

IAEA EXPERT REPORT

on the

Independent Technical Review of the Environmental Impact Assessment and Management Reports of the Proposed Wings Project for the Pilot In-Situ Leaching (ISL) Operations in The Omaheke Region

Counterpart: Namibian Ministry of Health and Social Services

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2. EXECUTIVE SUMMARY

The Government of Republic of Namibia, through the Ministry of Health and Social Services, requested the International Atomic Energy Agency to provide an independent technical review of the Environmental Impact Assessment and Environmental Management Plan submitted by Headspring Investment (Pty) Ltd for the proposed Wings Project. The project involves pilot in-situ leaching operations in the Omaheke Region within the Stampriet Transboundary Aquifer System. Headspring Investment, a Namibian registered company, owned by Uranium One Group, a subsidiary of ROSATOM, has held mineral rights on eight Exclusive Prospecting Licences since 2011, covering uranium and other metals.

A Terms of Reference, annexed to this report, was agreed upon by all parties to define the scope and methodology of the review. From the outset, it was clarified that it is not in the IAEA's mandate to provide recommendations regarding the approval or rejection of the Wings Project; rather, its role was to offer an independent technical review to support the Namibian authorities in making an informed decision. The analysis presented in this report applies exclusively to the pilot phase and does not extend to the full-scale ISL project.

The IAEA team – comprising external experts and the Agency staff – conducted a technical review of the submitted documentation and held virtual meetings to clarify key aspects of the information provided. These meetings included participation from representatives of the Project Proponent.

The expert mission included a comprehensive review of documentation submitted for the proposed Wings Project and a four-day in-country mission conducted from 10 to 13 February 2026. During the mission, the IAEA Team held meetings with representatives of relevant Namibian ministries, the Project Proponent, a range of stakeholders and interested parties, and conducted a field visit to the Wings Project pilot in-situ leaching site.

The IAEA Team completed a technical and factual analysis of all documentation and made expert evaluations on both stakeholder comments and the technical aspects of the Environmental Impact Assessment and Environmental Management Plan.

Some stakeholders consistently highlighted the importance of groundwater protection, raised concerns regarding the completeness and clarity of environmental documentation, and expressed uncertainty about the transparency and status of the decision-making process. While several good practices were noted – such as active multi-ministerial coordination and constructive community-level engagement – the evaluation identified opportunities to strengthen communication, improve documentation quality, and reinforce regulatory oversight.

The technical evaluation of the EIA and EMP identified areas of improvement in completeness, integration, and evidentiary support. Although the documents present a general framework for assessing environmental risks, key components – including aquifer confinement, hydraulic control, geochemical behaviour, groundwater restoration, monitoring design, and contingency planning – would benefit from more detailed information. Some technical uncertainties should be further addressed, including those related to the confinement between the Auob and Kalahari aquifers and the demonstration of geochemical processes relevant to production and restoration. A more detailed and fully integrated pilot test plan would ensure coherence between environmental assessments and operational planning.

To better align the proposed pilot-scale ISL operations with international good practice, additional field data, improved modelling, clearer mitigation strategies, and strengthened integration across technical disciplines would contribute to demonstrate safe and environmentally responsible in-situ leaching.

The evaluation identified several areas where the technical studies and the overall thoroughness of the Proponent's EIA and EMPs should be strengthened. Key issues requiring further development include:

- Verification of aquifer confinement;
- Demonstration of hydraulic containment;
- Validation of geochemical processed relevant to restoration;
- Definition of monitoring programmes and contingency systems.

Demonstration of aquifer confinement and the ability to maintain hydraulic control are fundamental prerequisites for ISL operations. The Proponent's current documentation asserts confinement but does not provide comprehensive empirical evidence to support this conclusion.

Until these aspects are adequately addressed, there remains uncertainty regarding the ability of the proposed pilot operation to ensure the protection of groundwater resources.

The results of the expert evaluation are presented in this report for consideration by the Namibian authorities. The report offers an independent technical assessment and conclusions, outlining the main observations and highlighting good practices as well as opportunities for improvement. Twenty-seven suggestions – seven relating to stakeholder engagement (S.1–S.7) and twenty relating to technical aspects of ISL operations (T.1–T.20) to address issues and to support safe and environmentally responsible in-situ leaching.

3. INTRODUCTION

The Government of the Republic of Namibia, through the Ministry of Health and Social Services (Office of the Executive Director), as facilitator and coordinator of IAEA Technical Cooperation matters, has formally requested assistance from the International Atomic Energy Agency (IAEA) to provide an independent technical review based on international good practices of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports submitted by Headspring Investment (Pty) Ltd for the proposed Wings Project, which involves pilot in-situ leaching (ISL) operations in the Omaheke Region.

Headspring Investment (Pty) Ltd, owned by Uranium One Group, a subsidiary of the Russian state-owned corporation ROSATOM, has held mineral rights on eight Exclusive Prospecting Licences (EPLs) in southern Namibia since 2011. These rights cover the exploration of nuclear fuel (uranium), as well as base and rare metals. As part of its application for an Environmental Clearance Certificate, the company has proposed drilling exploration and hydrogeological boreholes to depths ranging from 160 to 400 meters, with the potential for test mining activities within the Stampriet Transboundary Aquifer System (STAS).

A Terms of Reference (ToR) (Annex I) for the evaluation, and the group of experts and IAEA staff members (Annex II), was established in consultation with the Namibian counterparts. The ToR was agreed upon by all parties to define the scope and methodology of the review. From the outset, it was clarified that it is not in the IAEA's mandate to provide recommendations regarding the approval or rejection of the Wings Project; rather, its role was to offer an independent technical review to support the Namibian authorities in making an informed decision. The analysis presented in this report applies exclusively to the pilot phase and does not extend to the full-scale ISL project.

The IAEA Team conducted a comprehensive review of the EIA and EMP documentation. Following analysis of the documentation, the IAEA Team undertook a 4-day in-country mission to verify observations and clarify outstanding issues.

The IAEA team conducted a technical and factual analysis of the documentation provided, as well as observations made during an in-country mission. The analysis presented in this report applies to the proposed Wings Project pilot test and does not extend to a future state full-scale ISL project. Some expert suggestions are presented for a potential scenario in which the Namibian authorities elect to advance the project; however, these suggestions remain technically independent of that decision.

The results of the expert evaluation are presented in this report for consideration by the Namibian authorities. The main body of the report offers an independent technical assessment and conclusions, summarizing main observations, identifying key issues, and offers suggestions for adjustments or enhancements for safe and environmentally responsible ISL. The experts' detailed observations and analysis are provided in the Appendices I-III of this report. The Annexes contain records of administrative aspects of the review process.

Decisions regarding the approval of the proposed Wings Project rest solely with the Namibian authorities. The role of the IAEA Team was limited to providing an independent technical review based on international good practices of the EIA and EMP, and supporting document, to support the Namibian authorities in their own decision-making process.

4. THE REVIEW PROCESS

The review process was completed in two stages:

Stage 1: The IAEA Team examined documentation focussing on assessment of the completeness, quality and relevance of the environmental impact assessments (EIA), environmental management plan (EMP) reports and other supporting documents. During Stage 1 the IAEA Team held discussions, via virtual meetings, with Namibian authorities and the Project Proponent to clarify information and make further request for information.

Stage 2: Following the analysis of the documentation a 4-day in-country mission of the experts and IAEA staff members took place from 10-13 February 2026, including meetings and a visit to the Wings Project pilot ISL site.

A detailed description of the review activities in each stage is provided below.

2.1 Review process stage 1: Examination of documentation

The Namibian counterparts shared with the group of experts and IAEA staff members an advanced information package for the documentation for the evaluation of the EIA and EMP of the Wings Project. The documentation provided is listed in Annex III.

The IAEA Team examined the documentation provided on 31 July 2025; a meeting (in virtual capacity) was convened to discuss the materials shared by the Namibian counterparts. The discussions were highly constructive, resulting in a shared understanding among all participants. However, several questions were raised during individual expert contributions. It was agreed that these queries would be forwarded to the Namibian counterparts to ensure that the final assessment accurately reflects the situation in Namibia, regarding the implementation of the Wings Project. As per the consensus reached during the meeting, no conclusions were drawn at that stage.

The questions below were then submitted to the Namibian Counterparts on 5 August 2025. Questions 1 to 17 were more general in nature and those from 18 to 29, more specific.

Answers to questions 1 to 17 were provided by email sent to the IAEA team on 14 August 2025. Questions and respective answers (verbatim) provided by the Namibian counterpart are shown in Appendix I of this report.

Upon receiving the inputs from the Nambian counterparts, a virtual meeting involving the IAEA Team and professionals from Namibia was then held on 18 August 2025. The list of participants in this virtual meeting is provided in the Annex IV. The purpose of the meeting was to provide to the Namibian counterparts a general assessment of the documentation with the available information; highlight areas where information could be improved and/or request additional documentation. On 21 August 2025 the Namibian counterparts, by email, indicated that additional documents were uploaded in the IAEA Microsoft Teams. However, the IAEA Team identified that a number of the requested documents was still missing.

It has been agreed that a meeting with the Project Proponent would be appropriate to address the issues of more technical nature as described in questions 18 to 29. This meeting was implemented in virtual capacity on 3 October 2025 with the participation of representatives from the Project Proponent led by Mr Aldo Hengari. The meeting was useful to clarify the pending issues and direct the Proponent to what as being sought, in terms of information, by the IAEA Team. The list of participants of this virtual meeting is available in the Annex IV of this report.

Finally, on 31 October 2025 another virtual meeting with the participation of the Namibian counterparts, Project Proponent representatives and the IAEA Team took place. This meeting was focused on addressing the technical questions 18 to 29. In Appendix I of this report, the questions are reproduced together with the provided answers. The list of participants in this virtual meeting is provided in the Annex IV.

Following the meeting with the Project Proponent, three issues remained to be addressed to ensure safe operational integrity and minimize environmental impacts.

1. Geological integrity and solution containment: Confirm that the geological setting provides sufficient containment to prevent significant migration of leaching solutions from the designated ISL target zone into adjacent aquifers.
2. Validation of geochemical reactive transport modelling: Share the results of the geochemical reactive transport model with the IAEA to enable a thorough review of the underlying assumptions and to establish a reliable estimate for the timeframe for the system to return to baseline conditions post-operation.
3. Waste management and disposal pathways: Ensure that secure and compliant waste disposal routes are in place for managing operational by-products.

These key issues were agreed to be further evaluated during the in-country mission, which was supported by both the Namibian counterparts and the Project Proponent. The experts prepared additional questions (Annex V), which were submitted to the Project Proponent through the Namibian counterparts on 5 February 2026. It was not anticipated that the Proponent would provide detailed written responses to each

question. Rather, the questions were intended to outline the general technical lines of inquiry on the outstanding key issues, to be addressed during the in-country mission.

2.2 Review process stage 2: In-country mission

An agenda for the in-country mission was established in consultation with the Namibian counterparts (Annex VI).

The IAEA Team met with Namibian counterparts and representatives of competent authorities on 10 February 2026, as well as relevant Ministries at the Prime Minister's Office on 11 February 2026, in Windhoek. During these meetings the experts and participants undertook technical and scientific exchange of information for the evaluation, as well as hearing concerns and comments relevant to the proposed Wings Project.

The IAEA Team met with the stakeholder group, the Stampriet Aquifer Uranium Mining Association (SAUMA) on 10 February 2026 in Windhoek. On 12 February 2026 the IAEA Team attended a meeting in Gobabis in the Omaheke Region, which was attended by officials of local and regional government and representatives of local community groups and organizations. The IAEA Team heard from attendees their concerns and comments in relation to the proposed Wings Project.

A field visit to the Wings Project pilot ISL site, in the Omaheke Region, and meeting with the Project Proponent at the project office in Leonardville, took place on 13 February 2026.

The list of participants of in person meetings during the in-county mission is provided in the Annex VII.

During the in-country mission, the IAEA Team undertook activities to verify prior observations and further assess the key issues identified during the document examination stage. In line with the ToR, observations and verifications made by the experts and IAEA staff during the in-country mission are documented in the Appendices to this report:

- Appendix II: Key stakeholder comments and concerns
- Appendix III: Technical observation and analysis

5. MAIN OBSERVATIONS

Based on review of documentation and observations made during the in-country mission, expert evaluations were made on: 1) stakeholder comments and concerns; and 2) technical aspects of the EIA and EMP of the proposed Wings Project. The following is a summary of the main observations made. Detailed analysis can be found Appendix II and III.

3.1. Stakeholder comments and concerns

The experts comprehensively captured the comments and concerns of stakeholders and interested parties, highlighted good practices identified during the assessment and consultation process (Appendix II). The following is a summary of the expert evaluation of the main observations.

3.1.1 Core environmental concerns

General stakeholders' comment and concerns regarding the proposed Wing's Project focused primarily on groundwater protection, the risk of mining-solution migration beyond the intended operational zone, and the adequacy of plans for aquifer restoration after operations.

3.1.2 Quality and completeness of EIA/EMP documentation

Some stakeholders presented concerns on their perceived shortcomings of the EIA and EMPs. Comments included project documentation that did not consistently or clearly present the project plan, supporting studies, or technical basis for the proposed activities. The IAEA Team assessed that some missing information and, in some cases, the absence of materials in English-language, posed challenges to some stakeholders to make an informed review.

3.1.3 Clarity and sufficiency of additional information provided

Additional information was provided by the Project Proponent and national authorities during the assessment and decision-making process. However, many stakeholder groups remain unconvinced that their issues have been satisfactorily addressed, contributing to reduced confidence in both the project's justification and the reliability of proposed environmental mitigations.

3.1.4 Opportunity for improved communication and engagement

The effectiveness and credibility of stakeholder engagement efforts depend on the clarity, completeness, and evidence-based nature of responses. More structured communication strategy, combined with strengthened capacity for spokespersons and technical experts, would enhance the presentation of complex scientific and technical information to diverse audiences. Improved engagement processes are likely to build trust in predicted environmental outcomes and in the mitigation measures described in the EIA.

3.1.5 Observations on regulatory oversight

The review noted areas where Namibian Authorities may consider to further strengthen regulatory oversight of ISL activities. These observations aim at informing Namibian Authorities on the opportunities to strengthen the national policy and regulatory framework as well as to enhance coordination among ministries involved in permitting, environmental review and technical assessments. Clarifying criteria for evaluating EIAs based on national requirements and international good practice may further support transparent and informed decisions.

Continued development of ISL-specific technical capacity within regulatory institutions may help further reinforce oversight functions, support compliance processes and contribute to maintaining public confidence.

3.1.6 Good practices identified

Several existing good practices were noted during the mission. Records indicate several site visits to the pilot site were conducted by various stakeholder groups supporting transparency and direct access to information. The IAEA Team also noted an active, multi-ministerial process, affirming the Namibian Government's commitment to transparent and science-based decision-making. At the local community level, the Proponent has established regular engagement mechanisms, including monthly meetings with residents of Leonardville, and alongside a range of socio-economic initiatives that were positively received by community members. These efforts have helped maintain open communication channels and have contributed to generally constructive relationships, particularly within the local community.

3.1.7 Expert evaluation of stakeholder concerns and comments

During the evaluation process, particular attention was given to inputs from institutional stakeholders, including competent authorities responsible for environmental protection, water resource management, and radiation safety, as well as landowners, groundwater users and local communities who may be directly affected by the project.

During the in-country mission no additional issues relating to the pilot ISL, requiring evaluation by the IAEA Team, were identified. Comments pertaining to concerns of a full-scale ISL mining operations in the Omaheke region or ISL mining in the STAS were considered but are beyond the scope of the ToR for the review mission.

Nevertheless, all comments and concerns raised during the meeting provide valuable insight into the community's expectation for feedback from the relevant stakeholders – including the Competent Authorities and the Project Proponent – regarding the evaluation of the EIA and EMPs.

The IAEA Team identified opportunities to enhance stakeholder engagement across all key organizations involved in the proposed Wings Project in the areas of communication and coordination among authorities, the Project Proponent, other stakeholders, and the public. These opportunities are consistent with international good practice and are presented as seven expert considerations for adjustments or enhancements to stakeholder engagement (S.1–S.7) in this report.

3.2 Technical aspects of the EIA and EMP of the proposed Wings Project

The IAEA Team made comprehensive observations and verifications of the Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) reports submitted by Headspring Investment (Pty) Ltd for

the proposed Wings Project (Appendix III). The following is a summary of the expert evaluation of the main observations of the technical aspects.

3.2.1 Environmental Impact Assessments and Environmental Management Plans

The EIA and EMP present a framework for assessing potential environmental risks associated with the proposed Wings Pilot project. Although both documents identify key environmental receptors and outline general mitigation strategies, the level of technical detail provided should be improved, in specific:

(i) Greater clarity on specific mitigation measures to strengthen confidence in the proposed impact-reduction strategies.
(ii) The principal technical limitation which relies on conceptual or regional-scale assumptions without adequate demonstration of site-specific conditions.
(iii) Improvement of the documentation in the integration of key technical components (i.e. including hydrogeological characterisation, groundwater monitoring, geochemical and groundwater-flow modelling, and operational controls.

During the review process, the Proponent provided the IAEA Team with additional information not included in the submitted EIA or associated documents. The expert review also identified technical reports and supporting materials — such as studies, analyses, performance criteria, plans, and mitigation measures — that remain outstanding for evaluation.

The following section summarises the key technical issues and outlines the level of detail needed to support a comprehensive environmental impact assessment.

3.2.2 Aquifer protection and well integrity

Protection of overlying and underlying aquifers, particularly the potable Kalahari Aquifer, should be treated as a prerequisite to any ISL operations. The Proponent's documentation correctly identifies the need for casing, sealing, and abandonment procedures, however additional technical details are needed to confirm well integrity under operational conditions.

- Well Construction and isolation: The documentation identifies the need for appropriate casing and sealing but does not provide full technical specifications to demonstrate effective well isolation. Some uncertainties regarding material durability and long-term integrity in acidic operating conditions should be further addressed.
- Verification of well integrity: The documentation notes that well integrity must be verified but should also define testing procedures, acceptance criteria, or testing frequency.
- Legacy boreholes: The extent, condition, and potential influence of legacy boreholes on aquifer protection should be better characterised in the available documentation.

3.2.3 Aquifer confinement and hydraulic control

Demonstration of aquifer confinement and the ability to maintain hydraulic control are fundamental prerequisites for ISL operations. The Proponent's current documentation asserts confinement but does not provide comprehensive empirical evidence to support this conclusion.

- Faults in consolidated lithology: Hydraulic conductivity values for the target aquifer fall at the lower end of what is typically feasible for ISL, but if realised, low porosity also increases the system sensitivity to faults and fractures. Detection of faults and their influence on the hydrogeological architecture should be a part of the planning for ISL pilot and any further upscaling.
- Confinement verification: Hydraulic isolation between the Auob and Kalahari aquifers has not been empirically demonstrated. The installation of monitoring wells in overlying and underlying units is instrumental to collect relevant data regarding vertical gradients and potential leakage.
- Hydraulic control and capture: Assumptions of inward hydraulic gradients do not fully account for pressure mounding, regional gradients, or external pumping stresses.
- Geochemical modelling: The modelling approach relies primarily on deterministic simulations and does not incorporate transient conditions, scenario analysis, or uncertainty evaluation. Without these elements, the ability to assess hydraulic control and containment remains limited.

3.2.4 Groundwater restoration criteria and geochemical processes

The restoration strategy presented in the EIA represents an area of technical uncertainty. Demonstration of geochemical reactions governing both production and restoration should be more robust. The assumption that baseline conditions can be restored within a limited timeframe (e.g., six months, two pore volumes) should be further demonstrated with evidence.

- Defined baseline and targets: Baseline groundwater chemistry and restoration endpoints should be more clearly established in the documentation.
- Laboratory core studies: Core analyses show substantial variability in mineralogy and geochemistry, including carbonate contents that may influence low-pH leaching behaviour. Laboratory leach tests were performed on crushed samples, rather than intact core, which do not represent actual field conditions and limit the reliability of the results.
- Geochemical complexity: Sulphuric-acid ISL operations cause complex geochemical changes involving redox alterations, trace-element mobilisation, and mineral reactions. These site-specific processes introduce significant uncertainty that should be further evaluated with detailed reactive transport modelling.
- Limitations of reactive transport modelling: The Proponent's documentation should clarify whether modelling incorporated coupled flow and geochemical processes, calibration to site-specific data, or uncertainty analysis. The modelling approach that is described should be further developed for geochemical predictions and evaluation geochemical behaviour relevant to restoration.

3.2.5 Groundwater monitoring and contingency planning

Environmental monitoring in ISL operations is necessary for ensuring compliance with radiological safety standards and maintaining hydrogeochemical integrity of the surrounding aquifer system. The Proponent's proposed groundwater monitoring framework recognizes the importance of groundwater surveillance but should provide additional detail to ensure early detection and effective response to excursions.

- Monitoring network design: The proposed monitoring network should be improved to demonstrate adequate coverage to detect vertical migration, lateral excursions, or movement of low-pH fluids. The ability to identify impacts associated with legacy boreholes or to estimate natural remediation timeframes is not evident from the current design.
- Monitoring parameters: The connection between the collected groundwater monitoring data and the model validation process needs to be further defined to support process understanding and system characterization.
- Contingency measures: The proposed contingency approach lacks detail regarding how excursions would be managed in practice. Description of key elements – such as escalation pathways, disposal options, and potential unintended migration toward pumped monitoring wells – should be improved.

3.2.6 Radiation safety and protection

The Proponent's radiation protection documentation identifies several controls and monitoring elements, however, some refinements are identified to align with international standards. Key areas for improvement include:

- Facility design, sample handling and operational contamination control;
- Instrumentation section and monitoring procedures
- Standardization of units and reporting conventions;
- Inclusion of radon and radon progeny monitoring;
- Consideration of non-gamma detection methods (e.g., XRF for uranium in soils);
- Clarification of surface-contamination classification against national standards;
- Integration of occupation and environmental monitoring.

3.2.7 Waste management and disposal pathways

The Proponent's EMP describes waste mitigation principles, but site-specific waste management procedures for the pilot project were not available for review. This reflects the early stage of the project, as laboratory facilities are still incomplete and pilot operations have not yet begun.

Namibia currently does not have an established facility for the disposal of radioactive waste from ISL pilot operations. As a result, the Proponent intends to store radioactive residues on site until a suitable disposal option becomes available. It should be noted that, the absence of a confirmed disposal option introduces uncertainty regarding long-term handling and off-site transfer of radioactive materials.

3.2.8 Expert evaluation of the technical aspects of the EIA and EMP of the proposed Wings Project

The evaluation identified several areas where the technical studies and the overall thoroughness of the Proponent's EIA and EMPs should be strengthened. Key issues requiring further development include:

- Verification of aquifer confinement;
- Demonstration of hydraulic containment;
- Validation of geochemical processed relevant to restoration;
- Definition of monitoring programmes and contingency systems.

Additionally, the EIA and EMP need to be more integrated with a detailed pilot test plan that expands upon baseline conditions; aquifer confinement testing; pilot wellfield installation and initial hydraulic control testing; controlled pilot injection and operational testing; post-pilot evaluation; groundwater restoration testing; system performance assessment; and contingency measures for managing potential excursions.

Implementing a pilot test for an in-situ process relies on a structured technical approach that progressively reduces uncertainty while demonstrating the protection of groundwater resources. For projects involving subsurface injection, in-situ leaching, or other aquifer-based treatment processes, regulators typically expect a phased pilot programme that begins with detailed hydrogeologic characterization and concludes with a comprehensive evaluation of operational feasibility and post-operational aquifer conditions.

Until these aspects are adequately addressed, there remains uncertainty regarding the ability of the proposed pilot operation to ensure the protection of groundwater resources. This uncertainty could be managed through a staged authorization process. For example, the Proponent could be granted limited approval to undertake specific precursor activities – such as installing additional wells for hydraulic testing – to collect the data needed to confirm aquifer confinement before progressing to the introduction of lixiviant. Such a phased approach enables scientific technical evaluation the results of each stage before advancing to the next, ensuring that critical technical and environmental safeguards are confirmed prior to initiating full operational testing.

The experts assessed the completeness, quality, and relevance of the submitted EIAs and EMPs. The Proponent's EIA and EMP provide an initial framework for evaluating potential environmental risks associated with the proposed pilot ISL operations within the STAS. While the documents identify key environmental receptors and outline high-level mitigation strategies, the current level of technical detail presented in the reports needs to be improved. Based on the experts' assessment, additional documents and studies should supplement the existing EIA. This would align the assessment process with international good practice and ensure that all relevant information is systematically compiled and rigorously evaluated.

The IAEA Team identified opportunities for adjustments or enhancements for safe and environmentally responsible ISL. These opportunities are consistent with international good practice and are presented as twenty considerations (T.1–T.20) in this report.

6. ADJUSTMENTS OR ENHANCMENTS FOR ENSURING SAFE AND ENVIRONMENTALLY RESPONSIBLE ISL PILOT OPERATIONS

The evaluation of the Environmental Impact Assessment and Environmental Management Reports for the proposed Wings Project ISL operations in the Omaheke Region identified good practice and opportunities of improvement. The following suggestions aim to provide an independent opinion on how to address these issues and support safe and environmentally responsible ISL.

These suggestions identify options based on international good practice and are presented in this report for the consideration of the Namibian authorities.

The suggestions apply specifically to the proposed Wings Project pilot test and are not intended to extend to any future full-scale ISL project. However, some suggestions concern the collection of additional data during the pilot test, which may be valuable in informing the planning of potential full-scale mining activities. Certain expert suggestions are also presented for a potential scenario in which the Namibian authorities elect to advance the project; however, these suggestions remain technically independent of that decision.

Suggestions related to Stakeholder Engagement are provided in Section 4.1, and suggestions related to Technical Aspects of the pilot project are provided in Section 4.2.

4.1 Stakeholder engagement

The experts identified a number of opportunities during the in-country consultations to enhance stakeholder engagement, based on international good practices. Seven suggestions for improvement (S.1–S.7) are consolidated in the Table 4.1 below.

Table 4.1: Suggestions related to stakeholder engagement

S.1	The Namibian Government may consider a joint assessment report, prepared by the relevant Namibian authorities, on the pilot plant EIA and EMPs. A coordinated assessment approach would support a more objective benchmarking of the submission against relevant regulations and standards and would strengthen the decision-making process by the relevant authorities.
S.2	The Namibian regulatory authorities may consider establishing a consultative forum for engagement between uranium ISL mining industry and representatives of relevant ministries, with clearly defined roles, meeting schedules, and agendas; ensure that all discussions and decisions are formally documented in writing, thereby fostering a coordinated approach, transparent and proactive communication framework.
S.3	Targeted capacity-building/educational programmes, development of specialized expertise and investments in appropriate monitoring equipment could improve the Namibian authorities' ability to supervise pilot operations effectively contributing to transparency and strengthening public confidence.
S.4	It may be beneficial for the Project Proponent to formalize engagement with relevant stakeholders, including NGOs such as SAUMA, community groups, and individual members of the public) through establishing formal communication channels, framed in a structured technical format and supported by agreed response timelines to facilitate transparent and timely engagement.
S.5	Maintaining a unified documentation package in English language that is accessible to relevant stakeholders, together with targeted support for spokespersons and technical advisors in communication, could contribute to consistent, clear and standardized presentation of information by the Project Proponent, as well as to demonstrate accountability, and build stakeholder confidence.
S.6	The Project Proponent's social programmes could be more clearly positioned as a distinct component of corporate responsibility, while the safety of pilot operations may be more effectively demonstrated through robust monitoring data, established control methodologies, and independent expert review. Maintaining this distinction supports transparency and contributes to mitigate reputational risks.
S.7	High expectations within the community need to be carefully managed by both the Namibian authorities and the Proponent to ensure commitments are realistic and achievable. Clear, consistent, transparent communication is essential to align expectations and minimize the risk of dissatisfaction.

4.2 Technical aspects

The experts assessed the completeness, quality and relevance of the submitted environmental impact assessments and management plan reports. The evaluation highlighted several opportunities to improve the technical studies and overall thoroughness of the Proponents EIA and EMPs. These opportunities, aligned with international good practice, are summarized below and form the basis for twenty suggestions (T.1–T.20) consolidate in the Table 4.2 below.

Table 4.2: Suggestions related to technical aspects

T.1	The Proponent's ISL proposal needs to clarify which reagent(s) is/are proposed to be used and ensure that the relevant reactive transport model(s) is/are provided. .
T.2	The Proponent's reactive transport model needs further investigation to determine the fate of the sulphates arising from the use of sulphuric acid in groundwater.
T.3	The Project Proponent needs to implement measures to verify the radioactivity of cutting residues in order to determine whether they require classification as radioactive material for management purposes and whether they meet exemption levels for disposal.
T.4	For the Proponent, reconfiguring the laboratory equipment (i.e. radiation-contamination meter) displays to the local language would enhance usability and reduce the risk of misinterpretation.
T.5	The Proponent's EMPs need to consider bund design and capacity, including contingency capacity for potential rainfall events.
T.6	The Proponent's EMPs need to consider management of rainwater collection within bunds.
T.7	The Proponent may consider avoiding the use of buried pipelines, where practical, to enhance visual inspection and leak detection at the pilot site.
T.8	The Proponent should install spill trays and leak detection on wellheads of injection and recovery wells.
T.9	The Proponent may establish a low perimeter berm around pilot plant sites to assist in minimising the spread of spilled liquids from bunding or from a pipeline
T.10	For the Namibian Authorities and Proponent, management plans for pump testing can be improved by adopting a risk-based management approach, including for the management of groundwater produced during pump testing.
T.11	The Project Proponent's EIA submission could be supplemented by documentation that: (i) Incorporates site-specific conceptual site models (CSMs) supported by field data, reports on the geochemical reactive transport and groundwater flow modelling; (ii) Defines quantitative compliance criteria (e.g., restoration endpoints, excursion thresholds); (iii) Includes uncertainty analysis (e.g., parameter variability, model predictive ranges); (i) Provides clear linkage between monitoring data and operational decision-making.
T.12	The Proponent's documentation may be supplemented to provide more technical detail of the well construction and isolation to demonstrate that well integrity can be reliably achieved and maintained under operational conditions.

T.13	The Proponent's documentation may be supplemented with measures for verifying well integrity, describing testing procedures, acceptance criteria, frequency of testing, and procedures for addressing detected failures.
T.14	The Proponent's EIA application should include additional information on evaluation of legacy boreholes.
T.15	The Proponents EIA should be supplemented with a Pilot Test Plan, that includes: (i) Establishment of base line conditions (ii) Aquifer confinement testing plan. (iii) Pilot wellfield and demonstration of lateral and vertical hydraulic control by aquifer pumping tests using injectors, extractor and monitor wells (iv) Pilot injection and operational testing using formation water prior reagent addition to demonstrate confinement and hydraulic capture prior to altering groundwater chemistry. (v) Post-operational monitoring, groundwater restoration testing, and comprehensive evaluation of pilot system performance. (vi) Contingency plans that address excursions.
T.16	The Proponent's geochemical modelling approach may be enhanced to improve evaluation of hydraulic control.
T.17	The Proponent's documentation may be supplemented with information of the restoration strategy with defined baseline data and targets.
T.18	The results of the reactive transport modelling may be incorporated into a report to supplement the EIA
T.19	The Proponent's documentation should clarify the manner in which long-lived radioactive dust (LLRD) samples were collected and note the limitations of instrumentation (e.g. minimum detection levels) when used for measurements of environmental concentrations
T.20	The Project Proponent's EIA submission could be improved with additional supplementary information in the EMP and radiation management plans to address the issues related to radiation safety and radiation protection highlighted by the experts.

4.3 Additional considerations

The International Atomic Energy Agency (IAEA) provides Member States with a comprehensive suite of peer review and advisory services designed to provide assistance with assessment or evaluation of the status and/or performance of a programme, processes, practices and/or capabilities with respect to a topic or particular area based on specific IAEA reference publications (such as the IAEA Safety Standards, the IAEA Security Guidance, the IAEA Nuclear Energy Series publications, etc.), international good practices and individual expertise, performed by experts who are independent of the work being reviewed. Among the broad range of peer review and advisory services, those listed below could further support the future full-scale ISL operations in Namibia:

- The Integrated Uranium Production Cycle Review IUPCR is an IAEA peer review service that evaluates a Member State's uranium production cycle. Milestone 2 provides an evaluation of 16 national infrastructure aspects and can be tailored to include assessment of specific technical matters (Milestones in the Development of National Infrastructure for the Uranium Production Cycle IAEA-NF-G-1.1).
- The Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) provides an integrated expert peer review service for radioactive waste and spent fuel management, decommissioning and remediation programmes.

- The IAEA Regulatory Forum for Safety of Uranium Production and NORM provide advisory service on safety and regulatory aspects of uranium production activities and management of NORM residues.
- The IAEA Integrated Regulatory Review Service (IRRS) provides a review of national regulatory infrastructure for nuclear, radiation, radioactive waste and transport safety (Integrated Regulatory Review Service IAEA-SCS-37). An advisory or review mission could be applied to assist regulation development or review regulation for ISL operations in Namibia.
-

7. CONCLUSION

The expert mission was conducted in a constructive and cooperative manner. It was coordinated on the Namibian side by the Ministry of Health and Social Services, with participation from key organizations – including government authorities, regulators, the Project Proponent – and other stakeholders associated with the proposed Wings Project.

With respect to the proposed pilot ISL operations in the Omaheke Region within the Stampriet Transboundary Aquifer System, a number of good practices as well as opportunities for improvement were identified to enhance the completeness, quality, and relevance of the EIAs, EMPs, and other supporting documents submitted for the project.

Based on the observations and issues made during the expert evaluation, three key thematic areas are summarized below:

- Stakeholder Engagement: Enhanced engagement by all key organizations involved in the proposed Wings Project is suggested, particularly in strengthening communication and coordination among authorities, the Project Proponent, other stakeholders, and the public.
- Technical Aspects: Demonstration of aquifer confinement and the ability to maintain hydraulic control are fundamental prerequisites for ISL operations. The Proponent's current documentation asserts confinement but does not provide comprehensive empirical evidence to support this conclusion. The degree of confinement between the Auob Aquifer and the overlying Kalahari Aquifer remains not fully proven. In addition, a more robust demonstration of geochemical reactions governing both production and restoration should be provided.
- Quality and Completeness of Environmental Impact Assessment and Environmental Management Plan Documentation: The EIA and EMP reports shows opportunities for improvement in terms of completeness and technical studies, including integration with a detailed pilot test plan.

These aspects should be examined more thoroughly to address uncertainty about the proposed pilot operation to ensure the protection of groundwater resources. In this regard, the experts present an example of a staged approval process which may be considered for ISL project applications, consistent with international good practice. Such a phased approach would enable both the Proponent and the Namibian national authorities to evaluate the results of each stage before advancing to the next, ensuring that critical technical and environmental safeguards are confirmed prior to initiating full operational testing.

The role of the IAEA Team was limited to providing an independent technical review, based on international good practices, in reviewing the EIA and EMP reports, and supporting document.

A Terms of Reference (ToR) (Annex I) for the evaluation, and the group of experts and IAEA staff members (Annex II), was established in consultation with the Namibian counterparts. From the outset, it was clarified that it is not in the IAEA's mandate to provide recommendations regarding the approval or rejection of the Wings Project; rather, its role was to offer an independent technical review to support the Namibian authorities in making an informed decision. The analysis presented in this report applies exclusively to the pilot phase and does not extend to the full-scale ISL project.

8. APPENDIX I – RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

GENERAL QUESTIONS (1-17)

The IAEA submitted 29 questions to the Namibian counterparts on 5 August 2025. Questions 1 to 17 were more general in nature and those from 18 to 29, more specific and technical.

Answers to questions 1 to 17 were provided by email sent to the IAEA Team on 14 August 2025.

Answers (verbatim) to questions 1 to 17, provided by the Namibian counterparts, are recorded below.

1. On 23 August 2022, the Ministry of Environment, Forestry and Tourism, through the Office of the Environmental Commissioner, issued an Environmental Clearance Certificate to Headspring Investments Pty. This certificate, valid until 23 August 2025, authorizes the company to conduct exploration activities. To support further assessment, it would be appreciated if the following could be confirmed:

   a. Whether exploration activities have already commenced;

   Anwer: "Yes, the exploration has already started and is ongoing. To date, about 70% of exploration work has been completed. Headspring Investments (Pty) Ltd drilled 592 Exploration boreholes from 2012 to 2021 and 36 Hydrogeological/monitoring boreholes on 39 farms and communal area (reserve). The Exploration boreholes were drilled using the Diamond core drilling method and the Hydrogeological boreholes were drilled using the Down the Hole (DTH) drilling method. That is to say that Headsprings completed 60% of the exploration work up to date".

   b. Whether these activities exclude any form of hydraulic testing within the designated areas of interest;

   Answer: "Yes, as part of their exploration work, Headsprings drilled Hydrogeological boreholes to study how water gets into the ground (recharge), how it flows in the subsurface (through aquifers), how groundwater interacts with the surrounding soil and rock (the geology) and water quality monitoring (water sampling)".

   c. Whether there are currently plans to extend the certificate beyond 23 August 2025

   Anwer: "Yes, Headspring is planning to continue with exploration and have already applied for the certificate renewal which we intend to grant in coming week. They have however faced some challenges with regard to their exploration work, such as the granting of drilling permits that are granted by another entity, i.e. Ministry of Agriculture, Fisheries, Water and Land Reform – until MAFWLR is certain that the ISL will not have negative impacts on the drinking groundwater resources, the drilling licences are withhold. It is the reason for this mission. The ECC are always conditional to requirements of other entity permission".

2. If exploration activities have been completed, would you, please provide any reports describing the activities and presenting the results.

   Answer: "This information is available and can be obtained from Headsprings. We will arrange to obtain all information and share with IAEA team".

3. On 12 February 2024, the Ministry of Mines and Energy submitted a letter to the Ministry of Environment, Forestry and Tourism regarding the "Evaluation of Environmental Report to Conduct Preliminary Pilot Test Mining Work on EPL Nos. 4654–4657 and 6780–6783 for Headspring Investments Pty." The letter, signed by Ms. Isabell Chirchir (Mining Commissioner), includes several considerations. Notably, item 8 recommends that the Ministry of Agriculture, Water and Land Reform be consulted. To support further evaluation, it would be helpful to confirm whether there is any documented response from the Ministry of Agriculture to this consultation request.

   Answer: "Headspring have experienced difficult relationship with Ministry of Agriculture, Fisheries, Water and Land Reform, particularly at the political leadership level. There have been however continued consultations with the technical teams of the Ministry and such consultations are continuing.

The technical team of the Ministry of Agriculture, Water and Land Reform form part of the government team working with IAEA team working on this external review. As mentioned above, more information on the impact of ISL on groundwater quality need to be ascertained".

4. Could you please confirm whether the Environmental Impact Assessment (EIA) for the Wings Project pertains exclusively to the pilot test activities, rather than the overall project? Additionally, please confirm that any conclusions to be drawn by the IAEA Team will apply solely to these pilot activities.

   Answer: "The EIA reports submitted is exclusively to the pilot test activities and does not cover the actual mining activities. After the testing mining is completed (if approved), Headspring will carry out another detailed EIA for the actual in-situ mining activity. Our request for IAEA external review is for the test pilot activities, as well as for the team to make recommendations and advise us on the potential mining activities. The IAEA team must not limit their recommendations and conclusions to the test pilot activities only. For example, if this proposal or methodology is not feasible for the targeted environment, based on the characteristics, we would like to know that now and at this point".

5. On page 14 of the Environmental Impact Assessment (EIA) for the Wings Project, received by the Ministry of Mines and Energy on 19 December 2023, item 1.2.2 states that "a pilot cell was constructed to carry out in-situ leaching activities." It would be appreciated if confirmation could be provided regarding whether this construction actually took place. If so, further clarification would be helpful to understand the nature and scope of the activity, and whether it falls within the authorization granted for exploratory activities under the Environmental Clearance Certificate referenced in item the first bullet of this document. Please also note that the pilot test mining cell is referenced again on page 49 of the EIA report.

   Answer: "We have noted that the boreholes have been drilled in the ISL sequence, if activities have actually taken place, they are in non-compliance with our licence conditions or water Act requirement as a whole".

6. On page 15 of the Environmental Impact Assessment (EIA) for the Wings Project, item 1.3 states that "as this project is located in Namibia, the project must provide EIA documentation that meets the requirements of the Namibian environmental process." To support the review, the team would appreciate access to the specific documentation or regulatory references that outline the compliance requirements under the Namibian Environmental Management Act (Act No. 7 of 2007) and its associated regulations and guidelines.

   Answer: "Ok, this will be provided. We can also share with you Environmental Management Act and its regulations if required".

7. On page 18, item 2 of the EIA for the Wings Project, it is noted that the Namibian Minister of Mines and Energy may not issue a mining license unless the applicant has obtained an Environmental Clearance Certificate (ECC). It would be appreciated if it could be clarified that no such request for a mining license has been submitted at this stage, and that the current discussions pertain solely to the pilot test activities. Furthermore, we would like clarification on the role that the pilot test results would have in potentially granting an ECC for large-scale mining operations.

   Answer: "Yes, no mining application/request has been launched with the Ministry of Mines and Energy as yet. That application will only be launched by the applicant once the test mining is completed and after the application has been granted an ECC for the mining activity. ECC is one major requirement for the Mining Licence granting".

8. In item 4.6.2 (p. 25) The text states "The modelling has explored the most negative option of the pilot cel//mine unit demineralization with the utmost possible contamination scenario. It has explored the case when activities and works at the pilot cell/mine unit for some reason, would be suspended amid the technological solutions mineralized to the maximum extent, including 10 mg/L of sulfuric acid concentration and 100 mg/l of uranium concentration." Could we please receive the report associated with this modelling, as well as any modelling performed to predict remediation times later mentioned in the same page?

   Answer: "Ok, we will arrange to receive and submit this information".

9. On page 57 (number 7) of the EIA Report for the Wings Project, reference is made to "key stakeholders," including sectoral ministries, regional, and local authorities. Could you please clarify whether a broader range of stakeholders is expected to be involved in the consultation or decision-making process for the project?

   Answer: "The broader range of stakeholders are only involved as part of the consultations; they are not part of the decision-making process. Stakeholders and or interested and affected parties can, however, submit written comments/objection to the Environmental Commissioner (EC) during the review process. After the decision is done, stakeholders and or interested and affected parties can also launch a legal appeal to the Minister of Environment on the decision of the EC".

10. On page 57 (number 2) of the EIA Report for the Wings Project, reference is made to "Preparation of R&D Report for consultation with stakeholders and registration of projects (implemented in August / September 2020 and updated in 2021)." Could we please receive a copy of the R&D Report?

   Answer: "We will get this information and forward it to the team".

11. In item 5.0 (page 60) of the EIA Report states, "Detailed necessary justifications, baseline data, calculations and analysis is of the planned Auob groundwater operation regime on the basis of the completed models, indicating predicted changes of groundwater quality are specified in Book 1." Could we please receive a copy of Book 1?

   Answer: "We get this information and forward it to the team"

12. In item 5.2.2 (page 66, first two bullets) and Item 7 (References) of the EIA Report the following two reports are referenced that we would like to review:

   — Specialist input to the environmental scoping study. Regional-scale numerical groundwater flow model of the Auob Aquifer, Aranos Basin, Namibia. Uranium Project Wings, UIGSSTOI Headspring Investments, Po Box 318, Windhoek, Namibia, 2021.
   — Preliminary Report on the Hydrogeological Work Programme: testing for groundwater inflow and engineering hydrogeological survey at the stage of geological exploration at a hydrogenic type facility for the in-situ leaching method-based mining designed for Auob horizon (upper sub horizon), Windhoek, Namibia, 2021.

   Answer: "We will get this information and forward it to the team"

13. In item 5.4.6.2 of the EIA Report, reference is again made to the pilot cell. It states that "the cluster (envelop) hydrogeological pumping from well 132-1reG was carried out from 15 to 22 November 2021," with other wells used for monitoring purposes. These paragraphs appear to suggest that activities beyond the scope of exploratory work—covered by the Environmental Clearance Certificate—may have been conducted. If this interpretation is correct, it would be appreciated if clarification could be provided regarding whether these activities were carried out under the oversight of any regulatory authority, such as the Ministry of Mines and Energy and/or the Ministry of Environment, Forestry and Tourism. Additionally, it would be helpful if the corresponding report documenting these activities could be made available to the IAEA Team.

   Answer: "The hydrological pumping and monitoring thereof, which is mentioned in the report, are allowed as part of the exploration activities. These are outlined in the exploration applications and approved exploration EIA which can be shared with the team. Please note that the MAWFLR has not approved any drilling of exploration boreholes since 2019, when their licence was revoked".

14. In item 5.4.6.6 (page 89) of the EIA Report the text states "Information on the Wings Project deposit was collected in Leapfrog Geo. The hydrodynamic modelling was performed in Visual MODFLOW Flex." Could we please receive the report documenting this work?

   Answer: "We will get this information and forward it to the team"

15. In item 7 (page 44) of the EIA Report the text states "It is strongly recommended that an Independent Environmental Practitioner is appointed to carry out monitoring of the pilot test mining work through analyses of groundwater quality for the surrounding farms water wells." If the pilot test has already

been conducted was an Independent Environmental Practitioner appointed? and if so, was any documentation developed that we could review?

Answer: "This has not yet been done; it is only a proposal. No pilot test mining has taken place yet".

16. As a general note, we are tentatively planning to hold another virtual meeting on 11 August at 14:00 CET (Vienna time). The purpose of this meeting is to review the feedback provided by the Namibian counterparts in response to the questions outlined above, ideally with the participation of relevant Namibian officials involved in the project. During this session, the IAEA Team will share its preliminary views on the documentation received, in accordance with the agreed ToR. We kindly ask for confirmation that the proposed date and time are suitable for all parties. This meeting will serve as an opportunity for mutual clarification and discussion of the IAEA Team's initial conclusions. A final report, consolidating these conclusions, will subsequently be shared with the Namibian counterparts. In this context, we would appreciate clarification on the following points:

    — Does the Namibian counterpart intend to share the final report with a broader group of stakeholders?

    Answer: "The government team will discuss this in details and make a decision. Because of the interest in the project, there will be a high demand for us to release your report. We normally do not release these external review reports to the public apart for the only key stakeholders".

    — Given that the media is already aware of the IAEA mission, and in the event that the report is not publicly disclosed, would a press release issued by the IAEA be considered appropriate?

    Answer: "This will be encouraged, irrespective of whether GRN will release the report or not".

    — Is a site visit to Namibia being considered? If so, would this include engagement with stakeholders beyond Namibian officials—such as representatives from the Wings Project or other relevant parties?

    Answer: "Yes, field work and engagement with key stakeholders is a must and we must arrange for it as soon as possible".

17. During the discussions it was mentioned that section 5.2.2 page 65, 66 refers to a number of reports that are of interest to us. Can they be made available to the team?

    Answer: "We will be forwarding all the pending reports to the team".

TECHNICAL QUESTIONS (18-29) The IAEA submitted 29 questions to the Namibian counterparts on 5 August 2025. Questions 1 to 17 were more general in nature and those from 18 to 29, more specific.

On 31 October 2025, a meeting with the participation of the Namibian counterparts, Project Proponent Representatives and the IAEA Team took place to addressing the technical questions 18 to 29.

Answers to questions 18 to 29 are recorded below.

18. Section 5.3.1 to 5.3.6 discusses some of the hydrogeological regime of the project area and 5.4.6.2 (page 86), 5.4.6.6 (page 89) for the pilot test cell, but the information in the EIA is only high level. Is there more comprehensive information, e.g. water testing results, model reports or appendices available to review?

    Answer: Water Reports for the Pilot Testing area was done in 2021 (Pilot cell water reports file). Water reports on 207commercial and communal farmers were done in 2022 (Water report 2). Water reports on 36 Headspring's Hydrogeological wells we drilled along the ore body (Sampled 42x) were done between 2021-2023 (Water report 2). A review report for the farmers and Headsprings wells from 2021-2023 was done in 2024 (Water report 2 "Water Analysis Report HSI 260724 final").

    Water sampled together with the government in November 2024 and the review report (Water report 3). Work program for the study of Auob aquifer for high natural radionuclides concentration, 2022.

    The regionalscalemodelwasbuiltonbasisofseveralpaststudieswithinthearea, and this can be found in chapter 4 to 7 of Specialist inputs Model report 2021. On the pilot test details were provided when question No. 28 was addressed

19. There is no information on what plant will be installed on the site to perform the pilot work. For example, tanks, filter house, reagent storage, resin columns, etc. This information would help in the understanding of what test work is planned. This may be an item for later in the process but there will likely be NORM residue and radioactive contaminated filters and other items of plant that could arise during the trial. It would be useful at some point to find out if Namibia has a facility that can accept this material so that it can be properly and promptly disposed or otherwise, what the waste management strategy will be adopted.

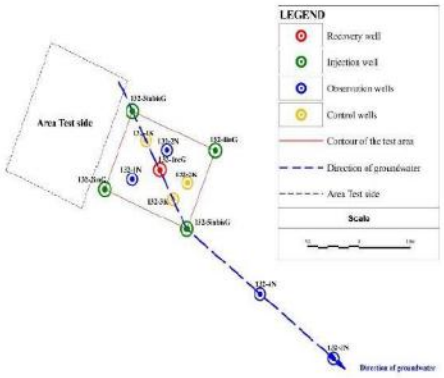
    Answer: The strategy that was being explored was put on hold and it was to have a temporary storage on site and to have an agreement with existing uranium mines, but later we also found a waste disposal company, which was upgrading to handle radioactive waste (Rent A Drum). Further documentation is in Russian: - Технологический регламент по теме «Разработка технологического регламента проведения опытных работ на участке кислотного выщелачивания и выбор места бикарбонатного опытного участка. Этап 1 page 38-46 and Этап 2. - Проект на проведение опытных работ на месторождении Крылья page 17-18, 22-37, 38-43 (Technological Regulations on the Topic: "Development of a technological procedure for conducting pilot operations at the acid leaching site and selection of the location for the bicarbonate pilot site. Stage 1 — pages 38–46, and Stage 2 — Project for conducting pilot operations at the Krylya deposit — pages 17–18, 22–37, 38–43."

The Pilot Test status

Design:

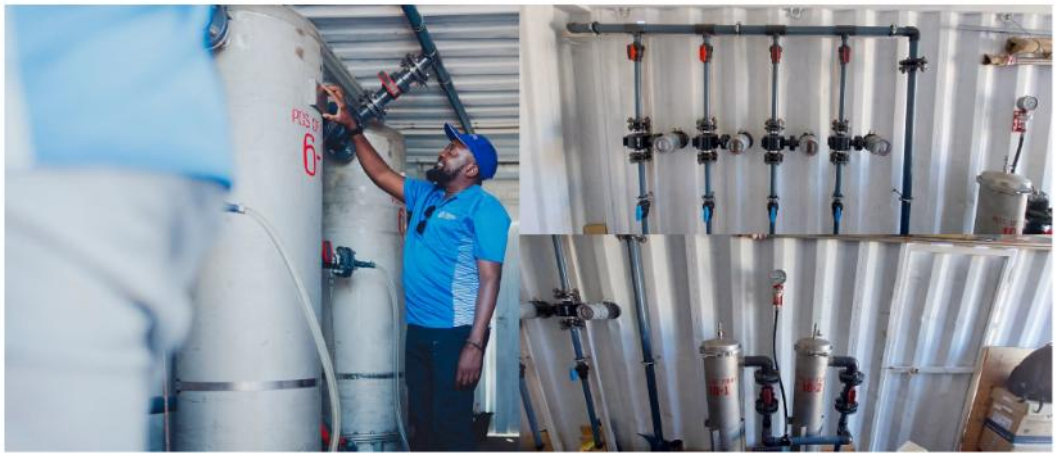
- 4 injection wells, 1 recovery well, to be surrounded by monitoring wells across multiple aquifers.
- Only monitoring wells still to be drilled.





Pictures to support Item no. 19

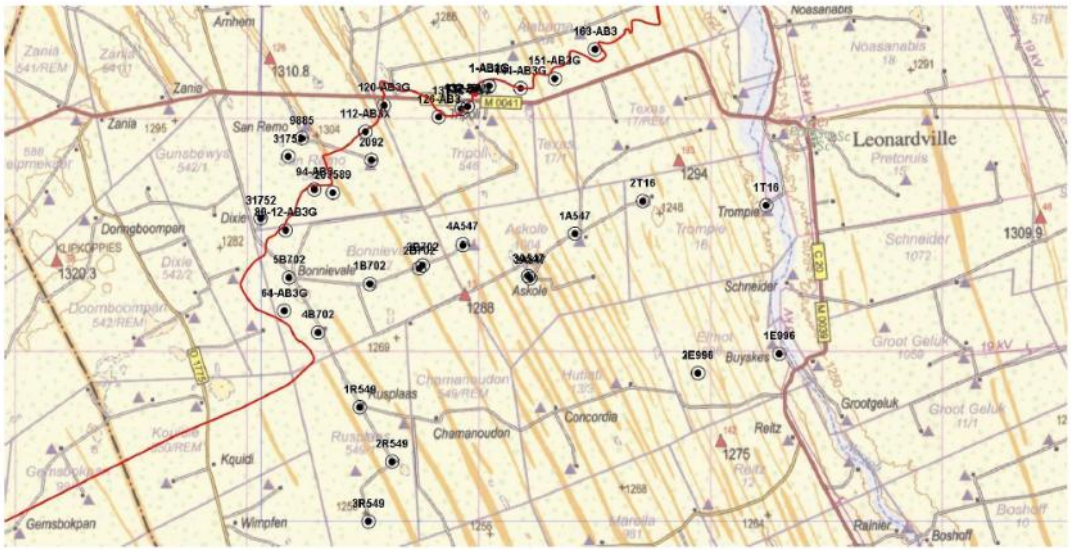
HEADSPRING INVESTMENTS ROSATOM



20. Section 4.1 page. 49: is there a map showing the location of the pilot cell accompanied by the location of the existing water intake wells in the area?

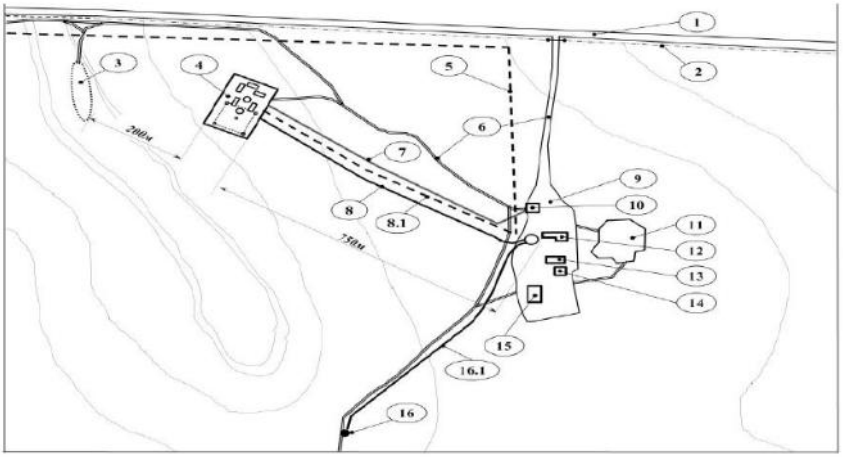
    Answer: Map showing wells intake and pilot test area and the preliminary report on hydrogeology 2020.

Item no. 20



Item no. 20

Item no. 20



Legend.

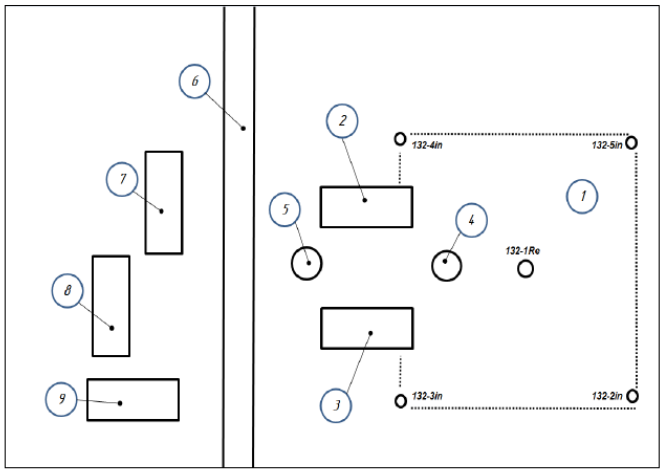
1 - State Road.
2 - Farm Fence.
3 - Hydrogeological Wells Pad.
4 - Fire Protection Area.
5 - Power Line.
6 - Field Roads.
7 - Reagent Pipeline.
8 - Water Supply Line.
8.1 - Power Cable Line.
9 - Delivery area and Assembly.
10 - Reagent Storage Area.
11 - Drilling Equipment Storage Area
12 - Office, Residential Complex.
13 - Well Construction Materials Storage Area
14 - Chemical Laboratory.
15 - Core Storage Area.
16 - Water Supply Well.
16.1 - Water Supply Line.

13

21. Section 4.3 page.58 - it contains a description of the in-situ recovery (ISR) method in general. Are there a specific description of the pilot proposed, accompanied by relevant diagrams?

Answer: See maps and layouts in Addendum no.2 and document: Технологический регламент по теме «Разработка технологического регламента проведения опытных работ на участке кислотного выщелачивания и выбор места бикарбонатного опытного участка. Этап 1 page 36 to 46 and Этап 2 [Technological Procedure on the Topic: "Development of a technological procedure for conducting pilot operations at the acid leaching site and selection of the location for the bicarbonate pilot site. Stage 1 — pages 36–46 and Stage 2.].

Item no. 21



Reference.
1. – wells area.
2. – Solution distribution unit container.
3. –Sorption columns container.
4. – Pregnant solution tank.
5. – Barren solution tank.
6. – Road.
7. – Administrative and household container.
8. – Workshop container.
9. – Warehouse container.

15

22. Section 4.4, p.59 – It is apparent that the proposed test will use acid solution. The section contains a very brief description of the pilot cell set-up. In addition to the available information, are there diagrams, plan views of the setup, including the location of the injector and extractor well, lixiviant pipelines, placement of any auxiliary and processing facilities? The section does not mention any monitoring wells – are those planned to be installed? A cross-section view showing the placement of the wells and screens into target mineralized aquifer and in the context of the local hydrogeological architecture would also be useful. A diagram and a description of the well construction – injectors, extractor, monitors, including their diameters, casing, screen, cementing, etc. as well as drilling and conditioning procedures would be appropriate too.

Answer: Book 209-09-22, chapter 6.3on Construction of the test cell from page 75 to 76.

Item no. 22

HEADSPRING INVESTMENTS ROSATOM

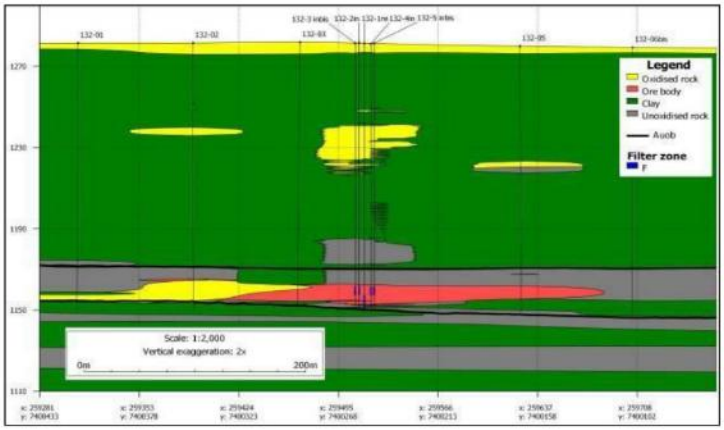


Item no. 22

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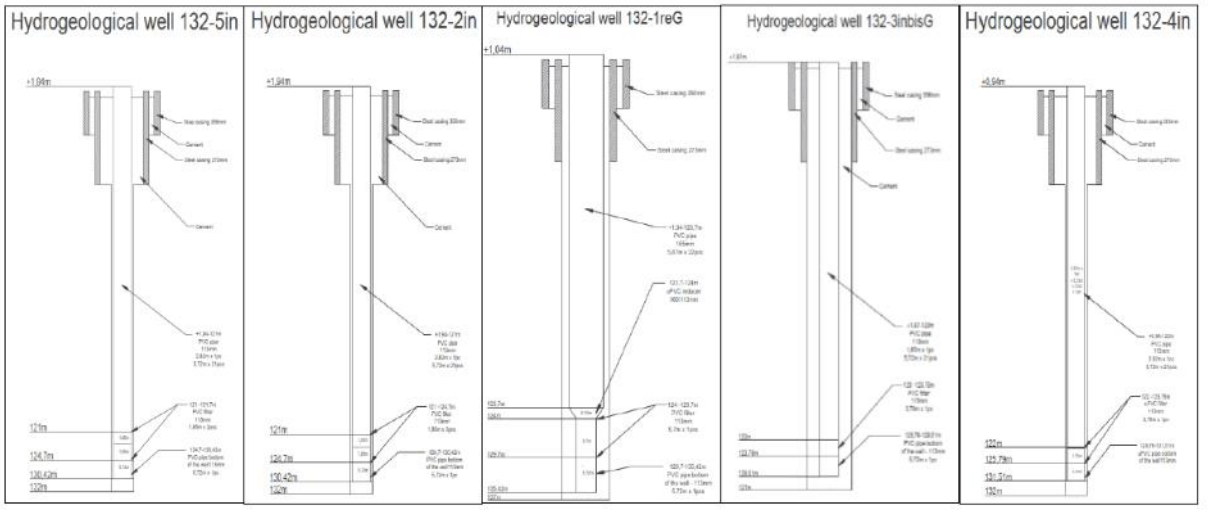


Item no. 22



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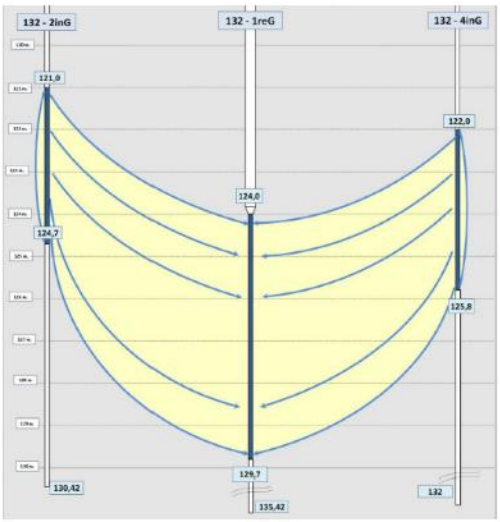
Item no. 22

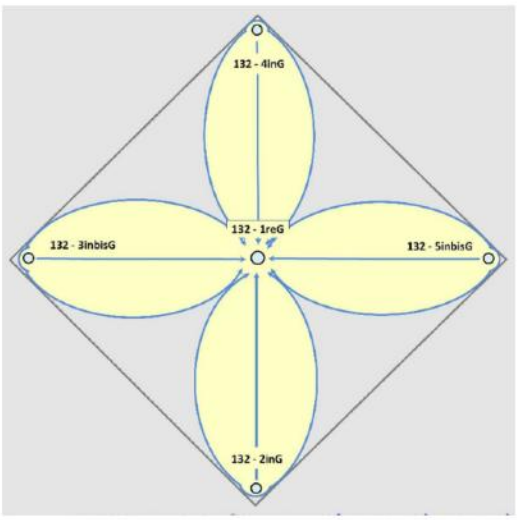


20

Item no. 22

HEADSPRING INVESTMENTS ROSATOM





23. Section 5.1 page 60 on spatial and temporal boundaries – The way it is written makes it unclear what the scope of the proposed activity is – in particular if it is the pilot ISR mining comprised on one cell mentioned in 4.4, or it is on a larger project that includes other activities? It specifically mentions three aquifers, albeit the pilot cell is apparently located in only the Auob aquifer.

    Answer: The environmental impact assessment and, consequently, the modelling of the consequences of operational activities was carried out on the basis of the work of a single cell within the Auob3 (where uranium mineralization is found) the upper aquifer the Kalahari is where one monitoring well is supposed to be drilled, the bottom aquifer Auob2/1 where a monitoring well is also needed to be drilled and within Auob3 where activities will be taking place.

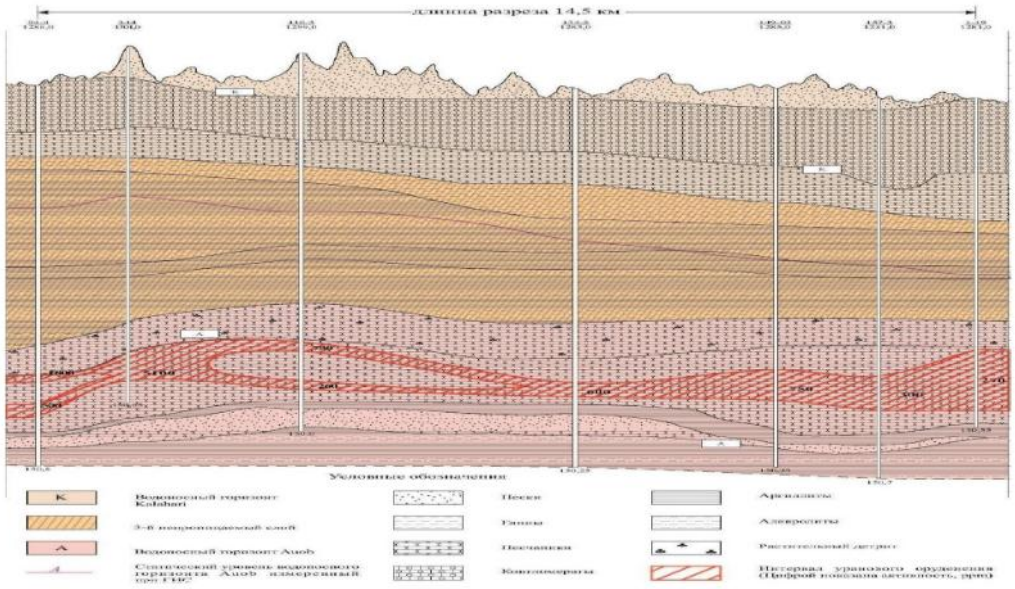
24. Section 5.1.3 (Zone of Influence) states that its limit is determined by the pilot wells and the (assumed – based on what?) pollution area of 50-100 metres. Does it refer to the aquifer? Are there any estimates of the on-surface zone of influence? The section mentions that the specific area of impact of the ISL will be determined during full EIA for the entire Wings Project.

    Answer: The pilot testing phase itself was primarily aimed at assessing the impact of the cell on the aquifer and on surface. When updated after the test, this will be included in the final EIA for the application of the mining license, should the test succeed together with the feasibility study.

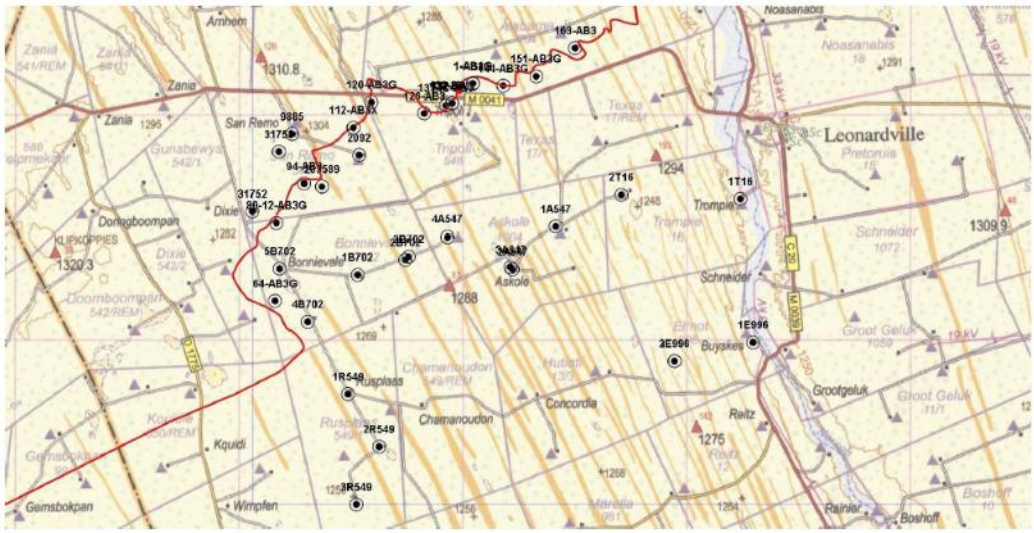
25. Sections 5.3.1 to 5.3.6 contain both regional and apparently local (5.3.6) hydrogeological characterization. The latter summarizes some relevant characterizations and mentions experimental works, and "cluster extraction from Auob horizon" which, it is presumed to consist of multi-well aquifer pump tests. The section contains the assertion of persistent aquicludes and the Auob aquifer being insulated by aquicludes from Kalahari aquifer. It would be important to see the supporting evidence for those assertions. The section uses the term "filtration coefficient", which apparently means "hydraulic conductivity". The section mentions farm abstractions. In this regard a location map of each in relation to the proposed pilot would be valuable.

    Answer: Documents supporting this evidence are: – Preliminary report on hydrogeology 2020. – Final Regional Groundwater Rep NHN234 Aronos Basin Model Auob Aquifer, Oct 2021. – Предварительный отчет по программе производства гидрогеологических работ Dec 2021 [Preliminary Report on the Hydrogeological Work Program Dec 2021].

Item no. 25



Item no. 25



26. Section 5.4.6.1 Aquifer Pollution by ISL page 84 in the third paragraph a typo is made in the number of subsections on "self-cleaning". The last paragraph mentions the use of bi-carbonate reagent use, but it is not clear if it is indeed to be used in the pilot, as all previous paragraphs describe the use of acid.

Answer: The modelling and assessment of the impact was mainly carried out taking into account the fact that sulfuric acid will be used as a reagent. The company was additionally invited to conduct a series of studies to assess the possibility of using other reagents, such as industrial oxygen and bicarbonates.

27. Section 5.4.6.2 page 85 uses past tense referencing pilot cell - so, have the wells been completed? it also describes an aquifer pump test carried out Nov 16-22. More data on that test would be appreciated. It mentions the groundwater falling into Group "B" according to Namibian classification. Are actual analytical results available, along with the sampling time, sites and protocols?

    Answer: The pilot cell is technically ready for test, only monitoring wells still to be drilled, unfortunately this was halted due to the revocation of the drilling permits in late 2021. New application for drilling the monitoring well is pending approval from the Ministry of Agriculture, Fisheries, Water and Land Reform.
    Page 76 to 77 in Book2 shows the pump test carried out Nov15-22. With the help of the laboratory, we took the samples for testing, the results report comes with group classification.

28. Sections 5.4.6.3 through to 5.4.6.8 describe effectively natural attenuation as the underground water post-mining restoration method. It mentions in section 5.4.6.6 modelling of "natural demineralization" using ModFlow, which, however, is only capable to simulate the flow i.e., without reactive transport modelling. The question then is: was Reactive Transport Modelling also done, and if so, how it was done?

    Answer: Yes, the simulation of the reaction transfer was also performed. After conducting hydrodynamic modelling in ModFlow, specialized tools in Modflow were additionally used to take into account chemical reactions between groundwater and rocks. This made it possible to evaluate the processes of natural attenuation and changes in the chemical composition of groundwater over time. Thus, the reaction-transport modelling confirmed the tendency towards a gradual restoration of groundwater quality due to natural processes. The tools include sorption and reaction parameters used in the selected mass transfer settings.

29. 29. Section 5.4.6.5 on groundwater neutralization time mentions "manual calculation" and contains the assertion that "complete neutralization ... would require 308 tonnes (335 m3) of fresh rock". It is not clear on what type of calculations were based upon. Are geochemical/hydrochemical data available, along with the details of how the required volume was estimated? Generally, the best practice would require a Reactive Transport Model to support such assertions.

    Answer: Yes, the calculation of the amount of "fresh rock" required to completely neutralize the reagent in the aquifer was performed based on data obtained during sampling and analysis of water and rock samples. In particular, the indicators of acidity, the content of sulphates and carbonates were considered. The so-called "manual calculation" was an estimate based on the material balance of acidity and alkalinity. Additionally, a reaction and transport assessment was carried out, the results of which confirmed the validity of the given value (~308 tons / 335 m3). Thus, the calculations are supported by both empirical geochemical data and modelling, which ensures the reliability of the conclusions reached. The calculations were made in the report on modelling the effects of downhole sulfuric acid leaching: Book 2. Development of hydrodynamic models on the example of a test block, February 2022, page 80 to 116.

9. APPENDIX II – STAKEHOLDER COMMENTS AND CONCERNS

The mission included consultations with key stakeholders involved in uranium mining, environmental regulation, water management, and radiation safety in Namibia. The objective, in accordance with the ToR, was to *"review and assess concerns and comments submitted by competent authorities, stakeholders and interested affected parties with special attention being given to feedback from key stakeholders in order to ascertain their validity and legitimacy of the issues raised and to provide recommendations on how these concerns can be addressed moving forward"*.

Appendix II describes findings from the pre-mission documentation review, as well as observations and verifications made by the IAEA Team on site. It summarizes stakeholders' comments and concerns related to the proposed Wings Project and highlights good practices identified during the assessment and consultation process. Particular attention is given to input from institutional stakeholders, including competent authorities responsible for environmental protection, water resource management, and radiation safety, as well as landowners and groundwater users who may be directly affected by the project. Based on the information gathered, the appendix provides an assessment of the relevance and validity of the concerns raised and, where appropriate, offers suggestions for adjustments or enhancements to address the identified issues.

A.II.1. Background

The Omaheke Region of Namibia is characterized by farm-based land use, with extensive livestock production on privately owned freehold land. Ecologically, the area forms parts of the Tree and Shrub Savanna Biome associated with the central Kalahari Shrubland, which is defined by sandy soils and semi-arid conditions. In this setting, groundwater is the primary source of water supply for domestic use, livestock and farming activities, making boreholes and associated watering infrastructure important environmental and socio-economic receptors.

Groundwater in the region is sourced from the STAS, a shared water resource extending across Namibia, Botswana and South Africa. The system comprises multiple aquifers, including the upper Kalahari Aquifer, which provides potable water for local communities and supports key economic activities in the Omaheke Region. Beneath this lies the deeper Auob Aquifer, which hosts the uranium ore body discovered during Wings Project exploration activities in 2018–2019.

Uranium exploration in the Omaheke Region has been conducted since 2011, involving geological and hydrogeological drilling as well as groundwater monitoring. These activities were paused between 2013 and 2018 due to a government-imposed moratorium on uranium exploration. As part of its application for an Environmental Clearance Certificate, the Proponent is seeking authorisation to drill additional – exploration and hydrogeological – boreholes to depths ranging from 160 to 400 metres, with the potential to undertake test mining activities within the STAS.

Given the project's proximity to the region's water source, robust and transparent stakeholder engagement is essential to maintaining public confidence, ensuring informed decision making, environmental protection and the long-term sustainability of the aquifer system.

A.II.2. Scope and sources of stakeholder comments

The comments and concerns considered in this appendix are primarily derived from the EIA and EMP documentation, including stakeholder engagement records and the comment–response register prepared as part of the EIA process. The experts identified prior to the mission is that there has been no process to capture and action feedback on the EIA and EMP. Input obtained during the mission meetings was used to complement and further contextualize the issues identified in these documents.

During the in-country mission, the IAEA Team met with competent authorities and institutional stakeholders involved in uranium mining regulation, environmental protection, water resource management, and radiation safety in Namibia. These consultations provided an opportunity to discuss the proposed Wings Project pilot ISL operations, clarify issues raised during the EIA process, and gather additional perspectives from relevant institutions and stakeholders.

The meetings conducted during the mission included the following:

- Meeting with regulators of the ministers of: Ministry of Environment, Forestry and Tourism; Ministry of Health and Social Services; Ministry of Agriculture, Fisheries, Water and Land Reform; and Ministry of Industries, Mines and Energy.
- Meeting with SAUMA;
- High-level briefing to the Prime Minister's Office, attended by representatives of the Ministries, National Planning Commission, Office of the Governor Omaheke Region and Parliamentary Standing Committee on Natural Resources.
- Meeting with Omaheke region stakeholders;
- Meeting with representatives of Project Proponent.

The programme of meetings and attendees were coordinated by the Namibian counterparts. The IAEA Team provided an overview and/or presentation at each of the meetings (with the exception of the Proponent Meeting) to presentation the scope and objective of the expert review, explained the preliminary review findings of Stage 1 (document examination), and stakeholders were given opportunity to ask questions to the IAEA Team.

A.II.2.1 Meeting with regulators

The IAEA Team presented an overview of its mission scope, a brief background to the Wings Project, and ISL mining methods and then described the three key issues identified by the 2025 review. The IAEA Team heard comment, concerns and questions from the attending ministry representatives and their experts during the meeting. Discussion topics included:

- Reasons for conducting a pilot – these include demonstrating that the mining method is viable and controllable, prove hydrogeological confinement of the mineralised zone, validating models and assumptions needed for larger scale operations;
- ISL specific technical skills within relevant regulatory authorities;
- Stakeholder engagement issues, including communication and coordination between ministries and other relevant parties;
- The transboundary nature of the host aquifer with neighbouring countries;
- Regulations for ISL mining of uranium;
- Pathways for disposal of radioactive waste generated during the pilot site.

No new or additional technical or scientific issues were raised that needed be evaluated by the IAEA Team during the in-country mission.

A.II.2.2 High-level briefing to the Prime Minister's Office

The Prime Minister invited the IAEA Team to participate in a high-level briefing on the independent technical review mission of the Wing's Project pilot ISL application.

During the high-level meeting the experts heard perspectives from Ministers, Executive Directors and government officials from the attending ministries and local government representative of the Omaheke region.

The briefing outlined the mission's objectives, community needs, exploration challenges and key technical considerations from regulatory and stakeholder engagements. The meeting reflects an active, multi-ministerial process, affirming the Namibian Government's commitment to transparent and science-based decision-making.

Over two days of meeting with the Ministries and Regulators, the IAEA Team's undertook and assessment of comments and concerns raised. The review of current regulatory, administrative and technical arrangements for assessing the proposed ISL mining project highlights several opportunities for strengthening national oversight and improving coordination. The following observations, while beyond the scope of the ToR, are provided to assist the Namibian Government as enhancements for decision-making processes on ISL projects in the Omaheke Region:

- Review and refine existing policy and regulatory parameters: Confirm that the current framework is adequate, comprehensive and fit-for-purpose for assessing ISL mining proposals.

- Strengthen coordination within Ministries: Establishing an integrated approach to managing approval and permitting processes for mining applications and associated environmental and technical assessments.
- Define approval benchmarks: Evaluation of EIA for uranium ISL mining operations (including pilot test) against established criteria, regulatory requirements, and adopt international good practice. This approach improves understanding and documentation of key uncertainties associated with the ISL mining proposal, enabling more informed risk evaluation and decision-making.
- Introduce a consolidated assessment report process: Between regulatory authorities to integrate findings from multiple agencies, improve transparency and provide a clear basis for final regulatory decisions.
- Develop procedures for transboundary review and engagement: Engaging with neighbouring countries to address potential cross-border impacts of the ISL mining in the STAS and ensure transparent regional cooperation.
- Assess and build regulatory capacity: Including technical skills, institutional knowledge, and resource availability, to ensure the regulators can effectively evaluate ISL submissions, oversee compliance and undertake enforcement activities.

Suggestions S.1–S.3

S.1	The Namibian Government may consider a joint assessment report, prepared by the relevant Namibian authorities, on the pilot plant EIA and EMPs. A coordinated assessment would support a more objective benchmarking of the submission against relevant regulations and standards and would strengthen the decision-making process by the relevant authorities.
S.2	The Namibian regulatory authorities may consider establishing a consultative forum for engagement between uranium ISL mining industry and representatives of relevant ministries, with clearly defined roles, meeting schedules, and agendas; ensure that all discussions and decisions, are formally documented in writing, thereby fostering a coordinated approach, transparent and proactive communication framework..
S.3	Targeted capacity-building/educational programmes, development of specialized expertise and investments in appropriate monitoring equipment could improve the Namibian authorities' ability to supervise pilot operations effectively contributing to transparency and strengthening public confidence.

A.II.2.3 Meeting with SAUMA

The IAEA Team met with SAUMA on 10 February 2026 in Windhoek. SAUMA raised issues on the importance of groundwater resources within the basin and the possible risks associated with uranium mining activities.

A presentation was delivered by SAUMA to express the comments and concerns, supported by two summary documents "What do we think we know" and "Comments on the Environmental Impact Assessment for In-Situ Leaching of Uranium for a Pilot Plan on Farm Tripoli". The materials prepared by SAUMA outlined the hydrogeology, groundwater dependence, and environmental risks linked to proposed ISL uranium mining in the STAS. This transboundary basin across Namibia, Botswana, and South Africa supports roughly 100,000 people who rely almost entirely on groundwater due to the region's arid climate. Because recharge is low, the basin is considered a strategic water resource requiring strict protection. Key issues were raised in the areas of:

<u>Hydrogeologic Framework</u>

The Auob Formation is the basin's main potable aquifer, consisting of permeable sandstone layers that supply most drinking and irrigation water. Its integrity is crucial for sustaining regional agriculture and communities.

Other geologic units within the basin include overlying Kalahari sediments as well as additional sandstone and shale formations that occur above and below the Auob aquifer, some containing uranium mineralization.

SAUMA's presentation highlighted the importance of understanding the relationships among these units when evaluating the potential impacts of mining operations.

Structural Geology and Faulting

The presentation emphasizes that the basin contains significant structural complexity. Containing numerous faults and fracture zones that can influence groundwater movement; presented as potential vertical pathways for fluid migration, raising concerns about the containment of ISL mining solutions. The presentation stresses that detailed mapping of fault networks is essential before any mining begins.

Uranium Deposits and Exploration Activities

Exploration near Leonardville and the Nossob River has identified uranium within specific sandstone layers, with ISL mining considered the likely extraction method. The presentation described that numerous exploration boreholes have already been drilled in the region, arising to the concern that poorly sealed boreholes could connect aquifers unintentionally. Understanding the condition and placement of these wells is important for preventing cross-contamination.

Groundwater use and agricultural dependence

Agriculture in the Stampriet area depends entirely on groundwater, with irrigation wells pumping large volumes year-round. Annual extraction reaches several million cubic meters, supporting both crops and livestock. Drawdown maps shown in the presentation illustrated that well capture zones can stretch tens of kilometres, highlighting that the groundwater flow systems in the basin operate over large spatial scales.

Concerns regarding in-situ leach mining

Key concerns involve whether ISL mining solutions can be reliably contained within the mining zone. Irrigation pumping and natural flow patterns could potentially draw contaminants toward agricultural or drinking-water wells if containment fails. Several potential leakage mechanisms were described, including faults and fractures connecting aquifers, contacts between sandstone units that allow cross-flow, improperly sealed exploration boreholes, and damaged well casings. The presentation included an image of a damaged well casing observed through a downhole camera as an example of potential well integrity problems.

SAUMA emphasizes geological complexity, structural faulting, intensive groundwater abstraction, and the large scale of potential mining operations are factors that must be considered when evaluating the feasibility of in-situ uranium mining in the basin. Stressing the need for calibrated groundwater-flow and geochemical models supported by robust field data as essential for reducing uncertainty and improving predictions of ISL-related impacts.

Scale of potential mining operations

Large ISL mining developments may involve thousands of tightly spaced wells, with examples showing up to 26,000 boreholes. This density increases the number of engineered components that must remain leak-free over long periods. The presentation notes that every well represents a potential failure point if improperly constructed or maintained that could introduce additional risks to groundwater systems.

Regulatory and administrative issues

The presentation included a letter from Namibia's Ministry of Agriculture, Water and Land Reform (dated 9 November 2021) to Headsprings Investment, regarding hydrogeological drilling permits. The letter reports that two drilling permits were withdrawn due to non-compliance with permit conditions for exploration and hydrogeological purposes. Authorities cited concerns such as boreholes drilled deeper than allowed and construction issues that might create pathways between aquifers. The letter requested additional information and documentation from the company conducting the drilling and indicated that further activities would need review and approval by the Ministry.

SAUMA noted that strong regulatory oversight and thorough hydrogeologic investigations are necessary to ensure that groundwater resources remain protected.

Document "What do we think we know"

The SAUMA also emphasized major uncertainties in Auob formation structure and behaviour. Its formation is interpreted as fluvial ECCA Group sandstones with significant heterogeneity, including shale lenses and erosion channels. SAUMA's concern is that due to this complexity, regional hydrogeologic datasets for evaluating ISL-scale conditions and observed pressure responses across the aquifer do not necessarily indicate actual groundwater flow.

Document "Comments on the Environmental Impact Assessment"

Technical comments were also submitted by SAUMA on the EIA, expressing concern that the document lacks sufficient hydrogeologic, groundwater, and geochemical information to assess potential impacts on the Auob aquifer.

The EIA relies heavily on regional scale data, which provides context but is inadequate for developing a site-specific conceptual model of the pilot area or orebody.

SAUMA also notes shortcomings in the EIA's treatment of hydraulic conditions. The assessment focuses primarily on gradients between injection and recovery wells, without considering broader hydraulic gradients that may result from bulk groundwater abstraction or other operational activities.

The geochemical assessment is similarly criticized. Geochemical zonation related to acid leaching appears based on generalized trends rather than site specific mineralogy and groundwater chemistry. Additionally, the EIA references the results of a full-scale sulfuric acid ISL test from November 2021, but it is unclear whether this test occurred.

SAUMA identifies further deficiencies in the groundwater flow modelling. The modelling does not follow standard reporting practices and lacks key information such as calibration methods, model adequacy evaluation, and predictive uncertainty analysis. Necessary data inputs and realistic operational scenarios are also missing, limiting the reliability of the modelling results.

SAUMA concludes that the EIA does not provide sufficient technical basis for assessing potential impacts of ISL operations on the aquifer.

Conclusion

The IAEA Team's assessment of SAUMA comments and concerns was that the association identified a number of technical issues inconsistencies (or missing information) in the Proponent's EIA that were also found by the experts.

With respect to the STAS, discussions included the wider regional use of groundwater from the Stampriet system and suggestion that the system is not fully understood. This is beyond the scope of the IAEA mission ToR; however, this may be an element needing further consideration for the wider regional groundwater model and would be a necessary inclusion of an environmental impact assessment for a full-scale mining operation.

SAUMA's concerns regarding poor borehole closure are valid. Poorly grouted wells have the potential to compromise target aquifer confinement and allow vertical migration of lixiviant and in some cases resulted in surface expression of lixiviant. The design of the vertical monitoring network and wellfield testing protocols need to account for the location of past boreholes to permit the detection of poorly grouted wells.

Generally, SAUMA expressed a lack of engagement pathways with the Namibian authorities and the Proponent during the EIA assessment and decision-making phases for item pertaining to the proposed Wing's Pilot project, but also on broader issued related to a potential full-scale mine and water usage of the Stampriet aquifer system. At the same time, available records indicate that engagement activities were undertaken at various stages, including several site visits and related interactions. The feedback provided by SAUMA highlights an opportunity to further enhance the accessibility, continuity, and perceived effectiveness of stakeholder engagement going forward. This could be supported through factual and evidence-based exchange, with structured meetings and documented responses to ensure focused and transparent interactions.

Suggestion S.4

S.4	It may be beneficial for the Project Proponent to formalize engagement with relevant stakeholders, including NGOs such as SAUMA, community groups, and individual members of the public) through establishing formal communication channels, framed in a structured technical format and supported by agreed response timelines to facilitate transparent and timely engagement.

There were no new or additional issues raised to be evaluated by the IAEA Team within the ToR mission scope for a limited pilot operation during the in-country mission, however some of the concerns raised by SAUMA would be relevant for consideration for a full-scale mining operation.

A.II.2.4 Meeting with Omaheke stakeholders

The IAEA Team participated in the Omaheke Region Stakeholder meeting 12 February 2026 in Gobabis. Attendees were invited by the Office of the Governor of the Omaheke Region from: 1) Omaheke Regional Council Leadership; 2) Regional and Local Authorities; 3) Regional Heads of Line Ministries and Offices; 4) Leonardville Community Representatives (farmers, youth group, councillors, teachers, etc). Stakeholders were given opportunity to ask questions to the IAEA Team about the proposed ISL project.

The following comments and questions were raised during the meeting:

1) How to confirm confinement of the host aquifer?
2) How to determine the direction of flow of the solution?
3) How to prevent upward/downward contamination (or other aquifers)?
4) Requested an explanation on the closing of injection wells.
5) What has been experiences at ISL operations elsewhere and what problems/issues have occurred?
6) Explanation sought on the fate of the lixiviant and risk assessment process?
7) What are the factors that decide on use of ISL vs conventional mining?
8) The nature of waste generated during the ISL trial and how it is done elsewhere.
9) Why is ISL mining a preferred method of mining compared to other methods (e.g. open cut)?
10) What are the alternative lixiviants?
11) Can ISL mining co-exist with other (groundwater) users?
12) Has there been operations that have been shutdown for poor compliance?
13) How are rehabilitation liabilities managed?
14) What will happen with the IAEA mission report?
15) Are stakeholder comments considered as part of the mission report?
16) What are the expected impacts, noting other locations have poorer quality?
17) Statement made that there is limited ISL specific technical expertise within Namibia.
18) The host aquifer is said to be unique. Is this a statement or based on science?
19) What is the radiological quality of the groundwater?
20) Is there competent water testing in place?
21) There is a need for more layman explanation of the matters.
22) What is the effect of the mass removal (e.g. uranium from the aquifer)?
23) Are there public health and safety considerations that need be addressed (with respect to water and physical safety)?
24) Community members noted the significant unemployment rates, particularly for younger community members and the project would create employment opportunities for the local community. During the meeting a petition in support for the pilot project was handed over from the Youth Group to the Governor of Omaheke Region.
25) Some community members expressed concern that the Stampriet aquifer water quality is too good to risk becoming contaminated by mining activities.

The IAEA Team listened to the comments and concerns raised by stakeholder and provided responses to aspects within the scope of the review mission. The function of the team was to provide general responses based on the expert's experiences, international good practices and IAEA safety regulations and guidance materials.

It was the IAEA Team's assessment that overall, the Omaheke stakeholder discussions centred on hydrogeological safety, environmental and operational risks, regulatory and rehabilitation responsibilities, the scientific rigour and transparency of assessments, and the need for clearer public communication. In addition, strong support for the project was noted among segments of the local community, particularly from youth and community leaders, who highlighted the project's potential positive economic and livelihood benefits for the region.

No new or additional issues within the scope of a pilot mining operation requiring evaluation by IAEA Team were identified during the in-country mission. Nevertheless, the comments and concerns raised during the meeting provide valuable insight into the community's expectation for feedback from the relevant stakeholders – including the Namibian Authorities and the Project Proponent – regarding the outcomes of the EIA decision.

A.II.2.5 Meeting with Project Proponent

The IAEA Team met with the Project Proponent on 13 February 2026 at the Headsprings Wings Project Office. The programme of the meeting included: i) presentations and discussions on technical areas and key issues; ii) a field visit to the Wings Project pilot ISL site; and iii) a tour of the community of Leonardville and overview of the Proponent community engagement strategy/programmes. The programme included a drive through the town, visits to the local primary and secondary schools and meetings with representatives of the local community.

Detailed in this appendix are observations of the IAEA Team on item iii) Leonardville community tour and Project Proponent's community engagement strategy/programmes.

The observations on technical matters and the pilot site are presented in Appendix III.

The Proponent's presentation "Wings Project" highlighted the potential economic and social benefits associated with a full-scale mining project; delivering job creation, government revenue, skills transfer and community investment aligned with Namibia's national goals for economic growth and development.

The local context provides additional perspective on the relevance of the project's potential benefits. Leonardville is a small rural settlement with a population of approximately 4,000 people. The town is characterized by limited infrastructure and restricted access to basic services. Residents face challenges in accessing quality healthcare, education and financial services. Household incomes remain relatively low, and unemployment levels are high. Housing conditions vary considerably, ranging from permanent brick houses to temporary structures. Not all households have access to electricity, water supply is limited, and centralized sewage systems are largely absent.

According to international good practices, effective stakeholder engagement is built on consistent, clear and accessible communication and information sharing (Stakeholder Engagement in Nuclear Programmes, IAEA NG-G-5.1). However, the IAEA Team noted that presentations and materials in the EIA and EMP were not always presented in English language (Namibia's official language) presenting barriers to communication of results of studies, impacts to the environment and mitigations proposed for the Wings Project to stakeholders.

A similar observation was made during the Proponent's presentations on site, where this may have, at times, limited the clarity of certain scientific and technical inputs. While discussions remained constructive overall, language-related challenges may have had some bearing on stakeholders' ability to fully engage with and interpret the information presented.

Suggestion S.5

S.5	Maintaining a unified documentation package in English language that is accessible to relevant stakeholders, together with targeted support for spokespersons and technical advisors in communication, could contribute to consistent, clear and standardized presentation of information by the Project Proponent, as well as to demonstrate accountability, and build stakeholder confidence.

During the community tour the Proponent provided the IAEA Team with an information related to local community engagement, including a number of initiatives aimed at supporting residents and improving regional socio-economic conditions. The key initiatives include the following:

a. a charitable project to provide meals for children at the Noasanabis Primary School. The company also funded the construction of a modern school kitchen, which allows meals to be prepared in improved sanitary conditions. The company also supports the development of school gardens where students grow vegetables and fruits. The harvest is used to supplement school meals and is partly sold to local residents. The initiative is intended to strengthen food security while also helping students develop agriculture skills and build a spirit of integrity and shared responsibility.
b. establishment of a fully-equipped computer class to support digital learning.
c. support for local healthcare services, including the donation of a blood analysis machine to improve diagnostics.
d. scholarships for Namibian students pursuing studies related to the mining industry and finances vocational training for young people from Leonardville at the Namibian Institute of Mining and Technology (NIMT). The company covers tuition, accommodation, and meal expenses.
e. contribution to social and infrastructure initiatives and support local sports and community events.

In parallel, the Proponent maintains regular monthly meeting with local residents to provide updates on the proposed pilot project, address concerns, answer questions, and plan future community activities. The IAEA Team observed a high level of community engagement and overall local support for the project.

Local community members noted that, since the project's early stages, the company has contributed to employment and educational opportunities, enhanced access to healthcare, and supported community livelihoods. Some members expressed the view that these contributions demonstrate the project's potential to deliver further socio-economic benefits if it proceeds. High expectations were generally observed within the Leonardville local community with regard to project moving forward and ongoing investment and development in the area.

Suggestions S.6 and S.7

S.6	The Project Proponent's social programmes could be more clearly positioned as a distinct component of corporate responsibility, while the safety of pilot operations may be more effectively demonstrated through robust monitoring data, established control methodologies, and independent expert review. Maintaining this distinction supports transparency and contributes to mitigate reputational risks.
S.7	High expectations within the community need to be carefully managed by both the Namibian authorities and the Proponent to ensure commitments are realistic and achievable. Clear, consistent, transparent communication is essential to align expectations and minimize the risk of dissatisfaction.

A.II. 3. Summary

The key concerns raised by some stakeholders relate to the protection of groundwater, the prevention of mining-solution migration beyond the target zone, and the effective restoration of the aquifer after operations. These issues are central to minimizing potential environmental and community impacts.

Across the consultations, the experts observed that EIA and EMPs did not consistently or clearly present the project plan, supporting studies, or technical basis for the proposed activities. Some stakeholders noted missing information, internal inconsistencies, clarity on studies parameters, and in some instances, the absence of English-language documentation necessary for transparent review.

Similarly, additional information provided by the project Proponent and Namibian authorities throughout the assessment and decision-making process has not adequately addressed the technical questions or concerns raised.

Currently stakeholder perspectives vary, with some groups indicating that certain concerns have not yet been fully addressed, which may contribute to reduced confidence in both the project justification and the expected environmental protection.

It is important that responses to stakeholder concerns are perceived as complete, sufficiently justified, and supported by evidence. Thus, a more structured and coordinated communication approach – combined with capacity building for spokespersons and technical advisors – would enhance the presentation of scientific and

technical information in a way that is accessible to diverse stakeholder groups. Strengthening these processes is likely to improve confidence in the predicted environmental outcomes and the mitigation measures described in the EIA.

At the same time, the stakeholder engagement process demonstrated several positive elements. Consultations were inclusive and facilitated constructive dialogue, with active participation from a broad range of authorities and community representatives. Some stakeholders raised relevant and technically informed questions, reflecting a good level of awareness of environmental and safety considerations. In addition, segments of the local community expressed support for the project and recognized its potential socio-economic benefits. The Project Proponent has also undertaken ongoing engagement and implemented social initiatives in education, healthcare, and skills development, contributing to local capacity building and supporting socio-economic development in the region and community well-being.

The IAEA team conducted a document review of stakeholder submissions and met with key stakeholder groups during the in-country mission. The objective of the mission was to for the IAEA Team to evaluate the concerns and comments raised by competent authorities, stakeholders, and interested or affected parties, in order to determine their validity and provides suggestion for how these issues may be addressed. No new technical or scientific issues – beyond those already recognized within the scope of the ToR – were identified that necessitated additional evaluation by the experts.

A.II.4.2. Consolidated suggestions related to stakeholder engagement

The expert evaluation highlighted several opportunities to improve stakeholder engagement processes across all key organizations, including coordination between authorities, the Project Proponent and other stakeholders, as well as the engagement with the public. These opportunities, aligned with international good practice, are summarized below and form the basis for seven expert considerations for adjustments or enhancements to stakeholder engagement (S.1–S.7) are consolidated in Section 4 of the main body of this report.

10. APPENDIX III – TECHNICAL OBSERVATIONS AND ANALYSIS

In accordance with the ToR:

> *(the)… requesting party expects that the IAEA Team, "as external review, will assess the completeness, quality and relevance of the submitted environmental impact assessments and management plan reports including the specialist studies, proposed mitigation measures and assess the overall findings". It is also expected that the IAEA Team will "evaluate the effectiveness of the proposed mitigation strategies and the thoroughness of the reports given the magnitude of this 'first-of a-kind uranium pilot In-Situ Leaching (ISL) mining operations in Namibia".*

Appendix III describes observations and verifications made by the IAEA Team during the in-country mission.

This appendix summarizes additional information presented by the Namibian counterparts and/or Project Proponent during the in-country mission. An independent technical assessment of the completeness and quality of information is based on IAEA Team's expert analysis of the:

- The Environmental Impact Assessment;
- Environmental Management Plans;
- Documents provided in the advanced information package (Annex III);
- Answers and additional documents provided in in Response to the IAEA Request for Information (Appendix I);
- Presentations made by the Proponent during the in-country mission (13 February 2026); and
- Field visit of the proposed pilot site (13 February 2026).

The observations in this appendix cover the *"entirety of the proposed project, covering exploration, test mining and actual mining and the surrounding environment with a particular focus on the impacts and interactions associated with in-situ leaching operations" (ToR Annex I).* With respect to observations related to "actual mining" or full-scale mining, any observations of this nature are generally in the context of the role of pilot operations play to gather additional information that would support the preparation of an EIA for a full-scale mining operation.

A.III.1. Introduction

During the in-country mission, the IAEA Team conducted a technical and factual analysis of new information, and validated observations noted in the document examination stage.

Analysis and verifications were made through discussions with the Project Proponent (on 13 February 2025) that included delivery of presentations and materials (see below) and field visit to the Project's core storage facility, laboratory and the pilot site on the Tripoli Farm.

Proponent presentations/materials shared included:

(1.) Wings Project.ppt
(2.) Wings – New sandstone type uranium deposit of ISL mining in Namibia.ppt
(3.) Groundwater recovery after pilot shutdown – reactive transport modelling – Wings Project.ppt
(4.) Radiation Exposure Monitoring – Baseline.pdf

A.III.2. Observations and Verifications

The following are summaries and expert observations of the Proponent's presentations and discussions, and field visit to the pilot site.

A.III.2.1. Proponent presentation summaries

A.III.2.1.1 Presentation 1 – "Wings Project"

The presentation titled "Wings Project" prepared by Headspring Investments (Pty) Ltd provides an overview of the proposed uranium development project in Namibia, focusing on the planned use of ISL mining, the regulatory and exploration process, and the anticipated economic and social benefits associated with the project. The presentation outlines the project within the broader context of the nuclear fuel cycle and the global

uranium industry, and it describes the steps to move the project from exploration through pilot testing and ultimately to commercial mining operations.

A conceptual diagram in the presentation illustrates a sandstone-hosted uranium deposit located within the Auob aquifer and bounded by confining layers above and below. Monitoring wells installed in surrounding aquifers are used to track groundwater conditions and ensure that mining activities remain confined to the target formation. According to the presentation, modern ISL operations rely on hydraulic control, monitoring networks, and hydrogeological confinement to prevent migration of leaching solutions into surrounding groundwater systems.

The presentation describes the exploration and project development process for the proposed Wings Project. Exploration activities include diamond core drilling to collect geological samples and characterize the mineralized zones. The drilling programme uses biodegradable drilling fluids and is accompanied by geophysical surveys to improve understanding of subsurface geology. Exploration boreholes are subsequently rehabilitated using pressure grouting to prevent long-term impacts. Laboratory analysis of core samples is conducted to determine geochemical and geological properties of the uranium-bearing formations. In addition to geological exploration, hydrogeological investigations are conducted through the drilling of monitoring boreholes and additional studies designed to characterize groundwater conditions and support hydrogeologic modelling of the system.

Following exploration, the project development pathway includes a pilot test phase designed to evaluate the feasibility and environmental safety of ISL mining at the site. The pilot test would be conducted within a small, tightly controlled test cell covering approximately 225 square meters, representing only a tiny fraction of the overall deposit. The test design includes four injection wells and one recovery well arranged in a 15 metres square five-spot pattern surrounded by monitoring wells installed across multiple aquifers. The objective of the pilot test is to determine the optimal leaching process under local geological and hydrogeological conditions, evaluate environmental impacts, and collect technical data for feasibility assessments and regulatory review. The Proponent noted that the results from the pilot test would help determine whether the project can proceed to full-scale mining operations, subject to approval by the Namibian government.

The presentation also outlined a staged project development plan. The first stage involves continued exploration and construction of the pilot testing infrastructure. The second stage includes pilot test operations, EIA updates, and feasibility studies needed to support a potential mining license application. Subsequent stages would involve construction of mining infrastructure, development of additional well fields, and long-term monitoring and rehabilitation of mining areas. According to the timeline presented, full mining operations could potentially begin in the early 2030s if the project proceeds through the regulatory and technical evaluation process successfully.

A.III.2.1.2 Presentation 2 – “Wings – New sandstone type uranium deposit of ISL mining in Namibia”

The presentation outlined the discovery, evaluation, and planned development of the Wings Project.

Exploration activities began in 2011 and intensified after the lifting of Namibia’s uranium moratorium in 2018. Subsequent drilling campaigns confirmed the presence of a large sandstone-type uranium deposit hosted in the Auob 3 aquifer, with JORC[1] code–compliant ‘Measured’ and ‘Indicated’ resources of 18,536 tU and additional ‘Inferred’ resources of 22,977 tU (2022). Prefeasibility studies completed in 2021 indicate that the project is economically viable, and preparations are currently underway for an ISL pilot test, pending regulatory approval.

From a geological and hydrogeological perspective, the Wings deposit is associated with regional redox front zones within the Aranos (Nama) Basin, a setting previously unexplored for uranium in Namibia. Groundwater in the basin flows south–southeast at approximately 1–3 m/year, with permeable sediments favourable for ISL extraction. Laboratory leaching tests performed between 2018 and 2020 confirmed the amenability of the host aquifer to both acidic and alkaline ISL solutions. The pilot test design includes a five-spot well pattern with

[1] Joint Ore Reserves Committee produced the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ('the JORC Code')

multiple observation wells to verify solution migration, environmental containment, and the confirmation of key technical parameters for feasibility assessment.

Baseline environmental studies reported that naturally elevated radionuclide levels (alpha and beta activity) occur in both exploration and local farmers' wells, attributed to natural decay of uranium mineralisation in the aquifer. International case studies – particularly an example from Kazakhstan (the Irkol ISL pilot) – was presented to illustrate aquifer natural attenuation following a pilot ISL operation and the potential for long-term restoration of groundwater quality when properly monitored. The presentation asserts that ISL mining does not introduce new pollutants into surrounding aquifers but operates within an already mineralised groundwater system, where post-mining attenuation is supported by geochemical and microbial processes.

In conclusion, the presenters argue that the Wings project has the potential to open a new uranium province in Africa and introduce ISL mining as a new extraction technology for Namibia. The Proponent highlights the importance of the pilot test to demonstrate technical feasibility and environmental safety.

A.III.2.1.3 Presentation 3 – "Groundwater recovery after pilot shutdown – Reactive transport modelling – Wings Project"

The presentation describes the application of reactive transport modelling to evaluate groundwater recovery following the shutdown of a pilot ISL test conducted for the Wings uranium project. The primary objective of the modelling was to assess the environmental behaviour of residual acid and mobilized metals remaining in the aquifer after completion of the pilot operations, and to evaluate whether natural geochemical processes within the host aquifer would be sufficient to neutralize residual lixiviant and immobilize dissolved metals without significant migration beyond the pilot test area.

Objectives of the Modelling

The modelling effort was designed to support the EIA for the Wings uranium project by examining the post-operational evolution of groundwater chemistry in the pilot cell. The analysis considered three principal scenarios: (1) normal pilot operation, (2) pilot shutdown with residual acid contamination of approximately 1 g/L distributed throughout the pilot cell volume, and (3) a more conservative case involving higher residual acidity of approximately 10 g/L across the pilot area.

The simulations therefore represent both realistic operational outcomes and bounding conditions intended to evaluate potential environmental impacts under worst-case circumstances.

The modelling framework integrates hydrodynamic transport processes with geochemical reactions occurring within the ore-bearing formation. By coupling flow and chemical reactions, the approach allows prediction of both the spatial extent of lixiviant migration and the progressive neutralization and attenuation of dissolved constituents.

Conceptual Model and Input Parameters

The reactive transport model incorporates both hydrogeologic and geochemical parameters representative of the host formation. The aquifer is treated as a confined pressurized system, consistent with the geologic framework of the deposit. Key geometric characteristics of the pilot cell include a test area of approximately 450 m^2, an effective ore thickness of roughly 15–52 meters, and an estimated acidified pore volume on the order of several thousand cubic meters.

Hydrodynamic parameters used in the simulations include a maximum filtration velocity of roughly 1 meter per day and a bulk rock density of approximately 1.5–1.8 g/cm^3. These parameters govern the movement of groundwater and dissolved species within the formation. In addition, the geochemical model includes an acid neutralization capacity of the ore estimated at approximately 8 kg of acid per ton of ore. This parameter is important as it represents the ability of the host rock to buffer and neutralize injected acidic solutions.

Physical parameters describing the ore body were also incorporated, including estimated ore mass, solution volumes, and effective porosity values. These parameters define the reactive volume of the system and control the rate at which chemical reactions between lixiviant and host rock occur.

According to the EIA and presentations from the Proponent, the pilot also intends to test both acid and alkaline lixiviant. The documentation provided by the Proponent is ambiguous as to which reagents are going to be

actually used during the ISL pilot, as both sulfuric acid and bicarbonate (alkaline) schemes are mentioned. The presented reactive transport modelling assumes only the addition of sulfuric acid. No modelling was provided for the fate of the alkaline lixiviant, despite attenuation chemistry for alkaline lixiviant being different to acid chemistry

Suggestion T.1

T.1	The Proponent's ISL proposal needs to clarify which reagent(s) is/are proposed to be used and ensure the relevant reactive transport model(s) is/are provided.

Pilot cell layout and monitoring framework

The modelled pilot cell consists of a typical five-spot well configuration including production and injection wells arranged to form a recirculation cell. Monitoring wells are positioned around the pilot area to observe groundwater levels and chemical conditions and to detect potential migration of solutions beyond the operational boundary.

These monitoring wells serve several purposes. First, they provide hydraulic control data during operations to ensure inward hydraulic gradients toward the production wells. Second, they function as observation points to track the movement of the reactive zone. Finally, they provide early warning if excursions occur beyond the designated pilot cell.

The modelling results were evaluated relative to the location of nearby farms and monitoring points in both the host aquifer and adjacent aquifers. Distances between the pilot site and potential receptors were analysed to confirm that migration beyond the pilot cell would not threaten nearby groundwater users. The analysis indicates that the nearest farms are located at distances exceeding approximately 500 meters from the pilot cell, providing a significant buffer distance between the operational zone and potential receptors.

Predicted behaviour during pilot operation

The modelling results show the evolution of the acidic solution zone within the ore zone during the course of pilot operations. Early in the operational period (e.g., approximately 30 days), the acidic solution remains concentrated around the injection wells but expands gradually as recirculation proceeds. By approximately 100–180 days of operation, the affected geochemical zone approaches a quasi-steady configuration within the pilot cell boundaries.

Despite this expansion, the simulations indicate that the acidic solution remains largely confined within the operational area due to hydraulic control and the balancing of injection and production flows. The modelled geochemical reactive zone dimensions remain on the order of several tens of meters and do not extend significantly beyond the pilot cell perimeter.

The results demonstrate that maintaining a balanced injection-production regime is effective in preventing outward migration of lixiviant. Even under extended operation scenarios of up to 270 days, the reactive zone remains manageable and confined to the pilot area.

Post-shutdown evolution and natural attenuation

Following pilot shutdown, the modelling predicts that natural hydrogeochemical processes within the aquifer will progressively neutralize the residual acidic solution. Several mechanisms contribute to this attenuation process. First, acid neutralization reactions occur between the injected sulfuric acid and carbonate minerals present in the host formation. These reactions consume acidity and gradually increase the pH of the pore water. Second, metals mobilized during leaching are progressively removed from solution through precipitation reactions. As pH increases, dissolved metals form hydroxides, carbonates, sulphates, or other mineral phases that precipitate and become immobilized within the rock matrix.

Third, sorption and adsorption processes also contribute to immobilization of dissolved species. Clay minerals and other reactive surfaces within the aquifer can adsorb metals and reduce their mobility.

Model results show that after shutdown, concentrations of acid and dissolved metals decrease steadily over time as these natural attenuation mechanisms operate. Within several hundred days after cessation of

operations, the modelled reactive zone shrinks and becomes progressively weaker. Eventually, the affected zone stabilizes and returns toward background conditions.

The Proponent estimates that residual acid will be neutralised 170 days after completion of the pilot test. No estimates were given for the sulphate component other than a comment that it will form gypsum and insoluble concentrations.

Suggestion T.2

T.2	The Proponent's reactive transport model needs further investigation to determine the fate of the sulphates arising from the use of sulphuric acid in groundwater.

Acidic zone mitigation scenario

The modelling also evaluated a contingency scenario involving an unplanned shutdown after approximately 60 days of pilot operation. Under this scenario, residual acid concentrations were assumed to remain at either moderate (1 g/L) or worst-case (10 g/L) levels within the pilot cell.

To address this condition, the proposed mitigation strategy involves pumping groundwater from monitoring wells located approximately 50 meters from the pilot cell. The extracted water would then be treated and potentially re-injected, thereby creating a hydraulic sink that draws contaminated water back toward the pilot area.

Simulation results indicate that this approach can effectively reduce the extent of the acidic zone and accelerate recovery of groundwater chemistry. Under both modelled scenarios, the acidic zone decreases in size and concentration over time, and migration beyond the pilot boundaries remains limited.

Attenuation through buffering and mineral precipitation

A key conclusion of the modelling is that the aquifer possesses significant natural buffering capacity. As acidic solutions move through the formation, they react with carbonate minerals and other reactive components of the rock matrix. These reactions progressively neutralize the acidity and create conditions that Favor precipitation of dissolved metals.

The model identifies several mineral phases that may precipitate during this process, including iron hydroxides, aluminium hydroxides, and other secondary minerals. These minerals effectively remove dissolved contaminants from solution and immobilize them within the solid matrix.

In addition, adsorption processes on mineral surfaces further reduce the mobility of dissolved species. Together, these mechanisms form the basis of the natural attenuation process predicted by the model.

A.III.2.1.4 Presentation 4 – "Radiation Exposure Monitoring – Baseline"

Constructive discussions between the IAEA Team and the Proponent resulted in delays to the planned programme (Annex VI). Due to time constraints, it was necessary to conclude the presentations. The experts subsequently reviewed the presentation material titled "Radiation Exposure Monitoring – Baseline" and held related discussions and verification activities with the Proponent during the field inspection.

A.III.2.1. Pilot site field visit observations

During the in-country mission, the IAEA Team completed a field visit to the Project's core storage facility, laboratory and the pilot site (on 13th February 2026) on the Trioli Farm.

Site Tour of the Laboratory and Core Storage Facility

A laboratory complex and drill core storage area has been established. Drill core is generally stored in ventilated shipping containers. The roof vents would assist in removal of any radon emitted from the core. The IAEA Team observed that cutting radioactive drill core can generate radioactive cutting residue which needs to be checked prior to disposal as it may exceed exemption levels, requiring classification as radioactive material.

The prefabricated analytical laboratory contained multiple rooms for analysis and drill core preparation. Measures for managing radioactive samples such as sealed floors, fume cupboards, ventilation. There was also

a laundry, shower and changing area and hand and foot radioactive contamination monitor (with instruction in in Russian language).

Waste management procedures were not available in the laboratory (though they would not be expected at this phase given the laboratory is not complete and the pilot test has not been approved or commenced operation)

Suggestions T.3–T.4

T.3	The Project Proponent needs to implement measures to verify the radioactivity of cutting residues in order to determine whether they require classification as radioactive material for management purposes and whether they meet exemption levels for disposal.
T.4	For the Proponent, reconfiguring the laboratory equipment (i.e. radiation-contamination meter) displays to the local language would enhance usability and reduce the risk of misinterpretation.

Site Tour of the Pilot Site

The pilot plant is surrounded by a stock fence. Five wells have been installed for the pilot test; four injection and a single recovery well was observed. Monitoring wells have not yet been installed (as permits and approvals are needed for these). The experts noted that these monitoring wells are important to permit the necessary pump testing to prove the confinement of the mineralised zone prior to the addition of any reagents.

The pilot site has holding tanks, shipping containers that contain the well control manifolds, filter and ion exchange resin. The containers have extraction fans (radon control). Some pipes are buried and some pumps were installed. Only some process control instrumentation is installed.

The shipping containers and vertical tanks have some limited bunding beneath them, and these contained what is suspected to be rainwater. There is a horizontal tank adjacent the central recovery well that did not appear to have any bunding. Reagent tanks (not yet present) would need to be bunded when installed. Some pipes were buried. The IAEA Team noted that good practice for tank bunding typically utilize bunds that hold a volume of 110% of the installed tank capacity plus contingency capacity for potential rainfall events [Life Cycle Asset Management of Uranium Mining and Processing Facilities, IAEA-TECDOC-2084].

The Proponent explained that groundwater recovered during pump testing is discharged to the ground. While the reported groundwater and radionuclide concentrations from the mineralised zones (e.g. gross alpha activity on the order of tens of Bq/L) are not expected to adversely affect topsoil or vegetation, the experts observed that that the practice of discharge of water to the ground does not reflect best industry practice, and there is no assurance that groundwater quality will remain consistent over time. In comparable Australian operations, recovered groundwater is typically contained within enlarged, deep drilling sumps or, in some cases, directed to a lined evaporation or storage dam for reinjection to the source aquifer, in order to minimise potential impacts to topsoil and subsoils.

Resin will not be eluted onsite. It will remain on site if the operation progresses to full-scale operations. If it does not progress to full-scale operations, the resin will be transferred to another ‘Uranium One’ facility to recover the small quantity of uranium loaded on it as this material is not considered radioactive waste (and therefore not subject to import/export restrictions that can apply to ‘radioactive waste’).

Suggestions T.5–T.10

T.5	The Proponent’s EMPs need to consider bund design and capacity, including contingency capacity for potential rainfall events.
T.6	The Proponent’s EMPs need to consider management of rainwater collection within bunds.
T.7	The Proponent may consider avoiding the use of buried pipelines, where practical, to enhance visual inspection and leak detection at the pilot site.

T.8	The Proponent should install spill trays and leak detection on wellheads of injection and recovery wells.
T.9	The Proponent may consider establishing a low perimeter berm around pilot plant sites to assist in minimising the spread of spilled liquids from bunding or from a pipeline.
T.10	For the Namibian Authorities and Proponent, management plans for pump testing can be improved by adopting a risk-based management approach, including for the management of groundwater produced during pump testing.

A.III.3. Expert technical analysis of examination points

In the first stage of the expert review, the IAEA team completed a comprehensions review of documents and included a meeting with the Project Proponent to clarify some information. Three outstanding issues were identified to be addressed during the in-country mission.

Prior to the in-country mission, the experts prepared additional questions (Annex V), which were submitted to the Project Proponent through the Namibian counterparts on 5 February 2026. It was not anticipated that the Proponent would provide detailed written responses to each question. Rather, the questions were intended to outline the general technical lines of inquiry on the outstanding issues, to be addressed during the in-country mission.

The IAEA Team of experts met with the Proponent on 13 February 2026 to seek resolution on the technical lines of inquiry on the outstanding issues:

1. Confirm that the geological setting provides sufficient containment to prevent significant migration of leaching solutions from the designated ISL target zone into adjacent aquifers;
2. Validate the geochemical reactive transport model; review of the underlying assumptions and to establish if there is a reliable estimate for the timeframe for the system to return to baseline conditions post-operation.

The IAEA Team's evaluation of these issues is presented in Section A.III.3.1 to A.III.3.6 of this Appendix.

During the review mission the IAEA Team sought clarification from the proponent on:

3. Water management and disposal pathways

The IAEA Team's evaluation of waste management is presented in Section A.III.3.7 of this Appendix.

In this Appendix, the experts provide an evaluation of the completeness and quality of the information provided and an independent technical assessment of the project, in accordance with the ToR. The information is presented as examination points, both general and technical in nature. Opportunities for project improvement, needs for further clarification/information are documented. Where appropriate, the experts offer suggestions for adjustments or enhancements to address the identified issues.

A.III.3.1. Environmental Impact Assessment and Environmental Management Plans

The EIA and EMP provide a foundational framework for evaluating potential environmental risks associated with the proposed pilot ISL operations within the STAS. While the documents identify key environmental receptors and outline general mitigation strategies, the level of technical specificity should be improved.

The principal technical limitation of the EIA/EMP is that it relies on conceptual or regional-scale assumptions without adequate demonstration of site-specific conditions. The Project's stated scope of work is to design and evaluate a pilot-scale study intended to generate localized, field-validated data to support feasibility and risk assessment. The current analysis uses generalized or basin-scale interpretations that do not resolve the heterogeneity and process-level controls governing the pilot test area. This is particularly important given the hydrogeologic sensitivity of the STAS, where groundwater serves as the primary water supply for domestic, agricultural, and ecological uses. More generally, the absence of clearly defined quantitative performance criteria, trigger thresholds, and adaptive management protocols limits assessment of the Project's proposed

mitigation measures as protections under both normal and non-normal operating conditions (i.e. credible failure scenarios.)

In addition, the improvement of the documentation integration between key technical components (listed below) is needed:

- Hydrogeologic characterization;
- Groundwater monitoring;
- Geochemical, groundwater flow and transport modelling; and
- Operational controls.

Integration of these technical studies and analysis will improve the confidence in the predicted environmental outcomes for a comprehensive assessment.

In line with international good practice, the EIA/EMP's for ISL sites include the following elements:

- Incorporate site-specific conceptual site models (CSMs) supported by field data;
- Define quantitative compliance criteria (e.g., restoration endpoints, excursion thresholds);
- Include uncertainty analysis (e.g., parameter variability, model predictive ranges);
- Provide clear linkage between monitoring data and operational decision-making.

Enhancements of this nature, to the current EIA/EMP would provide a sufficiently robust technical basis for evaluating environmental risk and improves regulatory oversight.

In line with international good practice, EIA assessments are typically iterative, allowing the proponent to respond to enquiries from authorities and to submit revised or additional material as needed. For example, mining related impact assessments generally follow an iterative approach:

1. Initial submission: The Proponent submits an initial impact assessment to the regulatory authorities for review.
2. Regulatory review: Authorities conduct a coordinated review. This step may also include public exhibition of the EIA where the public can make submissions on the EIA. Where information is incomplete or does not adequately address regulatory requirements, the authorities request further details from the Proponent.
3. Supplementation: The Proponent prepares a revised impact assessment, which may include additional studies and the development of new technical documents. During this period, the proponent typically engages with the authorities to confirm that identified issues are being adequately addressed. This phase may involve multiple, iterative submittals of test plans and supporting analyses, with the scope and focus of each submittal informed by the results of field testing and/or modelling conducted in the preceding phase.
4. Final submission: The proponent formally submits a final report that integrates the results of all phases of the project, including field investigations, testing, and supporting analyses. The authorities use this comprehensive, updated documentation as the basis for their final decision.

During the evaluation process, the Proponent provided the IAEA Team with additional information not previously included in the EIA (or its associated documents). The additional information is relevant for the Namibian authorities to be able complete an assessment of the project application and must form part of the project documentation to be considered during decision making. In addition, based on the experts' technical evaluation conducted during the mission, several key reports and supporting documentation, including studies, analyses, performance criteria, plans, and mitigation measures, remain outstanding for the Project application.

The Proponent's additional information/ documentation may be requested to supplement the EIA for a fully integrated assessment of the project application. This approach would align the assessment process with international good practice and ensure that all relevant information is systematically captured and adequately evaluated.

Suggestion T.11

T.11	The Project Proponent's EIA submission could be supplemented documentation that: (i) Incorporates site-specific conceptual site models (CSMs) supported by field data, reports on the geochemical reactive transport and groundwater flow modelling: (ii) Defines quantitative compliance criteria (e.g., restoration endpoints, excursion thresholds); (iii) Includes uncertainty analysis (e.g., parameter variability, model predictive ranges); (iv) Provides clear linkage between monitoring data and operational decision-making.

A.III.3.2. Aquifer protection and well integrity

Protection of overlying and underlying aquifers, particularly the potable Kalahari Aquifer, is a condition for ISL operations. The Proponent's documentation correctly identifies the need for casing, sealing, and abandonment procedures; however, it does not provide sufficient technical detail to confirm that well integrity can be reliably achieved and maintained under operational conditions.

Key technical aspects include:

A.III.3.2.1. Well construction and isolation

The proposed approach to well construction does not provide in full the detailed specifications regarding:

- Casing materials (e.g. corrosion resistance under acidic conditions);
- Cementing practices (e.g. slurry composition, placement verification);
- Annular sealing across confining units.

Given the use of acidic lixiviants, long-term degradation of casing and cement integrity is a credible failure mechanism. This is particularly important in formations with variable lithology or potential preferential pathways. Material durability and long-term integrity in acidic operating conditions should be further addressed.

A.III.3.2.2. Verification of well integrity

The Proponent's documentation does not define, testing procedures, acceptance criteria, frequency of testing or procedures for addressing detected failures.

Good practice for operational integrity includes conducting baseline and periodic mechanical integrity testing, performing baseline and periodic downhole geophysical logging using inductive electrical methods, maintaining continuous pressure monitoring throughout operations, and ensuring that corrective action protocols are fully documented.

A.III.3.2.3. Legacy boreholes

Stakeholder concerns regarding previously drilled boreholes are technically valid. Improperly abandoned or poorly sealed wells represent a significant vertical migration pathway, potentially bypassing confining units.

Identifying the legacy boreholes and establishing the adequacy of their sealing is an important component of a base line study both within the confines of the exploration drilling projects and the site of the ISL pilot..

A comprehensive evaluation includes developing an inventory and spatial mapping of all existing boreholes, conducting integrity assessments of legacy wells, and integrating these features into the monitoring and modelling frameworks. The scope of the evaluation would be proportional to the activities being undertaken. For a pilot operation the small footprint will limit the radius of investigations.

The extent, condition, and potential influence of legacy boreholes on aquifer protection should be better characterised in the Proponent's documentation. Addressing these aspects provides a high degree of certainty regarding aquifer protection, particularly for full-scale operations which cover a large area.

Suggestions T.12–T.14

T.12	The Proponent's documentation may be supplemented to provide more technical detail of the well construction and isolation to demonstrate that well integrity can be reliably achieved and maintained under operational conditions.
T.13	The Proponent's documentation may be supplemented with measures for verifying well integrity, describing testing procedures, acceptance criteria, frequency of testing, and procedures for addressing detected failures.
T.14	The Proponent's EIA application should include additional information on evaluation of legacy boreholes.

A.III.3.3. Aquifer confinement and hydraulic control

Demonstration of aquifer confinement and the ability to maintain hydraulic control are fundamental prerequisites for ISL operations. The Proponent's current documentation asserts confinement but does not provide comprehensive empirical evidence to support this conclusion.

A.III.3.3.1. Faults in consolidated lithology

The Proponent reported a relatively low hydraulic conductivity for the target aquifer in the range of 0.2 to 5.7 meters/day with average being 1.6 metres/day. This value is in the low range or is at the borderline of what is usually considered feasible for ISL to work. At the same time, the environment with low porosity controlled permeability in the matrix is going to be more sensitive to the presence of faults and fractures which would not only have the potential to disrupt the hydrogeological architecture of the artesian basin but also act as significant conduits in the underground water flow partitioned between the matrix and fracture network. It can be contrasted with a situation where the hosting aquifer has higher porosity-controlled permeability and/or is composed of unconsolidated lithology in which faults while still having the potential of disrupting hydrogeological architecture by offsets, not being able to act as significant conduits. Thus, the detection of faults and their influence on the hydrogeological architecture of the area of interest should be a part of the planning for an ISL pilot and any further upscaling.

A.III.3.3.2. Confinement verification

The assumption that the Auob Aquifer is hydraulically isolated from the Kalahari Aquifer remains unverified. Standard hydrogeologic practice involves conducting multi well aquifer testing, installing observation wells in overlying and underlying units, and evaluating vertical hydraulic gradients along with associated leakage coefficients. While some testing has been performed on the wells which have been installed for the pilot programme, the monitoring wells for of the underlying and overlying zones to confirm confinement had not yet been installed. The absence of such testing represents a data gap. This could be managed by a staged approval approach, where the proponent is given a limited approval to undertake the necessary permissions (e.g. permission to installed additional wells to undertake hydraulic testing) to collect the data needed to confirm confinement prior to progressing to the introduction of lixiviant.

Based on the experts' technical analysis during the mission, enhancements to the Proponent's pilot through additional monitoring wells supported by a detailed testing plan to demonstrate confinement from the over and underlying clay and siltstone layers. The testing plan should include establishment of baseline conditions, installation and testing of monitoring wells, demonstration of confinement of the production zone, demonstration of hydraulic control during pumping/extraction, and estimation of remediation times.

A.III.3.3.3. Hydraulic control and capture

The EIA assumes that inward hydraulic gradients will be maintained through balanced injection and extraction. This assumption does not fully account for injection-induced pressure mounding, regional hydraulic gradients, or external stresses such as agricultural pumping. Importantly, injection wells inherently generate outward radial flow, which may exceed the capture capacity of extraction wells under certain conditions. This is particularly relevant in heterogeneous aquifers where preferential flow paths may exist.

A.III.3.3.4. Vertical gradient development

Operational pumping and injection can induce vertical hydraulic gradients, potentially drawing fluids across confining units. This phenomenon has been documented in other ISL and pump-and-treat systems and can lead to:

- Downward migration of dissolved constituents;
- Apparent changes in constituent distributions with depth;
- Misinterpretation of monitoring data.

A.III.3.3.5. Limitations of geochemical modelling

The Proponent's current geochemical modelling approach (MODFLOW presented in "PROJECT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR URANIUM PROJECT WINGS Book 2. Development of hydrodynamic models in the example of a test block" appears to rely primarily on deterministic simulations. To adequately evaluate hydraulic control, it is necessary for the analysis to incorporate:

- Transient flow conditions;
- Scenario-based simulations (e.g., failure modes);
- Ensemble-based uncertainty analysis (e.g., PEST++ IES approaches).

Without these elements and those outlined in A.III.4 the ability to demonstrate reliable containment remains limited.

Suggestions T.15–T.16

T.15	The Proponents EIA should be supplemented with a Pilot Test Plan, that includes: (i) Establishment of base line conditions (ii) Aquifer Confinement Testing Plan. (iii) Pilot wellfield and demonstration of lateral and vertical hydraulic control by aquifer pumping tests using injectors, extractor and monitor wells (iv) Pilot injection and operational testing using formation water prior reagent addition to demonstrate confinement and hydraulic capture prior to altering groundwater chemistry. *See T.15 cont.' below (v) and (vi).*
T.16	The Proponent's geochemical modelling approach may be enhanced to improve evaluation of hydraulic control.

A.III.3.4. Groundwater restoration criteria and geochemical processes

The restoration strategy presented in the EIA represents an area of technical uncertainty. The assumption that baseline conditions can be restored within a limited timeframe (e.g., six months, two pore volumes) should be further demonstrated with evidence.

A.III.3.4.1. Defined baseline and targets

The Proponent's documentation should more clearly define:

- Baseline groundwater chemistry,
- Restoration endpoints (including key anions such as sulphate),
- Acceptable deviations from baseline.

A.III.3.4.2. Laboratory core studies

The Proponent reported conducting core studies including bulk geochemistry, mineralogy, grain size, bulk density and porosity. A bulk bottle roll type of leaching and filtration leaching laboratory test were also reported. The results presented indicated a wide range of mineralogical and geochemical composition, including such elements of concern for low pH leaching as carbonates. Some samples returned values

exceeding 2% of calcite which is commonly viewed as an upper limit for low pH ISL. Some other, less reactive carbonate species also detected, such as ankerite.

The drill core observed during the site visits, as well as core photos and description contained in the documentation and reports provided by the Proponent point to a significant degree of compaction and cementation of the hosting mineralization sandstones. The laboratory column leach tests were conducted on crushed core samples which is not representative of the actual conditions and limit the reliability of the results.

Column leach tests on intact (rather than crushed) core samples establish the necessary parameters for the planning and modelling of the field pilot ISL during mining and post-mining restoration, such as reagent consumption to attain the target recovery, as well as the buffering capacity of the host lithology to model post-mining restoration by natural attenuation. This enhanced practice provides the benchmarks needed to objectively evaluate the groundwater restoration.

A.III.3.4.3. Geochemical complexity

In-situ leaching operations that employ sulphuric acid lixiviants result in the mobilization of uranium and associated trace elements, changes in redox conditions, and alterations to mineral equilibria.

Restoration depends on a suite of complex geochemical processes, including sorption and desorption reactions, precipitation and dissolution dynamics, and microbially mediated reactions.

These processes are highly site-specific and need to be reliably predicted using detailed reactive transport modelling (RTM).

A.III.3.4.4. Limitations of reactive transport modelling

Although the Proponent's documentation references modelling, it is unclear whether:

- Fully coupled flow and geochemical models were used:
- Calibration to site-specific data was performed:
- Predictive uncertainty was evaluated.

The geochemical assessments can be strengthened when MODFLOW is integrated with tools such as MT3DMS/RT3D, PHREEQC coupling, or similar reactive transport models.

A.III.3.4.5. Restoration feasibility

Experience from full-scale ISL operations worldwide indicates that restoration to baseline conditions is seldom achieved, long-term residual impacts are frequently observed, and restoration timelines often extend well beyond initial projections. Accordingly, restoration feasibility should be evaluated conservatively, with explicit recognition of uncertainty.

The current reactive transport modelling predicts that groundwater impacts associated with the pilot ISL operation are likely to be localized and manageable. According to the modelling presented, and under conservative assumptions, the plume of acid is not expected to migrate further than 100 metres from the ISL pattern in the direction of the natural underground water flow and complete attenuation of acid concentration is predicted to occur in 18.5 years post-mining. If hydraulic control is maintained during operations it would effectively confine the lixiviant within the pilot cell, while post-shutdown natural attenuation processes progressively neutralize residual acidity and immobilize dissolved metals.

These results suggest that the aquifer has sufficient natural neutralization capacity to recover from pilot operations without long-term environmental impacts beyond the immediate operational area. The modelling therefore provides an important technical basis for evaluating the environmental safety of the proposed ISL pilot test and its potential implications for future development of the Wings uranium project. However, once additional field data is collected over the investigative phases, the additional geochemical modelling should be performed to confirm the preliminary analysis.

Suggestions T.17–T.18

T.17	The Proponent's documentation may be supplemented with information of the restoration strategy with defined baseline data and targets.
T.18	The results of the reactive transport modelling may be incorporated into a report to supplement the EIA.

A.III.3.5. Groundwater monitoring and contingency planning

The Proponent's proposed monitoring framework recognizes the importance of groundwater surveillance but should provide additional detail to ensure early detection and effective response to excursions.

A.III.3.5.1. Monitoring network design

A robust monitoring system incorporates multilevel wells positioned at upgradient, within the wellfield, and downgradient locations, together with the capability for detailed vertical profiling. This approach typically involves perimeter monitor wells arranged in several rings:

- A first ring placed similar to the pattern size (~10-15 m) from the pattern for an early detection of misbalance between injection and extraction or initial stages of flow outside the intended area. The wells in the ring being spaced at a distance similar to the pattern size.
- A second ring of perimeter wells placed 2-3 pattern sizes all around the pilot pattern spaced 2-3 pattern sizes apart to demonstrate that the lix remains within the intended area to be affected by ISL.
- An array of wells placed down the regional gradient (in the direction of regional/basin underground water flow), the farthest wells being placed just outside of the predicted by reactive transport modelling migration of the residual lixiviant plume post mining. At the very minimum, the array consists of a single row, however, two or more rows may be considered to account for any inhomogeneities in the hydrogeological settings or other factors resulting in widening the plume as it migrates down gradient..

The Proponent's current monitoring should be improved to demonstrate that the network is capable of detecting:

- Vertical migration,
- Lateral excursions beyond the wellfield,
- Impacts from legacy boreholes,
- Low pH migration distances, and
- Estimates of natural remediation times.

A.III.3.5.2. Monitoring parameters

Monitoring programmes typically encompass major ions and trace metals, redox indicators such as Eh and dissolved oxygen, pH, radionuclides, and, where appropriate, isotopic tracers to support process understanding and system characterization.

The connection between the collected groundwater monitoring data and the model validation process should be further defined in the Proponent's documentation.

A.III.3.5.3. Contingency measures

The Proponent's proposed contingency of pumping monitoring wells in the event of excursions needs to be further developed to address potential issues, including:

- Induced migration toward monitoring wells;
- Lack of defined disposal pathways;
- Absence of escalation protocols.

A comprehensive contingency plan incorporates tiered response actions, clearly defined trigger levels, and integration with operational controls to ensure timely and effective management of emerging issues.

T.15 cont.'	The Proponent's EIA should be supplemented with a Pilot Test Plan, that includes: (v) Post-operational monitoring, groundwater restoration testing, and comprehensive evaluation of pilot system performance; (vi) Contingency plans that address excursions. *See T.15 above (i) – (iv)*

A.III.3.6. Radiation safety and protection

The experts made observations and suggestions on radiation safety during the field visit to the Proponent's Pilot Site (see section A.III.2.1 of this Appendix). Additional observations of the Proponent's EIA/EMP and presentations made during the in-country mission are provided in this section of the report.

The Proponent's EIA and EMP documents made reference to a number of radiation protection and radioactive waste management measures that will be in place for a pilot operation. The experts made the following observations for enhancements:

- The documents be revised to ensure consistency of units, for example, for exposure rate, Roentgen per hour and Sievert per hour are used, suggest the use of the preferred unit advised by the Namibian authorities;
- Suggest the use typed prefix of milli and micro to avoid errors in misinterpreting 'm' as micro;
- Experience internationally has found that gamma surveys are not always effective for identifying ground contaminated by ISL fluids that are deficient in radium. Another method (for example Xray fluorescence) may be implemented to detect uranium contamination in soil;
- The monitoring programme did not discuss monitoring for radon or radon decay products (working level)[2];
- Consideration be given to soil sample analysis including parameters that may be of importance to agriculture, such as pH, sulphate and other key elements.

During the in-country mission, the following observations were made of the Proponent's Presentation "Radiation Exposure Monitoring – Baseline" are provided below.

Page 12 of the radiation presentation references surface contamination limits from IAEA SSR-6. The values cited correspond to the permitted removable contamination levels for SCO-I. An item is classified as a surface- contaminated object if contamination exceeds 0.4 Bq/cm² for beta and -low toxicity alpha emitters, or 0.04 Bq/cm² for all other alpha emitters. Therefore, an item exhibiting the quoted contamination levels would fall within the SCO-I category for transport. The experts suggest the Proponent clarify the standards for the classification of surface- contaminated- objects with the relevant Namibian authority.

Gamma radiation results presented appear consistent with typical background levels, assuming the 'SE International Ranger' radiation alert monitor shown in the presentation was used. The reported values are near the instrument's detection limit and thus associated with uncertainty. More sensitive instrumentation is generally needed for reliable low-level background measurements.

The reported concentrations of long-lived radioactive dust (LLRD) appear elevated compared with expected background levels. The (presentation) author was unavailable to provide clarification. For the purpose of review, the IAEA Team assumed that the measurements were obtained using the Sarad poCAMon continuous monitor. If this instrument was used, the reported LLRD concentrations are likely to be significantly higher than actual environmental levels. The Sarad poCAMon is designed primarily for occupational exposure monitoring, and unless operated in the 12-hour post-sampling filter analysis mode (without pump), it does not provide accurate low-level environmental concentrations.

[2] 'Book 2 09-09-22.pdf' *PROJECT ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR URANIUM PROJECT WINGS Book 2. Development of hydrodynamic models on the example of a test block* on page 54 and 55.

Low-level LLRD assessments generally involve the use of long-duration, flow-controlled air samplers, with alpha analysis performed no sooner than five days after sampling to allow short-lived radon progeny to decay.

Radon concentrations were also reported in the presentation materials. If these data were collected using the Sarad poCAMon, radon results would be expressed as Bq/m³ EEC (equilibrium equivalent concentration). For pilot plant operations, consideration needs to be given to measuring radon decay product concentrations – expressed as potential alpha energy concentration (PAEC) or EEC – in addition to radon gas. Relying solely on radon gas concentrations may not provide an accurate basis for dose assessment, as the equilibrium factor in ISL operations can be significantly lower than those used in 'default' radon dose conversion factors (therefore overestimating radon dose).

In summary, the Proponent's radiation safety programme identifies key monitoring components but some refinement. Areas for improvement include:

- Standardization of units and reporting conventions;
- Inclusion of radon and radon progeny monitoring;
- Consideration of non-gamma detection methods (e.g., XRF for uranium in soils);
- Integration of occupation and environmental monitoring.

Given the potential for radon release during ISL operations, this pathway garner particular attention to capture information during the Pilot Test as this data are of use for informing the planning full-scale mining activities.

The Proponent is encouraged to supplement the EIA, specifically the Radiation Management Plan., by incorporating additional information that addresses the observations presented in this report. The areas highlighted by the experts related to radiation safety and radiation protection enhance clarity and completeness of the document and reflects relevant international good practices.

In addition to suggestions T.3–T.4, the following are additional suggestions for radiation safety and protection T.19-20

T.19	The Proponent's documentation should clarify the manner in which long-lived radioactive dust (LLRD) samples were collected and note the limitations of instrumentation (e.g. minimum detection levels) when used for measurements of environmental concentrations.
T.20	The Project Proponent's EIA submission could be improved with additional supplementary information in the EMP and radiation management plans to address the issues related to radiation safety and radiation protection highlighted by the experts.

A.III.3.7. Waste management and disposal pathways

Key waste management considerations for the pilot project include the handling of NORM contaminated materials, the management of spent resins and filters, and the disposal of contaminated fluids. The Proponent's EMP outlines general waste mitigation measures; however, detailed waste management procedures specific to the Pilot Site were not available for expert review. This is not unexpected at the current stage, as the laboratory facilities are incomplete and the pilot test has neither been approved nor commenced.

Discussions with the Proponent indicated that, at present, Namibia does not have an established legal pathway for the disposal of radioactive waste, including options such as transfer to existing uranium-mining facilities. The Wings Project therefore proposes to store radioactive materials generated during the pilot test on site until such time as a suitable disposal facility becomes available and relevant legislation permits transport.

The Namibian authorities have identified preliminary options for waste disposal.

Good practices for waste management emphasize the importance of fully defining and permitting disposal pathways prior to the start of operations, appropriately characterizing all waste streams, and establishing contingency storage and transport plans.

At present, the disposal plan of radioactive waste generated by the Pilot site remains outstanding The absence of a confirmed disposal pathway introduces uncertainty regarding long-term handling and off-site transfer of radioactive materials.

A.III.4. Summary

Across technical areas, several overarching themes emerge:

- Availability of site specific-data is limiting;
- A number of conclusions rely on regional or conceptual assumptions rather than field-validated information;
- Approaches for characterizing and managing uncertainty should be comprehensively described;
- The absence of probabilistic or ensemble-based approaches reduces confidence in predictive modelling;
- Integration across technical disciplines; hydrogeological, geochemical, and operational elements are not yet fully incorporated into a unified predictive framework.
- Assumptions related to restoration timelines and hydraulic control appear optimistic relative to the current level of supporting evidence.

The technical evaluation indicates that, while the proposed pilot ISL operation is established, further work is suggested to demonstrate environmental protection and operational control.

Key issues for additional development include:

- Verification of aquifer confinement;
- Demonstration of hydraulic containment;
- Validation of geochemical processed relevant to restoration;
- Definition of monitoring programmes and contingency systems.

Addressing these issues will require:

- Additional field data collection;
- Advanced modelling and uncertainty analysis;
- Enhanced integration of technical disciplines;
- Alignment with international good practices.

The experts surmise that the degree of confinement between the Auob Aquifer and the overlying Kalahari Aquifer remains not fully proven. Standard practice involves aquifer testing in the production zone and monitoring water levels in wells above the pumping site to detect hydraulic connectivity

Demonstration of geochemical reactions governing both production and restoration should be robust. Baseline constituent concentrations for the mined aquifer and post-mining restoration criteria should be clearly defined. The EIA assumption of achieving restoration within six months using two pore volumes may underestimate both water requirements and time to equilibrium.

Until these aspects are adequately addressed, there remains uncertainty regarding the ability of the proposed pilot operation to ensure the protection of groundwater resources. This uncertainty could be managed through a staged approval process. For example, the Proponent could be granted limited approval to undertake specific precursor activities – such as installing additional wells for hydraulic testing – to collect the data needed to confirm aquifer confinement before progressing to the introduction of lixiviant.

A.III.4.1. Phased approached

Implementation of a pilot test for an in-situ process relies on a structured technical approach that progressively reduces uncertainty while demonstrating protection of groundwater resources. For projects involving subsurface injection, in-situ leaching, or other aquifer-based treatment processes, regulators typically expect a phased pilot programme that begins with detailed hydrogeologic characterization and culminates in a comprehensive evaluation of operational feasibility and post-operational aquifer conditions. A phased approach allows the project proponent and regulators to evaluate the results of each stage before advancing to subsequent activities, thereby ensuring that key technical and environmental protection is verified prior to initiating full operational testing.

The proposed pilot test plan is may be structured into four sequential phases, each designed to address a specific set of technical and regulatory objectives. Collectively, these phases provide a systematic progression from site characterization through operational testing and post-operation restoration evaluation. This framework is intended to demonstrate that the hydrogeologic system can safely support pilot operations, that hydraulic containment can be maintained during injection activities, and that groundwater conditions can be restored following completion of the pilot test.

The first phase, the aquifer confinement testing plan, focuses on establishing a comprehensive understanding of the hydrogeologic framework in the pilot area and confirming that the production zone is hydraulically isolated from adjacent aquifers. Activities conducted during this phase include installation of additional monitoring wells, collection of continuous core samples, laboratory analysis of confining units, baseline groundwater sampling, and hydraulic testing designed to evaluate aquifer properties and potential vertical hydraulic communication. The purpose of this phase is to demonstrate that the confining units separating the production zone from overlying and underlying groundwater systems possess the hydraulic characteristics necessary to prevent vertical migration of fluids during pilot operations.

Following confirmation of aquifer confinement, the second phase involves installation of the pilot wellfield and demonstration of hydraulic control. This phase transitions the project from characterization activities to operational system testing. Injection and production wells are installed in a defined pilot pattern, developed, and tested to verify mechanical integrity and hydraulic performance. Circulation tests using native groundwater are conducted to confirm that the wellfield can maintain inward hydraulic gradients, thereby ensuring that injected fluids remain contained within the production zone. The results of this phase provide the operational framework necessary to safely initiate pilot injection activities.

The third phase consists of controlled pilot injection and operational testing, during which the proposed injection fluids or lixiviants are introduced into the production aquifer under carefully controlled conditions. The objective of this phase is to evaluate the technical performance of the in-situ process while maintaining hydraulic containment within the pilot wellfield. Operational data collected during this period, including injection and production rates, hydraulic gradients, and groundwater chemistry, provide critical information on geochemical reactions within the aquifer, reagent consumption, system stability, and overall process efficiency. These data allow both the project team and regulators to assess whether the process behaves as expected under field conditions.

The fourth and final phase focuses on post-operational monitoring, groundwater restoration testing, and comprehensive evaluation of pilot system performance. Following completion of the operational testing phase, injection activities cease and the wellfield transitions into a restoration mode. Groundwater flushing and other restoration techniques (e.g., natural attenuation) are evaluated to determine the extent to which groundwater quality within the pilot area trends back toward baseline conditions. Monitoring data collected during this phase provide insight into the long-term response of the aquifer following pilot operations and help determine whether the system can be restored in a manner consistent with regulatory expectations.

Taken together, these four phases provide a logical progression from hydrogeologic characterization to operational testing and restoration evaluation. The phased structure allows for careful review of results at each stage and ensures that pilot activities proceed in a controlled and environmentally protective manner. By integrating geologic characterization, hydraulic testing, operational monitoring, and restoration evaluation, the pilot programme generates the technical data necessary to determine whether the proposed in-situ process can be implemented safely and effectively at the site.

The test plans and results obtained during each phase would be documented in a series of technical reports and incorporated into an updated conceptual site model describing the hydrogeologic, hydraulic, and geochemical behaviour of the system. These findings would provide the technical basis for regulatory review and would inform decisions regarding potential expansion of operations or additional testing. Ultimately, the phased pilot programme is intended to demonstrate whether the proposed approach could be implemented while maintaining protection of surrounding groundwater resources and complying with applicable regulatory requirements.

A.III.4.2. Consolidated suggestions on technical aspects

The experts assessed the completeness, quality and relevance of the submitted environmental impact assessments and management plan reports. The evaluation highlighted several opportunities to improve the technical studies and overall thoroughness of the Proponents EIA and EMPs. These opportunities, aligned with international good practice, are summarized below and form the basis for twenty suggestions (T.1–T.20) are consolidated in Section 4 of the main body of this report.

11. ANNEX I – TERMS OF REFERENCE

TERMS OF REFERENCE TO ADDRESS NAMIBIA'S REQUEST FOR TECHNICAL ASSISTANCE TO EVALUATE THE ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT REPORTS OF THE PROPOSED WINGS PROJECT FOR THE PILOT IN-SITU LEACHING (ISL) OPERATIONS IN THE OMAHEKE REGION.

1. Introduction

The Government of Namibia, through the Minister of Health and Social Services (Office of the Executive Director), has requested IAEA assistance to provide impartial and credible technical advice to review the Environmental Impact Assessment and Management Plan Reports submitted by Headspring Investment (Pty) Ltd for the proposed Wings Project for the pilot In-Situ Leaching (ISL) operations in the Omaheke Region. Headspring Investment (Pty) Ltd, a subsidiary of a Russian state-owned agency, ROSATOM, holds mineral rights on eight (8) EPLs in southern Namibia since 2011 for nuclear fuel (uranium) and base and rare metals. In an application for an Environmental Clearance Certificate, Headspring Investment proposed to drill exploration and hydrogeological study boreholes to maximum depths of 400 and 160m, respectively, and carry out a possible test mining, in the Stampriet Transboundary Aquifer System (STAS).

2. Background

The Stampriet Transboundary Aquifer System (STAS) covers a large arid region stretching from Central Namibia into Western Botswana and South Africa's Northern Cape Province. It contains two confined sandstone aquifers and the overlying unconfined Kalahari aquifer units. The delineation of the STAS area follows the outer boundary of the so-called Ecca Group of geological formations within the catchments of the Auob and Nossob rivers. The STAS is a very large transboundary aquifer system, receiving insignificant recharge, in a dry region without permanent surface water [1]. The area of the STAS is shown in Fig. 1.

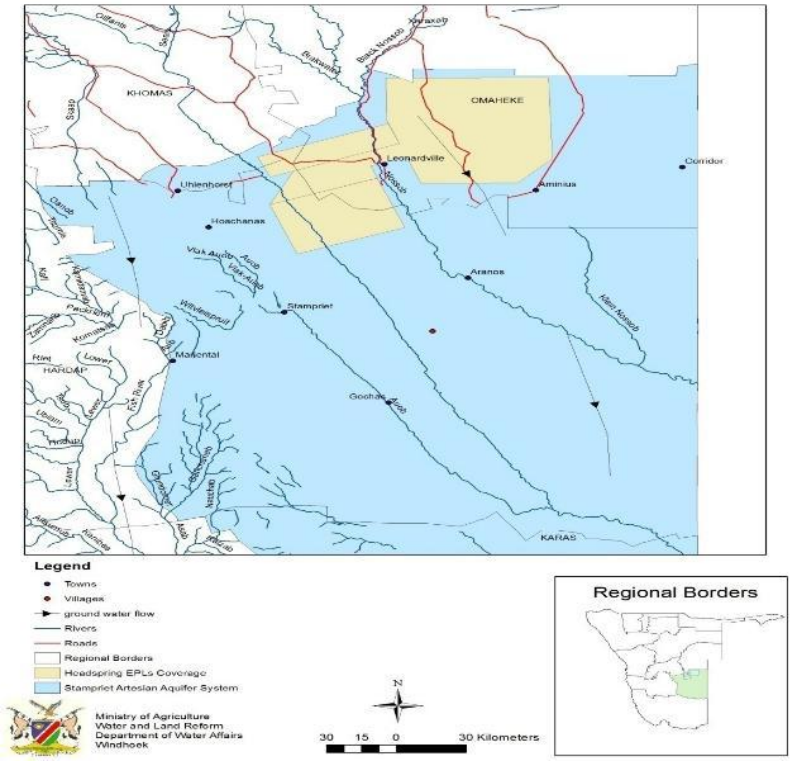


FIG. 1. STAS and EPLs areas for Headspring Investment (Pty) Ltd

The STAS area is 86,647 km^2 in extent and has a generally flat topography, gently sloping from NW to SE, between 1,500 and 900 m above mean sea level. It has a hot and dry climate, with an annual mean temperature of 19-22 ^{o}C and mean rainfall ranging from 140 mm/yr in the SW to 300 mm/yr along the northern and north-eastern border. During the period May through September there is hardly any rainfall. The Namibian sector of

the area covers approximately two-thirds of the area and is almost completely in use as agricultural land. The Botswana sector occupies 18% and includes from North to South three distinct land use zones: agricultural land (mainly in Ghanzi district), wildlife management area and national park. The South African sector (7%) is entirely used as national park. With an estimated population of nearly 50,000 – more than 90% of which in Namibia – the area is sparsely populated. Major settlements are Aranos and Koes, but their population is less than 5,000; all other settlements have less than 2,000 inhabitants. Commercial industrial and mining activities are absent [1].

Groundwater is withdrawn from the Kalahari, Auob and Nossob aquifers, by means of dug wells and boreholes (see below). It is estimated that at least 20 million cubic metre per year is abstracted; 65% of this volume comes from Kalahari aquifers, 33% from the Auob aquifer and 2% from the Nossob aquifer [1].

Groundwater quality has its natural variations. Most notable are generally poor conditions in or near the Salt Block zone. Pollution, however, may also lead to groundwater quality degradation elsewhere in the area. The confined transboundary aquifers have very low vulnerability to pollution, but they will experience higher withdrawal pressures if overlying Kalahari aquifers become polluted. The shallower and usually phreatic Kalahari aquifers are vulnerable to pollution; in particular, in the Namibian sector the pollution risk is often medium to high due to irrigated agriculture (using fertilizers and pesticides) and environmentally unfriendly sanitation and waste disposal practices [1].

3. Environmental Management in ISL Operations

Figure 2 below depicts a schematic representation of an In-Situ Uranium Recovery Process. Injection wells pump an alkaline or acid solution into the aquifer containing uranium ore. The solution dissolves the uranium from the deposit in the ground and is then pumped back to the surface through recovery wells, being these operations controlled by the header house. From there, it is sent to the processing plant. Monitoring wells are checked regularly to ensure that injection solution is not escaping from the wellfield. Confining layers keep groundwater from moving from one aquifer to another.

Uranium production by in-situ recovery is one of activities defined as one planned exposure situation in the IAEA Safety Standards No. GSR Part 3, that relevant IAEA general safety standards should apply. IAEA Safety Standards No. SSG-60 Management of Residues Containing Naturally Occurring Radioactive Material from Uranium Production and Other Activities, IAEA Safety Standards Series No. SSG-60 makes clear that "I.38. In cases of injection of liquid residues into aquifers, an environmental impact assessment involving detailed hydrogeological modelling of the situation should be undertaken" [2].

The IAEA draft safety report on Safety Aspects of Uranium Production by In-Situ Recovery provides information specific to development of a uranium production project by in-situ recovery where groundwater issues are well covered through the lifetime of such facilities:

- Consideration of groundwater protection during site design and operation
- Safety assessment and groundwater monitoring
- Regulatory aspects of groundwater protection in ISL
- Determination of groundwater restoration endpoints
- Options of groundwater restoration
- Consideration of groundwater in decommissioning and remediation

The IAEA has issued a publication entitled "In-Situ Leach Uranium Mining: An Overview of Operations". IAEA publications [3, 4] indeed play an important role in the overall discussions and are quoted in different occasions e.g. "By International Atomic Energy Agency (IAEA) requirements, as part of the exploration activities and baseline determination, Headspring conducted water assessments in the SAB within the boundaries of the Exclusive Prospecting Licenses" [5]. In the IAEA publication above [4], operations in different countries such as Australia, Bulgaria, China, Czech Republic, Hungary, Kazakhstan, Mongolia, Niger, Pakistan, Russian Federation, Ukraine, USA, and Uzbekistan are reported. Regarding Environmental Management, the publication states that "Environmental management will remain an important aspect of ISL uranium mining, both because of the perceived and real impacts to groundwater and the generally heightened

public and governmental attention given to uranium mines in general". The situation in Namibia clearly corroborates this statement and if a project is to be developed strong Environmental Management practices need to be in place to contribute to i) improved environmental outcomes; ii) demonstrate good corporate governance and accountability; iii) improve socioeconomic outcomes; iv) improve liability management and v) reduce closure and rehabilitation costs.

In a publication being developed by D&ER Section of NEFW [7], it is reported that excursion from ISL mines can be managed through careful water balance control systems, well design and integrity testing, and monitoring systems. Monitoring systems are designed and implemented to detect the impacts described above, for example monitoring wells adjacent ponds and tailings systems to detect leakage, or perimeter monitoring wells at ISL operations to detect excursion of mining lixiviant.

Operations planning has to incorporate the management of potential impacts based on risk assessment. Evaluation of potential impacts should be undertaken through a risk-based assessment approach with stakeholder input. Each potential impact is assessed based on the likelihood and severity of the impact. Risk assessment which identifies likely impacts can optimize groundwater impact prevention, management and monitoring. Excursion from ISL mines can be managed through careful water balance control systems, well design and integrity testing, and monitoring systems. Monitoring systems are designed and implemented to detect the impacts described above, for example perimeter monitoring wells at ISL operations to detect excursion of mining lixiviant.

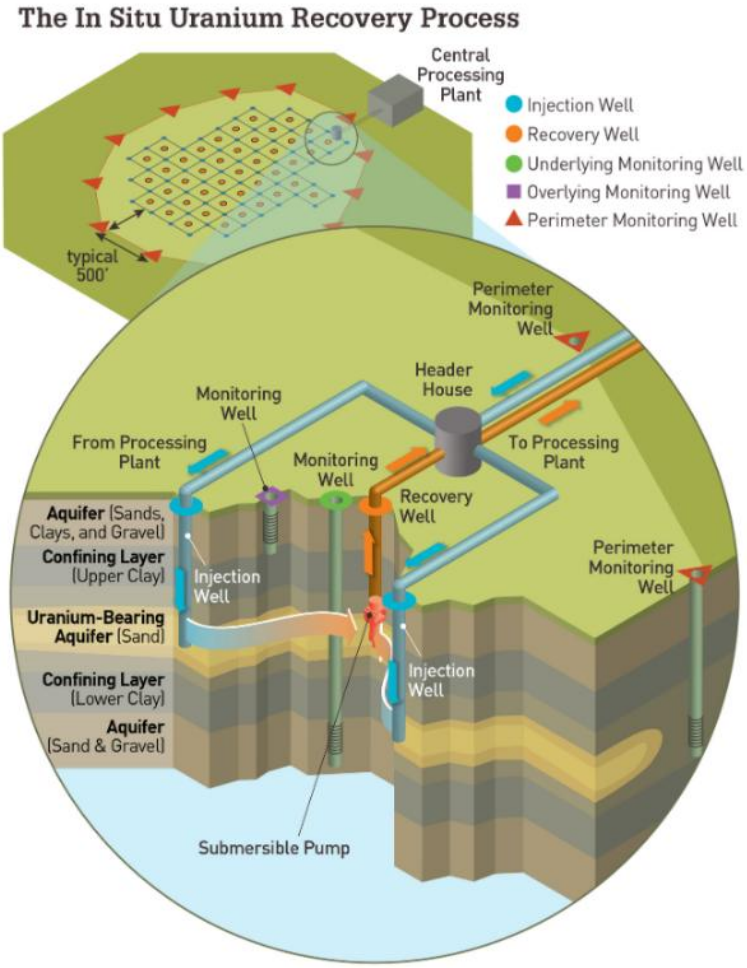


FIG. 2. The In-Situ Uranium Recovery Process [6]

4. The Wings Project

The Wings Project is being carried out by Headspring, a Namibian registered company, as well as a wholly owned subsidiary of Uranium One Group, an international mining company of ROSATOM, the Russian State Corporation for Nuclear Energy. The company intends to use what is known as ISL.

Headspring proposes to undertake the pilot project in the Omaheke Region.

Previous assessment studies indicates that potential impacts of significant nature, which will require further investigation, include but are not limited to:

- Potential sulphuric acid seepage/spillage into the environment and groundwater regime.
- Potential changes to groundwater quality as a result of the usage of sulphuric acid in the recovery process.
- Loss of containment of pregnant leach solution, both on surface and in the groundwater regime.
- Potentially lowering of groundwater levels over a wider area.

There seems to be quite intensive mobilization of different stakeholders in relation to the implementation of the project [8, 9]. It is reported that international experts from the Czech Republic (EU), Canada, USA, Kazakhstan, and the Russian Federation shared their professional expertise in uranium mining, hydro(geo)logy, groundwater rehabilitation and radiation studies throughout the world on experiences regarding ISL uranium mining projects during a public dialogue on the groundwater survey findings organised by Headspring Investments. Furthermore, the MAFWLR also held a stakeholders' workshop in June 2024, where the UNESCO procured support from the experts from USA and Australia to review the EIA reports and the model of Headspring's proposed Wing's Project.

5. IAEA Mission

The Government of the Republic of Namibia, through the Offices of the Environment Commission in the MEFT, and with support from Department of Mines in the MIME, , Department of Water Affairs in the MAFWLR and Atomic and Radiation Protection Authority, as requesting party expects that the IAEA Team, "as external review, will assess the completeness, quality and relevance of the submitted environmental impact assessments and management plan reports including the specialist studies, proposed mitigation measures and assess the overall findings". It is also expected that the IAEA Team will "evaluate the effectiveness of the proposed mitigation strategies and the thoroughness of the reports given the magnitude of this 'first-of a-kind uranium pilot ISL mining operations in Namibia".

The IAEA Team is also expected "to review and assess concerns and comments submitted by competent authorities, stakeholders and interested affected parties with special attention being given to feedback from key stakeholders" to ascertain their validity and legitimacy of these concerns, along with the recommendations of how these can be addressed moving forward.

With the above in mind, it is proposed that an IAEA organised mission will address the request of the Namibian government with the participation of international experts. The mission would start with a meticulous examination of the available documentation focusing on the examination of the points described below (additional points can be considered:

1. Applicable legislations and requirements in Namibia
2. Safety and radiological environmental impact assessment
3. Site Selection, aquifer Characterization and Project Design;
4. Source Control;
5. Operational Control;
6. Detection and water quality Monitoring;
7. Corrective Actions and Remediation where relevant;
8. Closure and Decommissioning.

In addition to the above, the team will also carry out the following tasks:

1. Assess the completeness of the information and field data collected, including both desktop studies and field-based sampling protocols, used for the specialist studies covering the entirety of the proposed

project, covering exploration, test mining and actual mining and the surrounding environment with a particular focus on the impacts and interactions associated with in-situ leaching operations.

2. Provide an objective assessment of the viability of this project with clear and succinct recommendations for any necessary adjustments or enhancements to ensure environmental sustainability.

   The available documentation will be forwarded to the IAEA in electronic form and in English. This set of information will then be shared with the selected experts and will be examined by IAEA staff members and international experts according to their area of expertise.

The experts will then discuss their findings with the involved IAEA staff, indicating possible gaps, opportunities for project improvement, needs for clarification, etc. Experts will then make recommendations to the IAEA. These discussions will be undertaken through virtual meetings.

In a second stage, additional discussions will be undertaken (also via virtual meeting) with Namibian authorities. Only then, a 4-day field mission of the experts and IAEA staff members will be planned (potentially including interaction with a larger group of stakeholders, at a different stage, to provide the conclusion of the team).

Each international expert will be initially recruited for 5-day home-based assignment, followed by a further 2 days for virtual meetings with IAEA staff and the Namibian counterparts totalling 7-day HBA. The lead expert will be awarded a further 1-day HBA to compile all inputs totalling 8-day HBA.

The IAEA Team will be composed of members with expertise in the following areas:

- ISL process expert;
- Hydrogeologist (preferably with experience in working in Stampriet/artesian aquifer or multi-layered sandstone artesian aquifer);
- Groundwater (modelling and) remediation specialist
- Radiation protection specialist;
- Regulator (with experience with licensing ISL operations (and/or EIA);
- Stakeholder communication specialist.
- Environmental assessment specialist.

The IAEA staff members to be involved in this mission will include representatives from D&ERS, NAPC, NFCMS, and WES).

6. Supervision

The IAEA Team will report to the Government of Namibia (GRN) through Mr. Axel Tibinyane, who is the IAEA National Focal Point and who will also be the direct supervisor for the consultant. The GRN will also set up a task team that will consist of all the competent authorities to provide necessary support to Mr. Tibinyane, to participate in IAEA field mission and fieldwork, as necessary, and to review the deliverables.

7. Conclusion

It is important to highlight that the IAEA Team will take no formal position in favour or against the project. The team will conduct a technical and factual analysis of the material handed over by the Namibian authorities and will conduct an objective assessment and make conclusions, and where appropriate, provide recommendations. It will be up to the Namibian authorities to make any decision regarding approvals of the project.

8. References

[1] INTERNATIONAL GROUNDWATER RESOURCES ASSESSMENT CENTRE, Stampriet Aquifer, https://www.un-igrac.org/case-study/stampriet-aquifer

[2] INTERNATIONAL ATOMIC ENERGY AGENCY, Management of Residues Containing Naturally Occurring Radioactive Material from Uranium Production and Other Activities, IAEA Safety Standards Series No. SSG-60, IAEA, Vienna, (2021).

[3] INTERNATIONAL ATOMIC ENERGY AGENCY, In-Situ Leach Uranium Mining: An Overview of Operations, IAEA Nuclear Energy Series No. NF-T-1.4, IAEA, Vienna (2016)

[4] INTERNATIONAL ATOMIC ENERGY AGENCY, Best Practice in Environmental Management of Uranium Mining, IAEA Nuclear Energy Series No. NF-T-1.2, IAEA, Vienna (2010).

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[8] https://www.namibian.com.na/6214829/archive-read/Uranium-leaching-threatens-Stampriet-aquifer

[9] NAMIBIAN FARMER, Stampriet Aquifer Challenge Rages On https://namibianfarming.com/stampriet-aquifer-challenge-rages-on/

12. ANNEX – II - COMPOSITION OF THE IAEA TEAM

Expert	Country	Role
Mr David Back	United Stated of America	Expert Team Leader
Mr David Kruss	Australia	
Mr Sergey Ivanov	Kazakhstan	
IAEA Staff	IAEA	Role
Ms Anastasiia Andruishina	NE	
Ms Carmen Good	NEFW	Team Coordinator
Mr Horst Monken-Fernandes	NEFW	
Mr Zhiwen Fan	NSRW	
Mr Felix Wanjala	TC-Africa	Country Officer

13. ANNEX – III – ADVANCED INFORMATION PACKAGE

1) Report on the Training Workshop on the In-Situ Uranium Recovery Method, presented to the Traditional Authorities Committee in Aminius Constituency of the Omaheke Region, Goba Lodge, Gobabis, Omaheke Region. 24 August 2023;
2) Mission of Omaheke Traditional Authorities in Namibia to DALUR JSC Uranium ISR Mine, Russia -Technical Report;
3) Environmental Compliance Consultancy, Combined Public Feedback ECC-128-355-REP-17-A –
4) Letter from the Mining Commissioner, Ms Isabella Chirchir from the Ministry of Mines and Energy (dated 12/02/2024) to the Environmental Commissioner Mr Timotheus Mufeti from the Ministry of Environment, Forestry and Tourism on the "Evaluation of environmental report to conduct preliminary test mining work on the EPL Nos 4654-4657 and 6780-6783 for Headspring Investment (Pty) Ltd by Two key LLP Consultants and Ederold Consulting;
5) Environmental Impact Assessment (EIA) for Wings Project – Preliminary Pilot Test Mining-Work Based on In-Situ Leaching (ISL) Mining Method;
6) Environmental Management Plan (EMP) for In-Situ Leaching (ISL) Pilot Test Mining under the Geological Exploration Activities at Wings Project, on Farm Tripoli 546, Omaheke Region;
7) Letter from the Office of the Environmental Commissioner to the Manager of Headspring Investments (Pty) Ltd on Environmental Clearance Certificate for the Proposed Minerals Exploration Activities Within Exclusive Prospecting Licenses (EPL) No. 6781, IN Gobabis District Omaheke Region (on 26 April 2019);
8) Update Environmental Management Plan – Renewal of the Environmental Clearance Certificate for the Exploration Activities on Exclusive Prospecting Licence (EPL) No. 6781, in the Gobabis District, Omaheke Region (2025);
9) Republic Of Namibia, Environmental Management Act, 2007, (Section 32) Application for Environmental Clearance Certificate;
10) Declaration of authorship, APPLICATION NUMBER: APP005821, Renewal of the Environmental Clearance Certificate for the Exploration Activities on Exclusive Prospecting License (EPL) No. 6781 in the Gobabis District, Omaheke Region;
11) Ministry of Environment, Forestry and Tourism, Office of the Environmental Commissioner, Environmental Clearance Certificate to Headspring Investment (Pty) Ptd to Undertake the Exploration Activities on Exclusive Prospecting License (EPL) No. 6781 in the Gobabis District, Omaheke Region, Namibia;

14. ANNEX IV - PARTICIPANTS VIRTUAL MEETINGS

18 AUGUST 2025

Display Name	Role	Attendance Duration
Axel (Namibian CP)	attendee	77 mins
Damian (Namibia)	attendee	63 mins
David Back (Expert)	attendee	80 mins
David Kruss (Expert)	attendee	88 mins
Zhiwen Fan (IAEA)	attendee	73 mins
Carmen Good (IAEA)	attendee	59 mins
Helena – MIME (Namibia)	attendee	58 mins
Horst Monken-Fernandes (IAEA)	host	79 mins
Sakeus Ihemba (Namibia)	attendee	76 mins
Sergey Ivanov (Expert)	attendee	79 mins
Soraya Benalcazar (IAEA)	attendee	81 mins
Tekla (Namibia)	attendee	61 mins

3 OCTOBER 2025

Display Name	Role	Attendance Duration
AMAKALI	attendee	87 mins
Aldo (Headsprings)	attendee	97 mins
Axel Tibinyane (Namibia)	attendee	93 mins
Colin & Spike (Namibia)	attendee	98 mins
Damian (Namibia)	attendee	53 mins
David Back (Expert)	attendee	96 mins
David Kruss(Expert)	attendee	93 mins
Carmen Good (IAEA)	attendee	94 mins
Zhiwen Fan (IAEA)	attendee	94 mins
Isabella (Namibia)	attendee	73 mins
Joseph Eiman (Namibia)	attendee	91 mins
Kirill Egorov-Kirillov (Headsprings)	attendee	94 mins
Maria Amakali (Namibia)	attendee	82 mins
Mike	attendee	49 mins
Horst Monken-Fernandes (IAEA)	host	98 mins
Mufeti (Namibia)	attendee	73 mins
Paulus	attendee	93 mins
Sakeus Ihemba (Namibia)	attendee	97 mins
Sergey Ivanov (Expert)	attendee	95 mins
Soraya BJ (IAEA)	attendee	98 mins
Tekla (Namibia)	attendee	71 mins
Wanga Mutelo (Namibia)	attendee	99 mins

31 OCTOBER 2025

Display Name	Role	Attendance Duration
Aldo (Headsprings)	attendee	93 mins
Anastasiia Andriushina (IAEA)	attendee	91 mins
Anna	attendee	99 mins
Axel Tibinyane (Namibia)	attendee	98 mins
Colin & Spike (Namibia)	attendee	98 mins
David Back (Expert)	attendee	102 mins
David Kruss (Expert)	attendee	98 mins
Fan, Zhiwen (IAEA)	attendee	98 mins
Good, Carmen (IAEA)	attendee	99 mins
Iya Goldfarb	attendee	99 mins
J Eiman (Namibia)	attendee	90 mins
Kirill Egorov-Kirillov (Headsprings)	attendee	99 mins
Maria Amakali (Namibia)	attendee	102 mins
Horst Monken-Fernandes (IAEA)	host	102 mins
Mufeti (Namibia)	attendee	102 mins
Omonya Wanjala, Felix (IAEA)	attendee	49 mins

15. ANNEX V – QUESTIONS TO PROPONENT ON OUTSTANDNG ISSUES

The IAEA submitted series of question to the project proponent through the Namibian Counterpart on 5 February 2026. The questions were intended to outline the general technical lines of inquiry on the outstanding key issues, to be addressed during the expert mission. The submitted questions are provided below. Appendix V describes the experts observations made during the review mission on 13 February 2026, meeting with project proponent and field visit to the proposed Wings Pilot Site.

Aquifer Testing Programme for Demonstration of Confinement

Purpose and Regulatory Context

The following questions are intended to elicit a detailed description of the applicant's proposed aquifer testing programme for demonstration of confinement.

A. Objectives and Scope of Aquifer Testing

1. What are the specific objectives of the aquifer testing programme?
2. Which hydrostratigraphic units will be tested (production zone, confining units, adjacent aquifers)?

B. Test Types and Design

4. What specific aquifer tests will be conducted (slug, step-drawdown, constant-rate, injection, interference, packer tests)?
5. For each test type, please specify the number of tests, target units, and purpose.
6. What site-specific considerations informed the selection of these test methods?

C. Well Construction and Test Intervals

7. How will test wells be constructed to isolate the intended test interval?
8. How will borehole and casing integrity be verified prior to testing?

D. Drilling Methods and Drill Cuttings Management

9. What drilling methods will be used for aquifer test wells?
10. How will drill cuttings be collected, segregated, and characterized?
11. How and where will drill cuttings be disposed, and how will radiological compliance be ensured?

E. Pumping / Injection Rates and Test Duration

12. How will initial pumping or injection rates be selected?
13. For step-drawdown tests, how many steps will be run, at what durations, and with what stabilization criteria?
14. For constant-rate tests, what rates and durations are proposed, and why?
15. What criteria will be used to terminate a test?

F. Monitoring Network and Data Collection

16. Which wells will be monitored during each test?
17. What monitoring equipment and data-logging frequencies will be used?
18. How will vertical hydraulic separation be evaluated?
19. How will external influences (e.g., barometric pressure, regional pumping) be accounted for?

G. Water Quality and Chemistry During Testing

20. Will groundwater quality samples be collected during testing, and which parameters will be analyzed?
21. How will testing ensure that water quality impacts remain confined to the production zone?

H. Handling and Disposal of Pumped or Injected Water

22. How will pumped groundwater be managed, stored, treated, or disposed?
23. How will injected water chemistry be controlled?
24. What contingency measures are in place for unexpected water quality changes?

I. Data Analysis and Interpretation

25. What analytical methods will be used to interpret aquifer test data?
26. How will hydraulic properties and leakage potential be quantified?
27. What QA/QC procedures will be applied to testing data?

J. Integration with Modelling and Monitoring Design

28. How will aquifer test results be incorporated into the conceptual and possibly numerical groundwater models?

29. How will results inform monitor-well spacing, excursion detection, and operational limits for the pilot study?

29.a What are the proposed monitor well network for the ISR pilot? What are the positions of the monitor wells and theirs screens in the plan view and in the hydrostratigraphic column within the same aquifer as the intended test, as well as above and below it. Explain how adequate it is for demonstrating the conferment of lix within the intended target mining zone laterally and vertically withing the timeframe of the pilot test as well as in post-test monitoring programme.

29.b Which parameters are going to be monitored? What are the procedures for monitor well data collection, their types, frequencies? Explain how adequate it is for demonstrating confinement of the lx with the intended target mining zone.

29.c In case excursions are detected, how the limits of the excursions are going to be determined? What are the procedures for remediation?

29.d What are the plans for post-pilot ISR monitoring? How is the monitored natural attenuation actually going to be monitored?

K. Reporting and Regulatory Commitments

30. What reports will document aquifer testing activities and results?

30. a What reports for ISR pilot monitor well data will document the confinement and any excursions?

30. b In case any excursions are detected, what are the procedures and protocols for reporting them?

30. c How remediation procedures are going to be performed and what coordination with the regulators is stipulated / required?
31. What is the schedule for submittal of results to the Namibian Ministries?
32. How will deviations from the testing plan be reported?

L. Health, Safety, and Environmental Protection

33. What health and safety controls will be implemented during testing?
34. How will surface disturbance and environmental impacts be minimized and reclaimed?

Zero-Bleed ISR Operations and Excursion Risk

Background

The applicant proposes to operate the ISR wellfield with injection volumes equal to extraction volumes (zero bleed). The following requests for additional information are provided to determine whether the proposed operating strategy provides a technically demonstration of hydraulic control, geological integrity, and solution containment.

A. Hydraulic Control and Pressure Gradients

1. Explain how hydraulic control will be maintained under zero-bleed operations.
2. Provide quantitative analysis demonstrating that localized pressure mounds at injection wells will not exceed pressure sinks at extraction wells.
3. Describe how the absence of a net inward hydraulic gradient affects the margin of containment.

B. Aquifer Heterogeneity and Preferential Flow

4. Explain how aquifer heterogeneity was evaluated and incorporated into the zero-bleed design.
5. Describe how injected fluids traveling along preferential pathways will be captured under zero-bleed conditions.

C. Vertical Containment and Confining Unit Integrity

6. Explain how zero-bleed operations will prevent vertical migration of lixiviant into adjacent aquifers.
7. Provide test data or modelling results demonstrating that injection pressures will not induce vertical leakage.

D. Operational Variability and Transient Conditions

8. Describe how zero-bleed balance will be maintained during operational upsets.
9. Explain how short-term imbalances will be detected and corrected before excursions occur.

E. Excursion Monitoring and Detection Capability

10. Explain how the excursion monitoring network remains effective under zero-bleed conditions.
11. Justify that assumed monitor-well spacing and indicator parameters are sufficient for detection under zero-bleed conditions.

F. Modelling and Demonstration of Containment

12. Has any numerical groundwater flow modelling been performed to evaluate zero-bleed operations, and if so explain how model assumptions were validated using aquifer test data.

13. Has the modelling considered the volumes of the reagents added (as these would result in more liquid injected than what will be extracted)?

G. Comparison to Alternative Operating Strategies

14. Compare zero-bleed operations to operations with a positive bleed rate.
15. Explain why zero-bleed operations are protective of groundwater relative to positive bleed.

H. Contingency and Corrective Action

16. Describe contingency measures if excursions occur under zero-bleed conditions.
17. Identify triggers requiring transition from zero bleed to positive bleed.

Reactive Transport Modelling of Acid-Based ISR Reagents

Purpose and Regulatory Context

The following Requests for Additional Information are intended to obtain a detailed, description of how reactive transport modelling (RTM) was performed for the planned pilot study for the acid-based ISR reagent (e.g., sulfuric acid). Responses should demonstrate that the RTM adequately represents low-pH geochemical processes and supports conclusions related to containment, groundwater protection, and restoration.

A. Modelling Code, Coupling, and Numerical Framework

1. Identify the reactive transport modelling code(s) used.
2. Describe how groundwater flow and geochemistry were coupled.
3. Describe the spatial and temporal discretization used.

B. Representation of Acid Injection Chemistry

4. Describe how injected acid chemistry was specified, including acid type, concentration, and pH.
5. Describe how temporal variation in injection chemistry was represented.
6. Explain how dilution, neutralization, and mixing were represented.

C. Thermodynamic Database Development for Acid Systems

6. Identify the base thermodynamic database used and describe modifications for low-pH conditions.
7. Explain treatment of ionic strength, sulfate complexation, and low-pH aqueous species.
8. Justify uranium species included under acidic conditions.
9. Describe temperature and activity corrections.

D. Mineral Stability and Reaction Network

10. Identify mineral phases sensitive to acidic dissolution.
11. Explain representation of buffering mineral dissolution.
12. Describe representation of secondary mineral precipitation.
13. Explain how mineral exhaustion or armoring was evaluated.

E. Kinetic Rate Development

14. Identify reactions treated kinetically.
15. Describe kinetic rate laws for acid-driven reactions.
16. Provide sources for kinetic rate constants.
17. Explain how reactive surface area was estimated and evolved.

F. Porosity, Permeability, and Feedbacks

18. Describe how acid-induced dissolution affects porosity and permeability.
19. Explain whether permeability changes were dynamically coupled to flow.
20. Describe evaluation of preferential flow path development.
21. Explain assessment of impacts to confining units.

G. Metal Mobilization and Secondary Impacts

22. Describe representation of mobilization of non-uranium metals.
23. Explain adsorption/desorption treatment at low pH.
24. Describe evaluation of downgradient metal transport.

H. Calibration and Validation

25. Identify data used to calibrate acid-based reactions.
26. Identify calibrated parameters and bounds.
27. Describe validation for low-pH conditions.

I. Sensitivity and Uncertainty

28. Describe sensitivity analyses for acid-specific parameters.
29. Identify parameters most influencing acid front migration.
30. Explain uncertainty impacts on containment and restoration predictions.

J. Groundwater Restoration and Post-Acid Rebound

31. Describe RTM evaluation of restoration following acid injection.
32. Explain modelling of pH, sulfate, and metal rebound.
33. Describe modeled time to reach geochemical stabilization.
34. Explain assessment of long-term confining unit stability.

K. Documentation and Transparency

35. Provide all RTM input files, modified databases, and kinetic definitions.
36. Describe QA/QC procedures for acid-based RTM.
37. Identify model limitations and regulatory implications.

Waste Management

1. How will wastewater (eg from filter backwash, resin regeneration) be managed?

Health Physics

1. The health physics monitoring programme did not discuss the monitoring of radon or radon decay products (also known as radon daughters, radon progeny, potential alpha energy concentration or working level). What are the reasons for this?

2. There is a significant quantity of samples (would amount to ~2000) that are proposed to be analysed for radium, etc. Is this correct?

16. ANNEX VI – AGENDA OF INCOUNTRY MISSION

Ministry of Environment, Forestry and Tourism

PROGRAMME FOR THE TECHNICAL TEAM VISIT TO NAMIBIA

Dates: 9 – 13 February 2026

Delegation: Technical Experts & Regulators

Purpose: Regulatory Consultations, Field Mission, Stakeholder Engagement and High-Level Briefings

DAY 1 – REGULATORY AND STAKEHOLDER ENGAGEMENT | Tuesday, 10 February 2026

Venue: Ministry of Environment, Forestry and Tourism (MEFT), DEA Boardroom

Time	Activity	Details
09:00	Pick-up from Hotel	Transport to MEFT
10:00 – 12:00	Morning Session: Meeting with Regulators	Participants: • Ministry of Environment, Forestry and Tourism – Environmental Commissioner • Ministry of Health and Social Services – Mr. Axel Tibinyane • Ministry of Agriculture, Fisheries, Water and Land Reform – Ms. Maria Amakali • Ministry of Industries, Mines and Energy – Mr. Shivolo • Office of the Mining Commissioner • Technical Experts Agenda: 1. Welcome by Environmental Commissioner 2. Introductions by Mr. Axel Tibinyane 3. Presentation of Report – Technical Experts/Presentation Stakeholder Engagements 4. Open Discussions and Q&A
12:30 – 14:00	Lunch Break	Delegation to be transported to and from Hotel for lunch
14:30 – 16:00	Afternoon Session: Meeting with SAUMA/Concerned Group	Agenda: 1. Welcome by Environmental Commissioner 2. Introductions 3. Overview and Objectives of the Field Mission

		4. Presentation on Draft Report and Draft recommendations 5. Open Discussions and Q&A
17:00	Drop-off at Hotel	

DAY 2 – HIGH LEVEL BRIEFING | Wednesday, 11 February 2026

Venue: Office of the Prime Minister, Cabinet Chambers, 1st Floor

Time	Activity	Details
08:00	Pickup from Hotel	
09:00 – 10:00	Courtesy Call to Minister of Environment, Forestry and Tourism: Technical Experts and Regulators	Agenda: 1. Introduction by Environmental Commissioner 2. Welcoming by Executive Director: MEFT 3. Overview and Objectives of the Field Mission- Technical Experts 4. Presentation on Draft Report and Draft Recommendations 5. Open Discussions and Q&A 6. Remarks by Hon. Minister: MEFT
10:30 – 13:00	High-Level Briefing and Update	Agenda: 1. Welcome by Executive Director, Office of the Prime Minister 2. Introduction of Delegation by Mr. Axel Tibinyane 3. Overview and Background by Environmental Commissioner 4. Opening Remarks by Hon. Minister of Environment, Forestry and Tourism 5. Presentation by Technical Experts – Updates and Findings 6. Open Discussions 7. Closing Remarks by the Right Honourable Prime Minister 8. Vote of Thanks – Executive Director, MEFT
13:00 – 14:00	Lunch	

DAY 3 – STAKEHOLDER AND CLOSING SESSIONS | Thursday, 12 February 2026

Venue: Goba Lodge – Conference Centre, Gobabis

Time	Activity	Details
07:00	Pickup from the hotel	Depart to Gobabis
07:00 – 09:30	Travel to Gobabis	±200 km, approximately 2.5-hour drive
10:00 – 12:00	Closed Stakeholders Meeting	By Invitation Only Agenda:

		1. Welcome by Environmental Commissioner 2. Introductions 3. Remarks by Hon. Governor 4. Overview and Objectives of the Field Mission 5. Presentation on Report 6. Open Discussions and Q&A
12:30 – 14:00	Lunch	
14:00 – 17:00	Activity to be determined	Technical Experts and Regulators
	Overnight in Gobabis	Accommodation Goba Lodge

DAY 4 – FIELD VISIT | Friday, 13 February 2026

Time	Activity	Details
07:00	Pick-up from Goba Lodge, Gobabis	Departure to Project Site
07:00 – 10:00	Travel to Site	±250 km, approximately 3-hour drive
10:00	Arrival at Site	Agenda at Site: 1. Welcome by Proponent 2. Introductions 3. Site Tour and Overview 4. Presentation by Proponent 5. Engagement by Technical Experts 6. Open Discussions
13:00 – 14:00	Lunch	Lunch to be arranged at or near Project Site.
14:00 – 17:00	Travel to Windhoek	Travel from Site to Windhoek and check into hotel upon arrival
19:00 – 21:00	Delegation Closing Dinner	Technical Experts and Regulators

Project Wings: Draft Field Visit Program

Location: Headspring Office & Farm no. 546 Tripoli, Leonardville, Omaheke Region
Date: 13 February 2026

Phase 1: Strategic Briefing & Technical Framework

Venue: HS Office Boardroom
Time: 09:00 – 10:30

- **09:00 | Opening & Welcome Remarks**
  - *Speaker:* Mr. Kirill Egorov-Kirillov – welcome and Introductions
- **09:15 | Exploration & Mining Strategy:**
  - *Speaker:* Dr. Alexander Boytsov – Overview of exploration and mining activities at the wings project.
- **09:30 | Modelling: Geochemical Reactive Transport Modelling**
  - *Speaker:* Mr. Kamenski (2 Keys)
- **09:45 | Environmental Safeguards: Radiation & Waste Management**
  - *Speaker:* Dr Vera(online)/ Pedro – Radiation monitoring and proposed waste management on site.

10:30 – 10:50 | Transition to Tripoli Site

Phase 2: Field Tour and overview

Venue: Farm no.546 Tripoli
Time: 10:50 – 13:00
Lead Facilitator: Mr. Abel Nghifitikeko

- **11:00 | Geology: Core Storage & Analytical Lab**
  - A hands-on look at the mineralized sandstone and the confining layers (borehole demonstration 1-NS)
- **11:20 | Infrastructure: Exploration & Hydrogeological Wells/Boreholes**
  - Exploration diamond core drilling and DTH hydrogeological wells drilling methodology
- **11:35 | The Engine Room: Pilot Test Site**
  - *Technical Leads: Mr.* Sergey Alexandrov & Mr Aldo Hengari – Construction development in preparation for the pilot testing (Current status) and planned future solution testing.
- **12:00 | Engagement by Technical Experts & Closing**
  - **Open Floor Discussion:** Facilitated by Dr. Kuiri F Tjipangandjara.
  - **Final Remarks:** Dr. Alexander Boytsov / Mr. Kirill Egorov-Kirillov.

Phase 3: Networking & Transit

- **12:30 – 13:30 | Luncheon** (HS Office)
- **13:30 – 16:30 | Transition to Windhoek**

17. ANNEX VII – PARTICIPANTS OF IN PERSON MEETINGS

Meetings attendees during expert mission 10-13 February 2026

Day 1 – 10 February 2026

Meeting with Regulators

Name	Organization	Position
Anakali, M	MAFWLR	Not Legible
Eiman, J.B.	MHSS-NRPA	Deputy Director
Endjambi, K.W.	MHSS	Physicist Radiation
Godfried, A.E.	MAFWLR	Hydrogeologist
Hambia, J.	MEFT	Acting Chief Conservation Scientist
Hiwana, J.K.	MEFT	Chief Environment Inspector
Ihemba, S.K.	MAFWLR	Deputy Director
Iiyambo, F.	MAFWLR	Hydrogeologist
Kalla, V.	MAFWLR	Hydrogeologist
Kaukuetu, V.	MIME	Geospatial specialist
Mbatha, I.A.	MAFWLR	Hydrogeologist
Mufeti, T.N.T	MEFT	Environment Commissioner
Mutelo, W.A.	MIME	Inspection Occupation Health and Safety
Shivolo, E.I.	MIME	DED
Tibinyane, A.	MHSS	Director
Not Legible, S.C.	AEB	Chairman

Meeting with Stakeholder Group SAUMA

Name	Organization	Position
Shivolo, E.I.	MIME	DED
Doeseb, D	MEFT	Technical Assistant
Dahj, T.	SAUMA	
Eiman, J.B.	MHSS-NRPA	Deputy Director
Ihemba, S.K.	MAFWLR	Deputy Director
Kandjii, K.	SAUMA	
Kasuto, U.	SAUMA	
Kaukuetu, V.	MIME	Geospatial specialist
Komjo, F.	SAUMA	
Mutelo, W.A.	MIME	Inspection Occupation Health and Safety
Miller, R.	SAUMA	
Nchindo, D.W.	MEFT	Chief Scientist
Tibinyane, A.	MHSS	Director

Day 2 – 11 February 2026

High Level Briefing to the Prime Minister's Office.

Convened under the patronage of Right Honourable Prime Minister Dr. Elijah Ngurare.

Name	Organization	Position
Amufenya, W.A.	National Assembly	Member of Parliament
Doeseb, D.	MEFT	Technical Assistant
Eiman, J.B.	MHSS-NRPA	Deputy Director
Haitambo, S	MEFT	Executive Director
Hengombe, F.	National Assembly	Member of Parliament
Ihemba, S.K.	MAFWLR	Deputy Director
Jacobie, T.	POMB	Deputy Director
Kambda, H.G.	Parliament	Member of Parliament
Karupa, U.	MHSS-NRPA	CRP
Kaukuetu, V.	MIME	Geospatial specialist
Likando, L.R.	National Assembly	Member of Parliament
Marungu, A.T.M.	OPM-PMB	Chief Political Analyst
Mbangu, S.K.	NPC	Acting Executive Director
Mufeti, T.N.T	MEFT	Environment Commissioner
Mubita, L.K	NPC	CNDA
Mutelo, W.A.	MIME	Inspection Occupation Health and Safety
Nganate, I.P.M	Office of the Governor Omeheke Region	Governor
Ntinda, A	OPM	SA
Pickering, G.	OMP-OPAN	Executive Director
Shivolo, E.I.	MIME	DED
Tibinyane, A.	MHSS	Director
Tjaimi, M.	MEFT	P.A
Uusiku, P.K.	NPC	MDA
Not Legible, S.C.	MHSS	Chairman

Day 3 – 12 February 2026

Meeting with Omaheke Region Stakeholders

Name	Organization	Position
Ashipal, A.	Ministry of Education	Teacher/Principal
Bostander, F.	Omeheke Regional Council	Councillor
Boytsov, A.	Tenex, Rosatom	ISL Expert Tenex, Rosatom
Christof, M.	Leonardville Village Council	Councillor
Daloios, E.	Community Member	
Du Plessis, E	Omeheke Regional Council	Directorate of MHSS
Egorov-Kirillov, K.	Headspring Investments	Managing Director
Endjambi, K.W.	MHSS	Physicist Radiation
Garoeb, G.G.	Hardap Regional Council	
Gardeb, J.	MHSS	
Gariseb, E.L.	Gobabis Municipal	Mayor
Geinub, A.G.	Leonardville Youth Empowerment Group	
Godfried, A.E.	MAFWLR	
Humavindu, C.M.	Division of Lands	

Ihemba, S.K.	MAFWLR	
Iiyambo, F.	MAFWLR	
Imasiku, S.W.	Omeheke Regional Council	Deputy Director
Jantze, H.	Hardap Regional Council and Member of Parliament	
Jantze, P.	Ministry of Education	Teacher
Janyxe, C.	Omeheke Regional Council	Councillor
Johnannes, E.	Leonardville Village Council	Councillor, Chairperson
Kalili, L.S.	Omeheke Regional Council	Councillor, Gobabis Constituency
Kariseb, I.	Omeheke Regional Council	Councillor
Katjiuangjo, Z.B.	Community Member Kalahari	
Katjinamunene, N.K.	Leonardville Youth Empowerment Group	
Kaukuetu, V.	MIME	Geospatial specialist
Kavaka, W.	Omeheke Regional Council	Councillor, Otjombinde Constituency
Kharises, S.	Community Member Leonardville	
Kharises, C.	Omeheke Regional Council	Councillor
Kijenya, A.	NES	Rehabilitation Coordinator
Kgosiemang, V	Ministry of Education	Principal
Komenskig, I.K.	Two Key	
Komenskig, N.K.	Two Key	
Kooper, S.G.	Hardap Regional Council	
Kwere, M.	Ministry of Education	Teacher
Kuata, F.T.	NBC	
Lishomwa, I.G.	Ministry of Education	
Masaka, A.T.	NBC	
Mbatha, I.A.	MAFWLR	
Mbura, H.	MEFT	
Mbuende, N.K.	Omeheke Regional Council	
Mbuna, R.	Swapo Regional Office	
Mpuka, A.	Headspring Investments	Fleet Manager / Admin Officer
Mukarli, D.	Farmer	
Mwashekuna, P.T.	Ministry of Education	Teacher
Mutelo, W.A.	MIME	
Muheua, C.N.	DWSSC Omeheke	Water Supply and Sanitation Coordination
Naanda, F.F.E	Headspring Investments	
Namena, C.P.	ECT	
Nguvauva, R.	Omeheke Regional Council	Chairperson, Omaheke Regional Council & Councillor, Okorukambe Constituency
Nghifitikeko, A.	Headspring Investments	Overseer of Exploration Works (Geologist)
Njamba, Ritha	Headspring Investments	Office Administrator
Pakarae, P.P.	Omeheke Regional Council	Councillor, Epukiro Constituency
Pietersen, D.	PRSD	
Rooi, I.B.	Hardap Regional Council	
Semba, P.	Omeheke Regional Council	Chief Regional Officer,
Sheludchenko, P.	Headspring Investments	Communications Consultant
Shikulo, J.	Omeheke Regional Council	Directorate of MHSS
Shinyemba, H.	Leonardville Village Council	
Shippilu, M.S.	Environmental Consultant	
Skoppellitus, M.	Farmer Leonardville	

Swartz, W.I.	Leonardville Village Council	Councillor
Tibinyane, K.P.	DAPEES Omeheke, MAFWLR	
Tibinyane, A.	MHSS	
Tjimbunda, G.	MICT	
Tjipangandjara, K.F.	Water Solutions Group	
Tjirue, L.	Community Member	
Tjizumaye, P.U.	Community Member	
Uazelia, U.	Community Member	
Van Neel, J.G.	Hardap Regional Council	
Visser, A.J.K.	Hardap Regional Council	
Witbooi, P.S.	Community Member & Farmer	
Not Legible, I.S.P.	Ministry of Gender (MGEPESW)	

Day 4 – 13 February 2026

Meeting with the Wings Project Proponent

Name	Organization	Position
Dr Alexander Boytsov	Headspring Investments Pty Ltd team	ISL Expert Tenex, Rosatom
Kirill Egorov-Kirillov	Headspring Investments Pty Ltd team	Managing Director
Abel Nghifitikeko	Headspring Investments Pty Ltd team	Overseer of Exploration Works (Geologist)
Agrippa Mpuka	Headspring Investments Pty Ltd team	Fleet Manager / Admin Officer
Pavel Sheludchenko	Headspring Investments Pty Ltd team	Communications Consultant
Ritha Njamba	Headspring Investments Pty Ltd team	Office Administrator
Sergey Alexandrov	Headspring Investments Pty Ltd team	Chief Engineer
Virgill Steyn	Headspring Investments Pty Ltd team	Chief Administrator / Chief Accountant
Dr Kuiri Tjipangandjala	Headspring Investments Pty Ltd Consulting team	Ground water consultant
Colin Namene	Headspring Investments Pty Ltd Consulting team	Environmental consultant
Spike Shipiki	Headspring Investments Pty Ltd Consulting team	Environmental Consultant
Pedro E	Headspring Investments Pty Ltd Consulting team	Radiation Consultant
Nikolai Kamenski	Headspring Investments Pty Ltd Consulting team	Ground water modelling
Ilya Kamenski	Headspring Investments Pty Ltd Consulting team	Ground water modelling
Aldo Hengari	Headspring Investments Pty Ltd Consulting team	Mining consultant

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19. ABBREVIATIONS

EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPL	Exclusive Prospecting Licences
IAEA	International Atomic Energy Agency
STAS	Stampriet Transboundary Aquifer System
ISL	In-Situ Leaching
ISR	In-Situ Recovery
SAUMA	Stampriet Aquifer Uranium Mining Association
ToR	Terms of Reference