closure.

2 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

GoviEx will ensure the highest practicable standards of safety, health, and environmental management are applied during all phases of the Project. High standards will be achieved by implementing a rigorous management system that integrates a safety, health and community engagement component with an environmental component.

This ESMS provides the framework within which the ESMP and associated supporting documents outlining GoviEx's commitments to manage impacts identified during the ESIA will be implemented, maintained and updated for all stages of the Project. The ESMP falls under the element of the ESMS (see below) entitled "objectives, targets and plans for management".

The ESMP may be known by different names, but in this instance is considered synonymous with the term Environmental Management Plan ("EMP"). Similarly, the ESMS is synonymous with the environmental management system or EMS used in ISO 14001.

The purpose of the ESMS is to structure and guide activities to ensure orderly, safe, compliant and environmentally and socially responsible operations at the Project. The ESMS aims to manage significant environmental, safety and security health and social impacts with the objective of reducing or mitigating any negative impacts to an acceptable level and optimising the benefits of any positive impacts.

The key objectives of this ESMS are to:

- Recognise that social responsibility and environmental management are core corporate priorities;
- Establish and maintain relationships with internal and external stakeholders;
- Maintain information on legislative requirements and environmental and social aspects associated with the Project activities;
- Assign clear accountability and responsibility for environmental protection and social responsibility to management and employees;
- Provide a process for achieving targeted performance levels;
- Provide appropriate and sufficient resources, including training, to achieve targeted performance levels on an ongoing basis;
- Evaluate environmental performance and social responsibility against GoviEx environmental and other policies, objectives, targets and seek improvement where appropriate; and
- Establish a management framework to audit and review the GoviEx ESMS and identify opportunities to improve the system and resultant environmental and social performance.

The basic elements of the ESMS for the Project are outlined in Table 2-1 with more detail on each element, and how it applies, given in the following sub-sections. The elements of the ESMS are discussed under the headings of the "plan-do-check-act" business performance improvement cycle. Stakeholder engagement and emergency preparedness are elements applying to all steps of the "plan-do-check-act" cycle as shown in Table 2-1 and have been discussed separated in Sections 3 and 4.

2.1 Planning Elements

2.1.1 Leadership and accountability

Policy

The Project will be undertaken in accordance with GoviEx's corporate policies. This will include as a minimum the following policies: Environment Policy, Health and Safety Policy, Human Resources Policy and Community Policy. GoviEx will periodically review the scope and effectiveness of its policies (Section 2.4.1). These policies drive the ESMS and will be obligatory for all personnel and contractors to the Project. As a minimum the corporate policies underpinning the ESMS will address:

- Lines of action to manage aspects and impacts:
 - Fostering environmental and social awareness and responsibility of employees;
 - Information and training of employees;
 - Assessing the environmental and social aspects of products and processes;
 - Preventive action and minimization of negative aspects;
 - Resource conservation;
 - Avoiding spills due to accidents;
 - Information sharing with the general public;
 - Advice to customers regarding the environmental aspects of products;
- Compliance with relevant environmental legislation;
- Commitment to continuous improvement of environmental and social aspects; and
- Reduction of impacts using best available technology, where economically viable.

The policies must be documented, maintained, implemented and communicated to employees, contractors, suppliers and the public.

ESMS

GoviEx will establish, document, implement, maintain and continually improve an ESMS for the Project. The ESMS will be in place prior to construction.

Table 2-1: Elements of the ESMS

Steps of the “plan-do-check-act” cycle	Elements of the ESMS for the Project		
	Elements	Primary function	Elements applying to all steps of the cycle
Plan (Section 2.1)	Leadership and accountability	<ul style="list-style-type: none"> Produce and communicate a statement of corporate commitment to environmental and social management (e.g. policy statement) Establish, document, implement, maintain and improve the Project ESMS 	<p>Stakeholder engagement (Appendix E) An ongoing process, throughout the life of the Project. Serves to build and maintain a constructive relationship with communities affected by the Project</p> <p>Emergency planning, response and recovery (Section 4) Maintain emergency response preparedness through the identification of potential environmental emergencies, development of response plans and allocation of response and recovery resources.</p>
	Legal and other requirements	<ul style="list-style-type: none"> Identify and provide access to legal requirements and other obligations 	
	Aspect identification and impact assessment	<ul style="list-style-type: none"> Identify aspects (“mechanisms” by which Project activities impact on the environment) and assess impacts throughout the Project life (the ESIA falls under this element of the ESMS) 	
	Objectives, targets and plans	<ul style="list-style-type: none"> Define objectives, targets, criteria and actions for the management of potential impacts (the ESMP falls under this element of the ESMS) 	
Do (Section 2.2)	Roles and responsibility	<ul style="list-style-type: none"> Provide sufficient management sponsorship of human and financial resources Establish roles and responsibilities for implementation 	
	Contractors, suppliers and vendors	<ul style="list-style-type: none"> Consider environmental and social impact management and performance in the selection and management of third party services 	
	Competence, training and awareness	<ul style="list-style-type: none"> Make personnel aware of their responsibilities and enable them to be capable and competent in meeting their responsibilities 	
	Communication	<ul style="list-style-type: none"> Maintain internal and external communications to enable effective environmental and social management 	
	Operational controls and maintenance	<ul style="list-style-type: none"> Implement operational controls and maintain equipment to uphold performance and compliance and to manage impacts and risks 	
	Documentation and record keeping	<ul style="list-style-type: none"> Control and maintain documents and records associated with environmental and social management 	
Check (Section 2.3)	Assessing, correcting and improving performance	<ul style="list-style-type: none"> Monitor environmental and social management and performance and take measures to continually improve performance 	
	Non-conformance and incident reporting	<ul style="list-style-type: none"> Promptly report non-conformances and incidents and take corrective and preventative actions to reduce the likelihood of recurrence 	
	ESMP and ESMS reporting	<ul style="list-style-type: none"> Report on compliance with the ESMP and ESMS performance to senior management, regulatory authorities and affected communities 	
Act (Section 2.4)	Governance / management review	<ul style="list-style-type: none"> Require site, regional and senior management to review the suitability, adequacy and effectiveness of the ESMS Identify improvement actions to facilitate continuous improvement and if required update the ESMP and ESMS 	
	Management of change	<ul style="list-style-type: none"> Modify the ESMS in response to changes in the Project, organisation, regulations or stakeholder expectations, ensuring external and internal stakeholders communication is maintained 	



The arrows show where there is integral relationship between stakeholder engagement and other elements of the ESMS.

2.1.2 Legal requirements and other obligations

The Project's ESMS takes account of both legal and other obligations imposed on the Project. The various types of obligations considered are shown conceptually in Figure 2-1. GoviEx will identify, document and maintain a register of legal requirements and other obligations applicable to the Project. It will also:

- track developing legislation and regulations that may apply to operations and activities to anticipate and prepare for compliance;
- inform employees and others working on behalf of the company of existing and emerging obligations that apply to their job responsibilities; and
- consider the register in the setting and review of objectives, targets and plans for management of impacts.

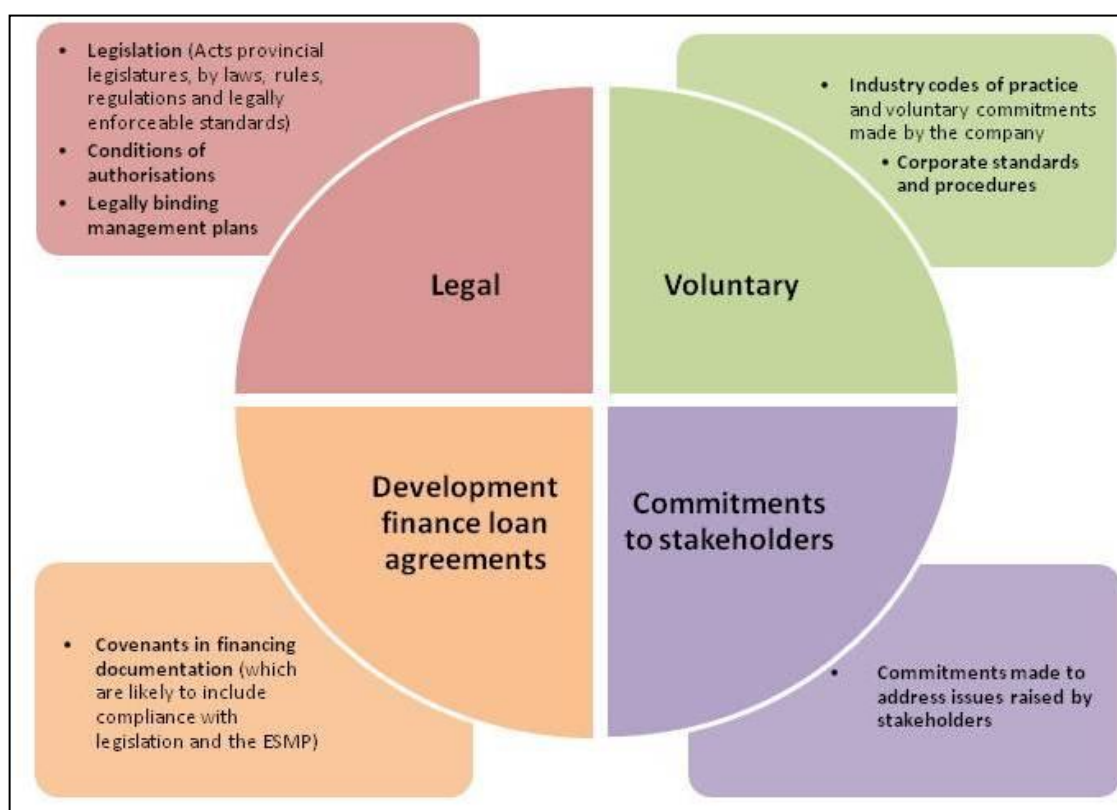


Figure 2-1: Types of obligations relevant to the ESMS

2.1.3 Aspect identification and impact assessment throughout the Project life

A key element of the ESMS is the compilation of an aspects and impacts register. The impact assessment documented in this report (Volume 2) is the initial stage of this element. Aspects are any element of an organisation's activities, products or services that can interact with the bio-physical or social environment. Examples of such aspects include:

- air emissions;
- effluent discharge;
- soil contamination;
- consumption of raw materials and natural resources (including land);
- use of energy;
- noise emissions;

- solid waste and by-products.

Procedures will be set up, implemented and maintained for the ongoing identification of any new environmental (or social) aspects. These will be evaluated using impact and risk assessments on an ongoing basis through the Project life, probably in the form of regular workshops attended by the environment and community teams, as well as the various engineering and operating teams. The procedure will address:

- identifying any significant aspects not covered by this ESIA either because it was not predicted by the ESIA or did not develop as predicted by the ESIA;
- determining which of the environmental or social aspects GoviEx can control and those it can influence;
- determining significance of the aspects on the bio-physical or social environment; and
- identifying any changes in the Project or new developments arising subsequent to the completion of this ESIA which may result in new aspects needing to be included in the register (Section 2.4.1).

2.1.4 Objectives, targets and plans for management throughout the life of the Project

This element of the ESMS pertains to the setting of objectives and targets for environmental and social management, and plans for the achievement of these objectives and targets at corporate and Project / site levels. The ESMP described below embodies this element of the ESMS at the Project level.

The primary purpose of the ESMP is to guide environmental and social management throughout the life of the Project. The core of the ESMP is a statement of environmental and social management objectives and associated management measures. The ESMP will be supported by other documentation, such as the original Project design (described in Volume 2: Section 6) and specific supporting management plans and operating procedures.

The preliminary ESMP commitments presented in Section 2 are derived from the following sources within Volume 2 of this ESIA report:

- inherent design or management measures described in the Project Description in Section 6;
- mitigation and enhancement measures identified in Sections 7, 8 and 9, which are required to manage identified impacts; and
- good practice management measures presented in Sections 7, 8 and 9, which may not significantly alter the impact rating but are considered standard industry practice for the management of such impacts and have been voluntarily adopted by GoviEx.

During the Project life, the ESMP may need to be amended to address a specific requirement, such as those included in the obligations register (Section 2.1.2). Therefore, in subsequent updates of the ESMP, a column entitled 'Source' may be needed to indicate additional sources of commitments, for example conditions of approval included in permits, or commitments made to stakeholders.

Management plans and other forms of supporting documentation will be developed by GoviEx or its contractors, where needed, to provide further detail on how key actions identified in the ESMP will be executed. The need for supporting management plans or other supporting documents have been determined initially during the ESIA, based on the risk posed by or complexity of the impact/s or area requiring management. Consideration is also given to the regulatory requirements of Niger.

Recognising the ESMP could become legally binding, by means of the conditions of approval attached to authorisations (licences / permits), it is considered desirable the supporting documentation is separated from the core ESMP. This allows for flexibility in meeting some of the objectives and commitments in the ESMP; the ESMP supporting documents can be dynamic documents, adaptable to changing circumstances, and can be modified (without necessarily requiring regulatory approval of each modification) providing the changes are in compliance with the stated objectives in the ESMP. In concept, these supporting documents would typically focus on *environmental* (biophysical) aspects and *safety, social* and *community* aspects. Generally, any associated management plans would utilise one of three principal mechanisms for the implementation of management and mitigation measures:

- Facilities or equipment – these are specific facilities, installations or equipment that have a dedicated environmental or social management function (such as a waste water treatment facility or noise barrier);
- Specifications – these can be stand-alone specifications with a dedicated function (such as a waste management specification) or a modification of an existing operational specification (such as vehicle refuelling) to include an environmental or social requirement; and
- Assignment of responsibilities and contractor management – roles and responsibilities that need to be defined to include dedicated environmental or community management roles as well as the environmental and social responsibilities of other personnel, including contractors.

These mechanisms, collectively referred to as **operational controls**, require a responsible party, a budget and an implementation schedule to be specified to enable and facilitate implementation.

Supporting documents identified as a result of the ESIA or Niger regulations include the following plans:

- Environmental and Social Management Plan (this document); and
- Stakeholder Engagement Plan (Appendix E).
- Additional plans to be prepared during detailed design for construction include (note these may be individual or combined plans):
 - Construction Management Plan (addressing land clearance, water / waste management, air quality, noise, vibrations and other environmental impacts associated with construction);
 - Community Development Plan;
 - Economic Displacement and Livelihoods Restoration Plan;
 - Human Resources Management Plan;
 - Heritage Resources Management Plan;
 - Grievance Management Plan;
 - Health and Safety Plan; and
 - Security Management Plan.
- Additional plans to be prepared and / or reviewed during the construction phase ready for operation include (note these may be individual or combined plans):
 - Community Health and Safety Plan;
 - Water and Waste Management Plans;
 - Land and Wildlife Management Plan;

- Air Quality Management Plan;
- Emergency Preparedness and Response Plan;
- Hazardous Materials Management Plan; and
- Closure and Rehabilitation Plan based on the closure strategy presented in Appendix R.

The supporting documentation may need to be presented differently, depending on the target audience and Project requirements, for example:

- an issues-driven format is often required to facilitate communication with regulatory authorities and stakeholders (for example community development plan); and
- an area / activity-driven format is needed for ease of application by the parties responsible for Project execution (for example construction management plan, waste rock dump management plan, spill prevention plans etc.).

2.2 Implementation (Do) Elements

Effective implementation and functioning of the ESMP depends on adequate human and financial resources, clearly defined responsibilities for environmental and social management, appropriate training and good communication. An outline of how these features will be managed for the Project is presented below.

2.2.1 Roles and responsibility

GoviEx will define, document and communicate the environmental and social management roles and responsibilities of Project personnel, including contractors and others working on behalf of the company, in all phases of Project implementation from detailed design through to closure. Personnel with specific roles and responsibilities will have the authority, and be held accountable for, carrying out these.

The basic roles required to implement the ESMP, and establish and maintain the ESMS, are shown in Table 2-2. These roles need to be reviewed and incorporated into the organisational structures for the various phases of the Project from detailed design through to closure. A key requirement is for the senior environmental management professional to report directly to the on-site senior manager (the General Manager).

2.2.2 Contractors, suppliers and vendors

Environmental and social performance, programmes and risk management will be considered in the selection and management of contractors, suppliers and vendors. Contracts will address potential environmental and social liabilities and responsibilities including the following:

- use of competent, trained staff;
- consequences for failing to meet obligations;
- monitoring of performance;
- required job-specific, site-specific training;
- compliance with GoviEx's policies and site standards and applicable legal requirements;
- responsibility for chemicals and hazardous materials brought on-site and wastes generated on-site, including closure activities where appropriate; and
- identification of a lead responsible person for both GoviEx and the contractor.

Contractors, including their employees and associated subcontractors, will be made aware of

the environmental risks, associated controls, procedures and standards relevant to their work on-site (Section 2.2.3), probably through the imposing of contracting clauses. The activities and performance of contractors will be monitored by GoviEx against the terms of their contracts.

Table 2-2: Key Roles for Environmental and Social Management

Roles	Relevant Responsibilities
Chief executive officer (CEO)	<ul style="list-style-type: none"> • Endorse the environmental and social management policy and require it to be communicated to the public and all staff members. • Allocate adequate human and financial resources to enable effective functioning and continual improvement of the ESMS. • Establish and maintain a governance system.
Top management	<p>Policy</p> <ul style="list-style-type: none"> • Develop, review and update policy/s on environmental and social management. • Incorporate principles of policy/s in business decisions. <p>Compliance</p> <ul style="list-style-type: none"> • Confirm necessary authorisations (licences / permits) have been obtained for the Project. • Confirm compliance with legal requirements and other obligations pertaining to environmental and social management. • Commit contractors and suppliers to meeting relevant environmental and social obligations by means of specific conditions in the contracts of appointment. <p>Roles and responsibility</p> <ul style="list-style-type: none"> • Define, document and communicate environmental and social management roles, responsibilities and authorities. • Provide sufficient appropriately trained human resources and adequate financial resources to enable effective functioning and continual improvement of the ESMS. • Hold personnel responsible for meeting their assigned responsibilities. <p>Communication and reporting</p> <ul style="list-style-type: none"> • Confirm there is adequate ongoing stakeholder engagement. • Confirm obligations for reporting to regulatory authorities, development financiers and affected communities are met. <p>Management review</p> <ul style="list-style-type: none"> • Provide leadership in the pursuit of environmental and social management. • Examine and review the ESMS periodically to determine its suitability, adequacy and effectiveness. • Support action to enhance the ESMS and make improvements in environmental and social management performance.
Environmental management team	<p>ESMS</p> <ul style="list-style-type: none"> • Establish the ESMS, with assistance from the senior management, division managers and community relations managers. • Liaise with division managers regarding environmental management roles, responsibilities and authorities throughout operational divisions. • Coordinate monitoring and evaluation activities and confirm corrective actions (an action taken to address a non-conformance) are taken to address incidents and non-conformances (a failure to comply with the Project's ESMS). • Report progress in implementation and functioning of the ESMS to senior management, development financiers, regulatory authorities and stakeholders. <p>ESMP and obligations register</p> <ul style="list-style-type: none"> • Keep the ESMP and obligations register up to date and confirm they address all relevant environmental and social obligations. • Present the ESMP in an appropriate format for communication with regulatory authorities and other stakeholders. • Present the ESMP in an appropriate format for communication with parties responsible for Project execution.

Roles	Relevant Responsibilities
	<ul style="list-style-type: none"> • Compile ESMP compliance reports. • “Sign-off” actions in the ESMP and non-conformances once they have been completed.
Government and community relations team	<ul style="list-style-type: none"> • Assist the environmental management team with ongoing reporting to stakeholders on ESMP and supporting management plans, and progress with implementation of management measures. • Assist Environmental Manager and division managers with stakeholder communication where awareness and / or co-operation of stakeholders are required to implement management measures. • Manage the grievance mechanism.
Operations management team	<ul style="list-style-type: none"> • Confirm the ESMS and ESMP are established, communicated, implemented and maintained in their respective areas. • Provide leadership in the pursuit of environmental and social management. • Identify ways to improve environmental and social performance through daily monitoring of their activities and evaluating implementation. • Review monitoring results, incidents and corrective actions taken. • Evaluate adequacy and effectiveness of awareness and skills training programmes pertinent to environmental and social management. • Maintain internal communication of environmental and social matters between the environmental manager, community relations manager and other personnel, and promote environmental and social awareness.
All personnel and contractors	<ul style="list-style-type: none"> • Comply with policies, site standards and applicable legal requirements. • Work in accordance with the ESMP and supporting documents. • Report problems or deviations from the ESMS or ESMP to division managers and / or environmental managers, as instructed.

2.2.3 Training

Personnel, including contractors’ personnel, working for or on behalf of the Project will receive training to maintain awareness of relevant environmental and social aspects, impacts and risks associated with the Project and corresponding controls. The training will also maintain awareness of the environmental benefits of improved personal performance and the potential consequences of departure from specified procedures. Visitors to Project sites will receive relevant environmental and social awareness training as part of site induction training.

Personnel, including contractors’ personnel, will be made aware of the particular environmental and social management responsibilities applying specifically to their jobs. Training needs analyses will be undertaken and personnel will be given adequate training to meet these responsibilities.

The training programme may comprise the following elements:

- identification of training needs for employees specific to their varying responsibilities;
- development of a training plan and schedule to address defined needs;
- verification of training programs to confirm consistency with organisational requirements;
- training of target employees and documentation of training received;
- evaluation of training effectiveness; and
- review and modification of training programmes, as required.

Personnel with direct responsibility for implementation of the ESMP and functioning of the ESMS should receive additional training to:

- provide them with the knowledge and skills necessary to perform their work;
- maintain their knowledge of relevant environmental and social obligations; and

- enable them to implement specific measures required under the ESMP in a competent and efficient manner.

Training requirements and completed training will be documented. Procedures to evaluate the effectiveness of such training will be implemented.

2.2.4 Communication

To effectively implement environmental and social management, the relevant managers will maintain lines of internal communication and provide information regarding the ESMP, ESMS and environmental and social management performance, incidents, good practices, lessons learned and concerns to personnel electronically, on notice boards and / or in newsletters. Such communication will be used to inform the personnel of their individual responsibilities with respect to the ESMS and to raise awareness on specific matters. External stakeholder engagement is discussed in Section 2.4.

A grievance mechanism will be established (Section 2.4) and will provide a means for Project personnel, including contractors' personnel, to anonymously raise environmental and social concerns (this grievance mechanism will be separate from the system dealing with employee grievances that need to be handled by the human resources department).

2.2.5 Operational controls

Operational controls will be implemented to maintain performance and compliance, and to manage impacts and risks. Operational controls may include:

- administrative controls such as performance standards;
- standard operating procedures and work instructions; and
- engineered controls such as pollution control equipment.

Written operational controls are required where their absence could lead to deviation from the identified obligations or objectives and targets. Written operational controls will be part of the ESMP supporting documentation (Section 2.1.4). The adequacy, suitability, and effectiveness of operational controls will be reviewed regularly.

Documentation on the design basis and operating criteria / limits for equipment having the potential to impact environmental performance will be maintained.

Operating equipment, as well as environmental monitoring and measurement devices, will be maintained consistent with manufacturers' specifications and good management practice to reduce the potential for environmental incidents and adverse environmental impacts.

2.2.6 Documentation and record keeping

The different elements of the ESMS will be documented and controlled in accordance with a document control system. Records demonstrating compliance with legal requirements and conformance with the ESMS will also be maintained.

GoviEx will establish, implement and maintain procedures for:

- ESMS document control detailing how the creation, review and updating of various types of documents will be managed and who will be responsible; and
- record identification, storage, protection, retrieval, retention and disposal.

Documentation and record keeping controls will include:

- measures to enable relevant documents (including those of external origin deemed necessary for planning and operation of the ESMS) and records to be readily available and identifiable (labelled, dated and properly filed), legible and protected from damage;
- periodic review, revision and approval of documents for adequacy by authorised personnel;
- making current versions of relevant documents available at locations where operations essential to the effective functioning of the ESMS are performed;
- suitably identifying obsolete documents retained for legal and knowledge preservation purposes; and
- identification and segregation of confidential and privileged information.

2.3 Monitoring and Reporting (Check) Elements

To confirm effective implementation of the ESMS and conformance with the ESMP, monitoring of performance is required. Checks include monitoring, site inspections and formal audits. Linked to this, measures need to be taken to remedy non-conformances and to continually improve environmental performance. These activities fall under assessing, correcting and improving performance (Section 2.3.1). Incident reporting (Section 2.3.2) and reporting on the effectiveness of the ESMS and compliance with the ESMP (Section 2.3.3) are also classified as “check” elements of the ESMS.

2.3.1 Assessing, correcting and improving performance

Monitoring programmes

The aim of monitoring programmes is to:

- provide measurements of environmental and social impacts of the Project;
- ascertain and demonstrate compliance with conditions of approval and other legislation;
- provide sufficient evidence to address any claims made against the Project in respect of environmental and social matters;
- track performance of the ESMS and progress in the implementation of the ESMP;
- track and measure key indicators and other performance measures over time to improve the Project’s performance and reduce the likelihood of environmental incidents; and
- inform decision processes for determining management actions.

The monitoring programmes cover the physical, biological and social components of the operation and are integrally linked with the assessment criteria stated in the ESMP. Preliminary monitoring programmes have been prepared and are included in Section 6. Where appropriate and possible, the sampling parameters and locations used in the ESIA baseline studies have been retained to provide data continuity.

The monitoring programme identifies monitoring parameters, sampling locations, sampling frequency and duration and detection limits (where appropriate). It includes control sites, where relevant. The focus and extent of monitoring is commensurate with the risk of impacts occurring, the sensitivity of the surrounding areas and the affected communities’ perceptions of risks to their health and environment.

For some types of monitoring, thresholds or targets are available (and included in the environmental or social management programmes described above). In other cases, the monitoring results will be compared to the baseline data set gathered as part of this ESIA. Lastly, where neither thresholds nor baseline data are available, the initial data collection may

form the baseline for future data collection.

Data will be documented and interpreted. Temporal and spatial trends in the data will be discerned and compliance with relevant thresholds will be evaluated. Monitoring reports will be produced to meet internal and external reporting requirements (Section 2.3.2). If monitoring results indicate non-conformance with stipulated thresholds or if a significant deteriorating trend is observed, it will be recorded as a non-conformance and handled by the non-conformance and incident procedure (Section 2.3.2).

The preliminary monitoring programmes in Section 6 provide a framework of monitoring to evaluate performance and assist in predicting and managing impacts. In conjunction with the development of supporting documentation for the ESMP (Section 2.1.4), detailed monitoring plans, with appropriate sampling protocols where relevant, may need to be developed. These more detailed supporting documents would include the criteria against which the monitoring results will be compared and the actions required if the criteria or thresholds are exceeded. The supporting documents may also cover:

- sample or data collection methods;
- sample handling, storage and preservation;
- sample or data documentation;
- quality control;
- data reliability (calibration of instruments, test equipment, and software and hardware sampling);
- data storage and backup, and data protection;
- interpretation and reporting of results; and
- verification of monitoring information by qualified and experienced external experts.

The frequencies and locations of monitoring may need to be adjusted depending on final Project design and ongoing review of results obtained by the monitoring programmes. Therefore the programmes will be reviewed on a regular basis (at least annually) and adjusted, where necessary (Section 2.4.1). Changes to the ESMP or obligations register may also result in changes to the monitoring programme.

Site inspections

Site inspections will be undertaken regularly in relevant areas of the Project. The inspections will focus on compliance with the ESMP and conformance with the ESMS. The inspections will play an important role in increasing awareness of ESMP and ESMS requirements.

Minor non-conformances will be discussed during the inspection and recorded as a finding in the inspection report. Serious non-conformances will be reported as incidents (Section 2.3.2). Inspection results will be disclosed at management meetings.

Formal audits

Formal audits of both the ESMP and the functioning of the ESMS will be undertaken at planned intervals in accordance with the requirements of GoviEx and regulatory authorities. Procedures for audits will be established, implemented and maintained. These will cover the audit criteria, scope, frequency and methods, and will address the responsibilities and requirements for planning and conducting audits, reporting results and retaining associated records.

Audits will include both internal and external audits, as well as regulatory audits required by

the Ministry in charge of environment. Internal audits will be undertaken frequently and may include review of contractors, evaluation of implementation of a specific supporting document or evaluation of one area of site against the relevant ESMP conditions. External audits occur less frequently (for example every one or two years) and are likely to focus on the ESMP, though more detailed audits could be commissioned if considered necessary.

Significant negative findings arising from an audit will be dealt with in accordance with the non-conformance and incident procedure (Section 2.3.2). Results from audits and evaluations of compliance with legal requirements will be reported to site and senior management and subject to management reviews (Section 2.4.1).

2.3.2 Non-conformances and incident reporting

Non-conformances include the following:

- exceedances of relevant thresholds as identified during routine monitoring;
- non-conformances with the requirements of the ESMP or supporting documentation identified during an internal inspection;
- non-conformances identified during an audit or by regulatory authorities, including legal non-conformances;
- events, such as spills, resulting in environmental harm;
- events that did or could result in risks to community health and safety; and
- significant complaints or grievances received from any source.

A process will be established for the identification, investigation and tracking of non-conformances, including:

- prioritising and classifying non-conformances based on the type and severity of the non-conformance;
- recording of non-conformances and the results of corrective and / or preventive actions, including the actions necessary to mitigate or remedy any associated impacts;
- defining results expected from the corrective and / or preventative actions;
- confirming the corrective and / or preventive actions taken to eliminate the causes of the non-conformance are appropriate to the magnitude of problem and commensurate with the impacts encountered;
- reviewing the effectiveness of the corrective and / or preventive actions taken; and
- implementing and recording required changes in the ESMP or monitoring programme resulting from corrective and preventive action.

Serious non-conformances will be classified as incidents. Incidents will be promptly reported to appropriate management. GoviEx will prepare a guideline on:

- the types of incidents reportable to internal management at the site, Project and corporate levels, as well as to regulatory authorities and other external stakeholders; and
- standards to be observed when reporting incidents.

The investigation of incidents and evaluation of effectiveness of existing controls and response actions will be undertaken at a level commensurate with the severity of the incident.

2.3.3 ESMP and ESMS Reporting

Progress on compliance with the ESMP will be reported to:

- Project site and GoviEx senior management;

- regulatory authorities, as required; and
- affected communities and other stakeholders who have an interest in the Project (Appendix E).

In addition, the formal audit reports on compliance with the ESMP and the functioning of the ESMS will be made available to site and corporate management.

2.4 Act Elements

2.4.1 Governance / Management review

Project site management and GoviEx senior management will review the ESMP and ESMS on a periodic basis to determine its suitability, adequacy and effectiveness. Each management review will initiate a new plan-do-check-act cycle with enhancement of the ESMS and continuous improvements in environmental and social management performance. The management review will cover:

- progress and closure of actions from previous management reviews;
- monitoring programmes findings / the extent to which objectives and targets have been met;
- findings of audits (Section 2.3.1);
- incidents and the status of corrective and / or preventative actions (Section 2.3.2);
- impact and risks assessments (Sections 2.1.3 and 2.4.2);
- changing circumstances, including changes to operations, Niger legislation or guidelines, ownership, socio-political circumstances (Section 2.1.2);
- legal compliance and compliance with other obligations (Section 2.1.2);
- stakeholder concerns, requests or complaints (Appendix E);
- adequacy of policies, ESMP, monitoring plans, support documents and overall functioning of the ESMS to meet operational and corporate requirements; and
- recommendations for improvement.

2.4.2 Project risk assessment

Management will regularly assess the potential risks to the projects arising from non-compliance with the ESMP or associated with the implementation of the ESMS. The significance of the risks will be evaluated using the agreed corporate risk assessment procedure. Examples of the types of risks that will be considered include:

- changes to regulatory requirements resulting in the need for significant changes to Project or operational controls;
- loss of social licence to operate due to real or perceived poor performance;
- significance of expected impacts greater than originally predicted resulting in need for additional management measures.

The risk assessment will be used to determine if any further changes are required to the ESMP or ESMS.

2.4.3 Management of change

Changes to the Project can be expected throughout the life of the Project. These can range from changes to operations and infrastructure, new developments (such as an expansion), changes to personnel and the Company, changes in legislation and changes to the

environment of the Project (such as a new settlement established near Project infrastructure). These changes could result in changes to the significance of environmental and social impacts and risks, or identification of new aspects or impacts (Section 2.1.3). This may necessitate updates to existing authorisations / permits, changes to the ESMP (which may have to be approved by regulatory authorities), changes to supporting documentation including monitoring programmes and general changes to the ESMS framework.

A procedure for the management of change will be established and maintained by GoviEx. This will:

- observe the corporate owners' requirements for the management of change;
- identify proposed changes that could alter environmental or social impacts and risks and / or require new authorisations / permits or changes to existing authorisations / permits; and
- define the impact and risk assessments appropriate to different types of changes, which need to be undertaken by competent personnel.

Changes will not be made without the required authorisations / permits in place. The measures identified as necessary to mitigate impacts and risks will be implemented. The various elements of the ESMS will be modified as required in response to the change,

A procedure specifically for changes to the policy/s, ESMP, monitoring programmes and supporting documentation will be established. This will detail:

- how the changes are to be recorded;
- who has responsibility for overseeing changes and checking they do not conflict with any planning conditions or other obligations;
- the process of review and sign off in response to changes; and
- how changes to the ESMP should be communicated internally and externally.

3 STAKEHOLDER ENGAGEMENT

Stakeholder engagement provides stakeholders with opportunities to express their views on Project risks, impacts and impact mitigation measures and involves appropriate consideration of the views and responses by Project management (IFC, 2012). Table 2-1 shows how stakeholder engagement applies to each of the steps of ESMS “plan-do-check-act” cycle and is an integral part of several ESMS elements. The relationship between stakeholder engagement and these elements is explained further in Table 3-1.

GoviEx will establish a programme of stakeholder engagement for the Project that builds on the consultation undertaken for the ESIA. An initial stakeholder engagement plan is included as part of this ESIA in Volume 4, Appendix E. This will be reviewed regularly as part of the overall ESMS.

Table 3-1: Relationship between stakeholder engagement and the ESMS elements

Steps of the “plan-do-check-act” cycle	ESMS elements that stakeholder engagement is integral to	
	ESMS elements	Role of stakeholder engagement
Plan	ESIA	During the ESIA, the focus of stakeholder engagement has been the involvement of stakeholders in Project-planning and Project-approval decision-making processes. It facilitated identification of stakeholder’s concerns so they could be addressed in the Project design and / or ESMP. It forms the basis for stakeholder engagement throughout the life of the Project.
	ESMP	Stakeholders will be involved in the review of the preliminary ESMP. Throughout the life of the Project, there should be ongoing reporting to stakeholders on progress in the implementation of the ESMP and related management plans that are of interest to them. The ESMP and related management plans may need to be revised in response to stakeholders’ concerns.
Do	Communication	Communication with stakeholders will be required to implement some management actions. The communication will be required to raise awareness and / or co-operation of potentially affected communities and other stakeholders. GoviEx will determine effective communication methods for making affected communities aware of actions they may need to take to avoid exposure to operation-related hazards and how they can maximise on opportunities resulting from the operation.
Check	Assessing, correcting and improving performance	Participatory monitoring is desirable. This entails involvement of stakeholders, particularly affected communities, in monitoring and verifying information to check that impact mitigation measures are appropriate.
		Grievances will be handled as incidents and managed through the incident procedure to enable the grievance to be received, documented, addressed and results fed back to the complainants. This procedure will protect the confidentiality of the persons raising the complaint, where necessary. The feedback will be easily accessible and understandable to members of the affected community and / or staff.
	Reporting	Stakeholders affected by the Project will be informed of progress in the implementation of the management plans and of the effectiveness of management measures.

4 EMERGENCY PREPAREDNESS AND RESPONSE

The Project will implement and maintain an Emergency Preparedness Response and Recovery Plan (“EPR&R”). The plan will be in place prior to construction and be reviewed prior to operation. The purpose of the EPR&R is to provide a framework for a comprehensive system to:

- establish a process to identify potential emergency situations prior to their occurrence;
- take steps to prevent or minimize the impact of potential emergencies;
- train personnel to appropriately identify, report and respond to emergencies;
- provide and maintain emergency response resources and equipment to mitigate potential emergencies;
- define detailed procedural steps to respond and manage various types of potential emergencies;
- provide information to and consult with the surrounding community regarding environmental risks and response measures;
- co-ordinate with external emergency response organizations;
- test communications, emergency procedures and equipment on a periodic basis;
- contain, where practicable, any emergencies and their effects within Project site boundaries;
- safely return to normal operations following an emergency;
- identify the cause(s) of an emergency event and the corrective and preventative measure to avoid a reoccurrence; and
- review and update plans and procedures based on lessons learned from tests and responses to actual emergencies.

The EPR&R will be prepared in accordance with:

- IFC PS3 Resource Efficiency and Pollution Prevention and PS4 Community Health, Safety and Security, which require a plan is in place to effectively respond to emergencies associated with Project hazards and local communities to be involved in the planning process (IFC, 2012);
- IFC/World Bank Group (“WBG”) Environmental Health and Safety (“EHS”) Guidelines, Volume 3 Community Health and Safety, Section 3.7 Emergency Preparedness and Response and the equivalent sections of the Sectoral EHS Guidelines relevant to the Project (WBG, 2007a and b);
- United Nations Environment Programme (“UNEP”) guidelines for Awareness and Preparedness for Emergencies at Local Level (“APELL”), including the guidelines for mining (UNEP, 2001), and dangerous goods transport (UNEP, 2000);
- International Council on Mining and Metals “ICMM” and UNEP guideline on good practice in emergency preparedness and response (2005); and
- International Atomic Energy Agency “IAEA” (2007) safety guide for preparedness for a nuclear or radiological emergency.

For the purposes of the EPR&R, the term “emergency” will refer to an unplanned event when a Project operation loses control, or could lose control, of a situation that may result in risks to human health, property or the environment. The EPR&R will not cover safe work practices for frequent upsets or events, which will be covered by occupational health and safety plans.

The EPR&R will contain the following elements:

- **administration** (relevant policy, purpose, distribution, definitions, scope, criteria for triggering the EPR&R, date and frequency of updates);
- **organisation of emergency areas** (for example command centres and medical stations);
- **roles** and responsibilities;
- **communication systems** (worker notification and communication, community notification, media contacts and media relations strategy);
- **emergency resources** (finance and emergency funds, fire services and medical services, mutual aid agreements provide a clear basis for response by mutual aid providers, contact list);
- **emergency equipment** (such as location of isolation valves, helicopters and equipment for fire fighting, toxicity testing, personal protection and pollution prevention equipment);
- **training** and drills;
- **updating** (to account for changes in equipment, personnel, and facilities);
- **checklists** (role and action list and equipment checklist);
- **business continuity and contingency** (including measures to allow business continuity following an emergency, back-ups of critical information in a secure location to expedite the return to normal operations following an emergency and alternative supplies of resources such as water); and
- **clean up** (options and procedures for clean-up following accidents);
- **emergency scenarios and risks** (identified scenarios, people and environments at risk, maps of risk areas, locations of hazardous substances and properties of hazardous substances);
- **emergency response procedures for each emergency scenario** (with specific information on specific procedure triggers, response actions, equipment, relevant notification procedures, relevant communication procedures, alarm systems, relevant evacuation procedures, relevant media procedures, medical procedures, assessment, monitoring and recording of the progress of the accident, procedures for operational shut down if necessary, relevant procedures for clean-up, recording of actions taken to respond and de-activation of the procedure); and
- **review** (to identify missing or weak elements, consistency with any regional and national disasters plans and compliance with relevant legislation and codes).

The emergency scenarios covered by the EPR&R will be determined by means of risk assessments. Procedures will be developed for at least the following events:

- off-site chemical, oil or fuel spills;
- on-site chemical, oil or fuel spills;
- slope failure at the tailings storage facilities, waste rock facilities or mine workings;
- emergencies arising from natural hazards such as earthquakes, sandstorms, extreme heat, flash floods;
- security incidents such as lost contact / missing person, sabotage or a threat to kill / injure employees;
- vehicle or equipment accidents;
- medical emergencies;
- fire; and
- blasting and explosives accidents.

The EPR&R will distinguish between two types of emergencies as follows:

- Type 1 – emergencies contained within Project site boundaries requiring use of the Project's emergency resources, but not requiring external resources;
- Type 2 – emergencies not contained within the Project site boundaries and / or requiring involvement of external resources.

Type 2 emergencies require application of relevant APELL guidelines. The primary goals of APELL are:

- to raise awareness of local communities living close to industrial activities on how to react if an accident happens; and
- to establish adequate coordination and communication in situations where the public might be affected by accidents and emergencies arising from natural hazards (such as floods).

APELL is a multi-stakeholder dialogue working through a stepwise process comprising the 10 steps listed in the textbox below.

The APELL process

- Step 1 – identify emergency response participants and establish their roles, resources and concerns;
- Step 2 – evaluate risks and hazards that may result in emergency situations in the community and define options for risk reduction;
- Step 3 – have participants review their own emergency plan, including communication for adequacy relative to a coordinated response;
- Step 4 – identify the required response tasks not covered by existing plans;
- Step 5 – match to resources available from the identified participants;
- Step 6 – make changes necessary to improve existing emergency plans, integrate them into an overall community plan and gain agreement;
- Step 7 – commit the integrated community plan to writing and obtain endorsement for it and relevant approvals;
- Step 8 – communicate final version of integrated plan to participating groups and ensure that all emergency responders are trained;
- Step 9 – establish procedures for periodic testing, review and updating of the plan; and
- Step 10 – communicate the integrated plan to the general community.

5 PRELIMINARY ENVIRONMENTAL AND SOCIAL MANAGEMENT PROGRAMME

The tables below list the management measures identified in the ESIA, either as part of the Project Description or through the impact assessment process. The first table presents the commitments arising from the bio-physical impact assessment process and relate directly to the identified impacts in Section 7 of the Volume 2 of the ESIA report. The second table presents the commitments arising from the social impact assessment (Section 8).

These programmes have been developed as outlined in Section 2.1.4. The column headings are explained below.

- **Impact reference** – this specifies the impacts the proposed management measure influences (Tables 1 to 3 only).
- **Objective** - statement of the objective of the management action/s, which generally addresses the impact/s.
- **Reference number** - a unique reference for the management measure.
- **Type** – an abbreviation indicating the type of the management measure (IH = inherent design or management included in the Project description, MM = mitigation measure, EM = enhancement measure, GP = good practice measure that is not critical to managing the impact).
- **Management measure** - a description of the measure or action, which will be clear, concise and specific enough to enable execution of the action. Where relevant, the appropriate targets, indicators, trigger points and / or threshold levels will be incorporated into the management measure. If a set of management actions is required to meet the objective, the ESMP will be simplified by making a commitment to develop an appropriate supporting document in which the detail will be provided. Where the management measure cross references to another measure under a different impact it is shown in italics.
- **Project phase** – an abbreviation indicating the project phase/s when the management measure is applicable (DD = Detailed design, C = Construction, O = Operation, D = Decommissioning, PC = Post Closure).
- **Timing** – the time when the management action should be implemented and / or completed, and if relevant, how frequently it should be undertaken.
- **Achievement criteria** – an indication of how achievement of the management measure will be assessed, which will be used to develop the monitoring, inspection or audit programmes.

Table 5-1: Management programme to address identified bio-physical impacts

Impact Ref.	Objective	Ref No.	Type	Management measure	Project Phase	Timing	Achievement criteria
WR01	Minimise disturbance to natural drainage lines	1	MM	Develop and implement a Storm Water Management Plan.	C, O	Prior to construction	Plan in place with evidence of implementation
WR02	Minimise disturbance to other groundwater users as a result of Project activities	2	MM	Use operational monitoring data of groundwater inflow into the workings to refine the numerical groundwater model to confirm the likely extent and timing of impacts to the groundwater systems in the vicinity of the mining operations.	O	Once sufficient data collected	Report on outcome of study
		3	MM	If required, investigate the need for and location of alternative supplies to livestock herders.	O	On receipt of justified complaint	No justifiable complaints received
		4	MM	Use operational monitoring data of water abstractions to refine the numerical groundwater model to confirm the likely extent and timing of impacts to the groundwater systems in the vicinity of the wellfield.	O	Once sufficient data collected	Report on outcome of study
		5	MM	If required, investigate the need for and location of alternative supplies to communities using the Tejiat well.	O	On receipt of justified complaint	No justifiable complaints received
		6	MM	Consider joining the water users association so strong communication with other key abstractors can be maintained.	O	Ongoing	Minutes of meetings
		7	MM	Investigate and if deemed appropriate utilise water conservation technologies to minimise need for additional make-up water from the well field.	DD, C, O	When designing or upgrading water systems	Records of water abstraction
		WR03	Minimise risk of seepage from mine residues impact on other groundwater users	8	IH	Undertake predictive numerical modelling once the exact composition of the WRDs and mine wide water balance has been finalised (during detailed design) to determine if any additional mitigation measures are required in the development of the WRDs.	O
9	IH			Construct TSF with a clay liner to minimise the risk of any process water to the underlying strata.	C	During construction	Signed off by competent engineer
10	IH			Concurrently rehabilitate the TSF with low uranium content reject material from the processing circuit (which has a low ARDML potential).	O, D	Ongoing	Annual report on progressive rehabilitation
11	MM			Develop and implement a Mine Residue (Waste Rock and Tailings) Management Plan.	O	Ongoing	Plan in place with evidence of implementation
WR04	Minimise risk of waste water discharges impacting on other groundwater users	12	MM	Maintain sewage treatment and disposal systems in accordance with design criteria.	C, O	Ongoing	Maintenance records
		13	MM	Take a duty of care to confirm third party contractors are appropriately disposing of any sewage sludge in accordance with municipal requirements.	C, O	Ongoing	Records of checks undertaken

Impact Ref.	Objective	Ref No.	Type	Management measure	Project Phase	Timing	Achievement criteria
WR05	Minimise the risk of seepage from underground mine workings impacting on other groundwater users	14	MM	Use operational monitoring data of groundwater inflow into the workings (and its quality) to refine the numerical groundwater model to confirm the likely extent and timing of groundwater rebound, and how this may be impacted by any leaching post closure.	PC	Prior to final closure	Report on outcome of study
WR06	Manage potential impacts arising due to the formation of a pit lake	15	MM	If a pit lake does form once open pit mining has ceased, control access until such time as the quality of the pit lake can be confirmed and/or measures are taken to prevent formation of lake.	O, PC	On formation of a pit lake	Inspection of control measures
		16	MM	Review the mine plan during operation to determine if the chance of a pit lake establishing post closure can be prevented, for example by flattening the base of the pit at end of life of mine. If necessary, revise the closure plan to incorporate the necessary measures.	O	When undertaking closure planning	Report on outcome of study
SG01	Minimise degradation of soil and reduction in land capability	17	IH	Where possible source borrow materials required for construction from within the Project area to minimise transport of materials to site and to reduce the impacted footprint.	C	During construction	Records of land disturbance
		18	MM	Limit the disturbed footprint by only clearing land required for construction of surface infrastructure.	C	On commencing construction	Records of land disturbed
		19	MM	Prohibit unnecessary off-road driving.	C, O, D, PC	Ongoing	Records of warnings issued
		20	MM	Remediate disturbed land, for example by re-establishing a thin layer of broken or crushed rock over disturbed area where needed to reduce dust emissions and risk of erosion.	C, O, D	Ongoing	Records of progressive rehabilitation
		21	MM	Inspect disturbed areas and rehabilitated areas for visual signs of erosion and/or sand deposition affecting either the Project's or community's use of the land. If problems identified, initiate remedial action.	C, O, D, PC	At least twice a year	Inspection records
SG02	Minimise risk of soil contamination	22	IH	Use dust suppressants as required to minimise generation of fugitive and entrained dust.	C, O, D	At least once a day as needed	No exceedance of PM metal concentrations at Project boundary
		-	IH	Undertake progressive rehabilitation of tailings as per commitment Ref. 10.	-	-	-
		23	IH	Store process chemicals in bunded areas with dedicated spill kits located nearby.	C, O	Ongoing	Inspection records
		24	MM	Put in place spill management procedures to minimise likelihood of spills and facilitate prompt response in the event a spill does occur.	C, O, D	In the event of a spill	Incident records
		25	MM	Provide spill clean-up training.	C, O, D	Annually	Training records

Impact Ref.	Objective	Ref No.	Type	Management measure	Project Phase	Timing	Achievement criteria
		26	MM	Maintain machinery and vehicles in accordance with manufacturers' instructions.	C, O, D	As per manufacturers requirements	Maintenance records
AQ01	Minimise Project contribution to naturally high dust levels	27	IH	Water or treat with an appropriate dust suppressant roads and active work areas, as appropriate, to minimise entrainment of particulate matter.	C, O, D	As required	Agreed dust standards met at Project boundary
		28	IH	Use water sprays at the crushers to minimise fugitive dust.	O	Ongoing	Visible dust reduced
		29	MM	During detailed design confirm the assumptions made in the air quality model accurately reflect what will be built. If significant differences identified, re-run the model using the final design to confirm the impact predictions given in this report are accurate.	DD	Prior to construction	Report on outcome of study
		30	MM	Develop and implement an Air Quality Management Plan.	C, O, D	During construction	Plan in place with evidence of implementation
AQ02	Minimise releases of gaseous emissions	-	-	As for AQ01 and Ref. 26 in SG02	-	-	-
BD01	Minimise disturbance to habitats or species of conservation importance	-	MM	Limit the disturbed footprint as per Ref 18.	-	-	-
		31	MM	Conduct an ecological walk-over or drive-over survey prior to construction to check for new ecological features that should be avoided or managed during construction e.g. birds' nests, mammal dens.	DD	Prior to ground disturbance	Records of surveys undertaken
		32	MM	Inform and provide community members the opportunity to collect plants of use (e.g. for medicinal purposes, firewood, fruits) prior to clearing the areas for surface infrastructure construction.	C, O	Prior to ground disturbance	Invitations to community members
		33	MM	Stipulate and enforce speed limits along access and haul roads to minimise the risk of road kills.	C, O, D	Ongoing	Warning issues
		34	MM	Implement appropriate covers on the waste storage areas for putrescible waste to prevent scavenger animals from being attracted to the site.	C, O	Ongoing	Minimal scavenger presence observed
		35	MM	If required, put in place a plan to manage invasive species.	O	If invasive species observed	Plan in place with evidence of implementation
BD02	Minimise risk of a tailings pool resulting in bird deaths	36	MM	Re-use any water collected on surface of TSF by the processing plant as soon as practicable. If impacts are found to be occurring investigate bird deterrent measures.	O	After rainfall events	No observed bird deaths
RA01	Minimise direct exposure people and animals to radiation from Project activities	-	IH	As for dust suppression in AQ01.	-	-	-
		37	MM	If exclusion zones preventing access to TSF, ROM and plant areas are not feasible then ensure adequate warning signs with pictorial and verbal warnings of the hazards are located around any potential sources of radiation exposure.	O, D	If public are approaching the TSF or other Project infrastructure	Inspection of warning signs

Impact Ref.	Objective	Ref No.	Type	Management measure	Project Phase	Timing	Achievement criteria
		38	MM	Undertake stakeholder engagement to raise awareness and educate the local population on radiation exposure.	C, O	Ongoing	Engagement records
		39	MM	Implement rehabilitation measures post-closure such that the radiation dose received at the surface of the TSF is ALARP.	D	Once deposition stops	Radiation levels at surface acceptable to authorities
		40	MM	Cover tailings material as soon as possible to act as a barrier to rainfall erosion, radon transfers to air and accessibility to receptors.	O	Ongoing	TSF operational records
RA02	Minimise risk of inhalation of radon and radionuclides from ventilation systems	41	IH	Develop and implement a Radiation Management Plan and Health and Safety Plan.	C, O	Ongoing	Plans in place with evidence of implementation
		42	IH	Design site exhaust stacks taking into account prevailing winds.	DD	Detailed design	Appropriate design
		43	MM	Clean-up ground if contaminated with radioactive dust from exhaust plume above agreed guideline level.	O, D	If levels exceeded	Levels maintained as per agreed standard
		44	MM	Update dispersion modelling taking consideration of the prevailing wind direction during detailed design of the ventilation systems.	DD	Detailed design	Revised model results
		45	MM	Discourage grazing in the immediate vicinity of the ventilation shafts if future measurement shows required.	O, D	If concerns raised	Deterrent measures in place, if required
RA03	Minimise the risk of accidental spillage of yellow cake	46	IH	Design packaging plant to minimise human presence within the plan during normal operations.	DD	Detailed design	Appropriate design
		47	IH	If human presence is required in the restricted area, ensure staff adhere to strict access rules and the use of personal protective equipment.	O	Ongoing	No health and safety issues raised by staff
		48	IH	Construct and maintain scrubbers on the ventilation systems of the packaging plant.	C, O	As per manufacturer's instructions	Agreed limits complied with
		49	IH	Ensure transport of yellow cake undertaken by highly experienced specialist uranium logistics operators.	O	When contracts agreed	No accidents
		50	IH	Require logistics operators to provide driver training and awareness programmes.	O	When contracts agreed	No accidents
		51	IH	Require logistics operators to undertake regular vehicle maintenance and inspection programmes.	O	When contracts agreed	No accidents
		52	IH	Transport yellowcake is sealed in drums in sealed shipping containers	O	Ongoing	No accidents
		53	IH	Include management of potential spills in the Emergency Response and Preparedness Procedures.	C	When plans prepared	Included in plan
		54	IH	Provide adequate PPE and spill kits in the event of a spill of yellow cake.	O	Ongoing	Spills contained

Table 5-2: Management programme to address identified social impacts

Impact Ref.	Objective	Ref. No.	Type	Management measure	Project Phase	Timing	Achievement criteria
SE01	Optimise the benefits of increased government revenue and fiscal and foreign exchange income	1	EM	Establish and maintain constructive relationships with regulatory bodies at regional and national level that encourage and support high standards of transparency and accountability regarding tax and royalty payments.	All	Ongoing	Evidence of meetings held with relevant regulatory bodies
		2	EM	Establish monitoring and payment mechanisms in line with Government Requirements.	C, O	Prior to first payments	Monitoring and payment records
		3	EM	Develop a Closure and Rehabilitation Plan that includes measures to enhance the likely sustainable social benefits associated with the project.	O, D, C		
SE02	Maximise direct and indirect employment opportunities for the Project	4	EM	Develop and implement a Human Resources Management Plan addressing the following: <ul style="list-style-type: none"> • Employment policy to 100% employment of Nigeriens, where practicable; • Corporate definition of 'local' as the urban and rural affected populations and communities of Arlit Department; • Prioritised recruitment of skilled, semi-skilled and unskilled workers from the local area; • Prioritisation of local and indigenous contractors employing Nigeriens from the Agadez Region; • Local promotion of short, medium and long term work opportunities through designated places; • Training and development of local staff with the aim of maximising local content in semi-skilled and skilled positions; • Potential influx of migrant labour from neighbouring countries or other parts of Niger. 	C	Prior to construction	Plan in place and evidence of implementation
		5	EM	Provide a Continuing Professional Development (CPD) training programme for staff (to include: technical and transferable skills, health and safety, hygiene, cultural awareness and life skills).	C, O	Ongoing	Records of staff CPDs
		6	EM	Engage with existing mining TVET providers to increase access for young men and women from the Arlit Department to benefit from direct and indirect employment opportunities in with the project.	C, O	Ongoing	Evidence of relationship with TVET
		7	EM	Develop and implement a Local Procurement Plan to increase indirect employment.	C	Prior to construction	Plan in place and evidence of implementation
		8	EM	Build capacity of local suppliers of goods and services to enable them to bid and meet quality, quantity and reliability requirements.	C, O	Ongoing	Records of capacity building exercises

Impact Ref.	Objective	Ref. No.	Type	Management measure	Project Phase	Timing	Achievement criteria
SE03	Minimise negative impacts associated with increased demand for goods and services	9	MM	Review how other mining companies have managed similar circumstances to plan how to address expectations and perceptions of employment and benefits associated with infrastructure and service provision	DD, C		Review report
		10	MM	Liaise with local authorities to identify short and long term opportunities to improve existing infrastructure and to expand economic development within the urban settlements through local provision of services	C, O		Records of government engagement
		11	MM	Engage with Government and other key stakeholders involved in service provision and social infrastructure development to: <ul style="list-style-type: none"> discuss and plan timeline of infrastructure demand increases develop a strategic plan to address increased demand on social infrastructure identify opportunities for structured investment opportunities to manage increase in demand. 	C, O	Ongoing	Records of government engagement
		12	MM	Prohibit recruitment of full time and contractor staff except at designated recruitment centres located within Arlit.	C, O	When recruitment required	Job seekers not found at gate
		13	MM	Develop and implement a Community Development Plan to improve services in the area to meet increased demand as a direct result of the mine (workers living in urban areas).	C, O	Prior to ops then ongoing	Plan in place and evidence of implementation
SE04	Minimise negative impacts associated with changes in community dynamics	14	MM	Update the Stakeholder Engagement Plan to encourage active participation of key stakeholders, including Project affected communities in decisions that affect them.	C	Prior to construction	Plan in place and evidence of implementation
		15	MM	Create a policy against discrimination in hiring practices and develop positive employment policies regards creation of initiatives and programs that give careful consideration to the social implications of employing traditional rural and urban men and women.	C	Prior to construction	Policy in place and evidence of implementation
		16	MM	Provide the support necessary for women in a broad range of personal and family circumstances to be able to fully benefit from increased employment opportunities provided by the Project.	C, O	Ongoing	Records of support given
		17	MM	Develop policies against discrimination in the work place and provide cultural and gender awareness training as a key component of the Health and Safety Plan.	C	Prior to construction	Policy in place and evidence of implementation Records of training
		18	MM	Ensure corporate social initiatives take into consideration traditional rural and urban men and women's concerns and inputs, in order to mobilise their contributions to community development efforts.	O	Ongoing	Documented in social initiative business plans

Impact Ref.	Objective	Ref. No.	Type	Management measure	Project Phase	Timing	Achievement criteria
SE04	Minimise disturbance associated with loss of pasture land	19	MM	Engage with local authorities to identify and agree process and location to drill and construct an alternative community borehole/livestock watering station replacement for the Core shed borehole access.	C	Prior to operations	Alternative borehole in agreed location
		20	MM	Engage rural project affected people in economic displacement discussions to devise an Economic Displacement and Livelihoods Restoration Plan that includes culturally appropriate innovations providing sustainable alternatives, to offset the loss of pasture.	DD, C	Prior to land clearance	Records of engagement and plan in place with evidence of implementation
CH01	Minimise Project related spread of disease	21	MM	Develop and implement a worker housing policy that enables some control over the quality of housing occupied by the mine employees through control of housing stock sourced through workers allowances.	C	Prior to ops	Policy in place with evidence it is being adhered to
		22	MM	Establish an occupational and community health promotion awareness programme in partnership with local health professionals and community representatives.	O	Ongoing	Programme in place with records of initiatives undertaken
		23	MM	Establish a community vector (mosquito) control programme including residual spraying and environmental management of staff housing and office areas.	O	Ongoing	Programme in place with records of spraying
CH02	Minimise the risk of Project related injury and accidents	24	MM	Develop and implement a Waste Management Plan to: <ul style="list-style-type: none"> Ensure safe disposal of scrap materials that have no reusable or recyclable value; Make provision for scrap material that has reusable and recyclable value to present no toxic hazard to end users prior to disposal or disbursement. 	C, O	Prior to construction then ongoing	Plan in place and evidence of implementation
		25	MM	Post warning signs around the waste disposal sites.	C	During construction	Inspection of signs
		26	MM	Incorporate waste management awareness into the occupational and community health promotion programme (see Ref. 25).	O	Ongoing	Programme documentation
		27	MM	Provide or require compulsory driving instruction and test for contractors and staff using vehicles on site or belonging to the Project.	C, O	Prior to staff starting work	Training records
		28	MM	Support the establishment of safety technology including speed restrictors and potentially cameras being fitted to Project trucks.	C, O	When obtaining new trucks	Records of technology used
		29	MM	Apply traffic calming measures and speed limits on site.	C	Ongoing	Records of measures imposed
		30	MM	Provide road safety awareness training to local communities.	C, O	Ongoing	Training records
		31	MM	Use warning signs suitable for literate and illiterate populations.	C, O, D, PC	Ongoing	Inspection of signs

Impact Ref.	Objective	Ref. No.	Type	Management measure	Project Phase	Timing	Achievement criteria
AH01	Avoid loss of sites of archaeological or cultural importance	32	MM	Establish a Heritage Resources Management Plan to address the flagging, fencing and if required excavation of sites likely to be directly impacted by the Project and a chance find procedure for any sites identified during on-going construction and operation of the site.			

6 PRELIMINARY ENVIRONMENTAL AND SOCIAL MONITORING PROGRAMMES

'Project facilities' refer to the different Project related installations. 'Project area' refers to the parts of the Madaouela West tenement where Project personnel are likely to be working.

Table 6-1: Preliminary environmental monitoring programme

Aspect	Impact reference	Type of monitoring	Units	Frequency	Location/s	Records	Internal reporting
Land disturbance	SG01/BD01	Extent of footprint area disturbed and /or rehabilitated	m ²	Monthly during construction and then as needed when land disturbed or rehabilitated	Within footprint of all disturbed areas, including along pipelines, conveyors and roads	Log	Monthly report during construction and rehabilitation Annual report during operation
Water	WR01	Volume and rate of water pumped from the pits (pump ratings can be used)	m ³ /d and L/s	Daily when pit dewatering occurring	Pit sump pumps	Database	Monthly report of max and min rate and daily volume
	WR02	Volume and rate of water pumped from the well field and underground operations (pump ratings can be used)	m ³ /d and L/s	Daily when wellfield and/or mine dewatering in operation	Well field and dewatering pumps	Database	Monthly report of max and min rate and daily volume
	WR02	Groundwater levels in village wells within drawdown cone	m below ground level (mbgl)	Continuously using transducers or monthly using dip meters	Monitoring boreholes	Database	Quarterly report of levels and long term trends
	WR02	Rate and volume of water used and recycled at the mine site	m ³ /d and L/s	Continuous	Offices, TSF, storm water ponds, processing plant, water spray trucks and any other key water off-take points	Database	Monthly water balance showing daily/monthly volumes

Aspect	Impact reference	Type of monitoring	Units	Frequency	Location/s	Records	Internal reporting
	WR02, RA01	Groundwater quality at the mine site and in nearby communities for at least the following parameters ^(a) : pH, Eh, TDS, alkalinity, temperature, dissolved oxygen, nitrate, chloride, gross alpha and gross beta, fluoride, sulfate, phosphate, Na, K, Ca, Mg, Al, Cr, Fe, Mn, B, Cu, Zn, As, Se, Mo, V and U	ug/L, mg/L or other units as appropriate	Quarterly for full parameter suite, with field pH, EC and temperature collected monthly when water levels recorded	New holes installed around the TSF; hazardous materials storage areas; monitoring and community boreholes	Database	Quarterly report of results and long term trends
	WR02	Inspection of storage facilities to determine need for sediment removal	None	Quarterly	Sediment ponds	Log	Annual report
Air quality	AQ01	Weather conditions on site (wind, rainfall, temperatures)	various	Daily	Onsite weather station	Database	Quarterly report of results and long term trends
	AQ01	Total dust fallout over a monthly period	µg/m ³	Monthly	Bucket monitoring stations	Database	Monthly report of results and long term trends
	AQ01	PM ₁₀ and PM _{2.5} (24 hour reading)	µg/m ³	Monthly	Monitoring stations	Database	Monthly report of results and long term trends
	AQ02	Ambient NO ₂ and SO ₂ 24-hour concentrations	µg/m ³	Quarterly	Monitoring stations (subject to review during construction)	Database	Quarterly report of results and long term trends

Aspect	Impact reference	Type of monitoring	Units	Frequency	Location/s	Records	Internal reporting
Radiation	RA01	Short and long term Gamma and Radon measurements at the mine site and in nearby communities	Various	Quarterly	TSF, WRDs, pits, ventilation shafts, offices, communities, upwind reference point, various along site boundary	Database	Quarterly report of results and long term trends
	RA01, RA02	Radionuclide analysis of PM ₁₀ dust and total dust fallout	Bq/m ³	Annual	Air quality monitoring locations	Database	Annual report of results and long term trends
Biodiversity	BD01	Visual inspections of presence of invasive plant species	None	Quarterly	Disturbed and rehabilitated areas, and adjacent areas	Log	Annual report on findings and remedial measures
		Records of major wildlife sightings	None	On occurrence	Within or near the Project area	Log	Annual report on observations
		Records of prevalence of nuisance animal species	None	On occurrence	Within or near the Project area	Log	Annual report on observations
	BD01 BD02	Records of wildlife kills by equipment, vehicles, drowning or poisoning	None	On occurrence	Within the Project area	Log	Monthly report on fatalities and remedial measures
Vehicles and equipment	BD01	Random speed checks	km/hr	Once every two weeks at different locations and times	Access and haul roads	Log	Annual report
	CH02	Blasting-related vibrations (measured as Peak Particle Velocity)	Mm/s	Initial 3 blasts and on receipt of complaint	Closest villages or at location of complainant	Log	Annual report
	SG02	Records of vehicle and equipment maintenance	None	As per manufacturer's instructions	Mine truck shop and equipment workshop	Log	None
	CH02	Baseline noise emissions of new equipment	dB	On commissioning of new equipment	Within 100m of equipment	Log	None

Aspect	Impact reference	Type of monitoring	Units	Frequency	Location/s	Records	Internal reporting
Hazardous materials	SG02	Records of hazardous materials acquired and used	m ³ or kg of each type of material	On arrival at site and during construction/operation	Warehouse or storage facility	Log	Quarterly report
	SG02	Inspections of hazardous substances containment facilities, instrumentation and detection systems	None	At least monthly for containment facilities with instrumentation as per manufacturer's instructions	Hazardous material containment facilities	Log	Annual report (non-conformances handled as per Section 1.3)
Waste	CH01, SG02	Volume of different wastes types disposed of to landfill or removed to hazardous waste site	kg or tonnes	Daily	Waste disposal sites	Log	Quarterly report
	SG02	Volume of different waste types recycled or reused	kg or tonnes	Daily	Waste disposal sites	Log	Quarterly report

Table 6-2: Socio economic monitoring programme

Aspect	Impact reference	Type of monitoring	Units	Frequency	Location/s	Records	Reporting
Economic development	SE01	Government revenue used in areas affected by the Project	Percentage	Yearly	Arlit Department	Government revenue and budget records	Yearly social performance report
	SE02, SE03	Source of employees (for the Client and its contractors) categorised by: <ul style="list-style-type: none"> • skill level; • whether they are local, provincial, national and/or international ; • ethnicity; • gender. 	Percentage of employees in each category	Ongoing throughout the life of the project	Project facilities	Employee database for the Client and for its contractors	Quarterly human resources report
	SE02, SE03	Origin of contractors and suppliers (Local, provincial, national and/or international)	Percentage	Quarterly	Project facilities	Contracts register	Quarterly report from contractors/suppliers
Wellbeing of employees	CH01	Health and well-being of mine workers and contractors	Numbers of recorded illnesses	Monthly	Mine site	Number of sick days	Monthly work attendance reports
	SE03	Gender Equity in the work place	Numbers of men and women employed/contracted and skill breakdown	Ongoing throughout the life of the project	Project facilities	Employee database for the Client and for its contractors	Quarterly human resources report
Resettlement and loss of land and social and natural resources	SE05	Initiatives for promotion of alternative livelihoods (focus on affected people and vulnerable members)	Number, type and effectiveness of initiatives	Annually	Project affected villages	Reports on initiatives; Meeting minutes	Quarterly community relations report

Aspect	Impact reference	Type of monitoring	Units	Frequency	Location/s	Records	Reporting
Social order	SE03, SE04, SE05	<p>General social monitoring using available secondary sources with some household questionnaires to assess:</p> <ul style="list-style-type: none"> • population; • prevalence of crime; • prevalence of social diseases (alcohol abuse, prostitution, drug abuse) • access to social infrastructure such as schools, health centre, grain banks, markets for selling and buying, credit facilities, religious centres, water supply and sanitation. 	Percentage	Two yearly	Focussing on Project affected villages with some assessment of Arlit	Primary sample survey; Government statistics Police records; Media reports; Community meeting minutes	Social monitoring report
	CH01	<p>Prevalence of communicable diseases:</p> <ul style="list-style-type: none"> • STIs • Tuberculosis and respiratory track infections • Malaria • Diarrhoea 	Incidence of diseases	Quarterly	Arlit and affected villages	Reports from health centres; Employee health screening records	Quarterly social performance report
	CH02	Avoidable accidents and incidents	Number and type of incidents	Monthly	Project area	Health and safety Records Policy records	Monthly HSE reporting

Aspect	Impact reference	Type of monitoring	Units	Frequency	Location/s	Records	Reporting
Archaeology and cultural heritage	AH01	Relocation of impacted cemeteries/cultural sites to the satisfaction of affected people and regulators	Number and type of site moved	Quarterly during land clearance	Project affected area	Relocation survey reports Stakeholder meetings records	Quarterly social performance report

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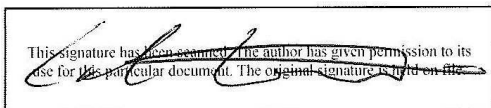
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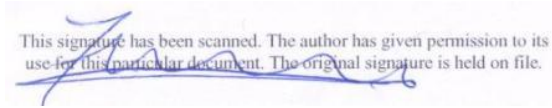
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Carl Williams,
Senior Consultant,
Environmental Engineering
SRK Consulting (UK) Limited



This signature has been scanned. The author has given permission to its use for this particular document. The original signature is held on file.

Fiona Cessford,
Corporate Consultant, Environment
SRK Consulting (UK) Limited