

Australian Rare Earths

Koppamurra Landowner Reference Group #3

Summary notes

The third meeting of the Koppamurra Landowner Reference Group was held on Wednesday 12 April, 2023.

Agenda:

No	Topic	Time
1	Welcome: <ul style="list-style-type: none"> - Run through meeting agenda and describe format - Recap past meetings - Introduce guest speaker 	4.30 – 4.40pm
2	Project update: <ul style="list-style-type: none"> - Company update and ML Plan progress (timing/expectations): Rick Pobjoy - ML Application Process - Baseline studies and impact assessment: Jacqui Owen - 	4.40 – 5.20pm
3	Guest speaker – Dr Melissa Fraser, soils, studies, trial pit review	5.20 – 5.50pm
4	Q&A (facilitated by Danielle as needed)	5.50 – 6.20pm
5	Discuss next meeting agenda (desired speakers) – Danielle & Jacqui	6.20 – 6.30pm
6	Close	6.30pm

Attendees were: representatives from the Landscape Board Sustainable Ag/Soils Team, NLC Mayor, Wrattobully Wine Growers, Landholders from within the ML and Landholders from within the region

Guests included: Dr Melissa Fraser, Principal of Soil Function Consulting.

Session objectives:

- To continue to enhance participants' understanding of the Project by hearing from both Project representatives and external parties (Dr Melissa Fraser).
- To respond to key areas of interest that landowners raised at the previous meetings in September and December 2022. In particular the topic of soils, which has been a prominent topic at previous meetings, was the focus of the session with an update on the status of the trial pit and a summary of the findings of the various soils analysis completed to date.

Discussion summary:

Topic	Actions
1. Project update – Rick Pobjoy and Jacqui Owen Rick provided a summary of slides from the AR3 corporate presentation describing the progress of the Project including recent drilling results. The	AR3 to continue to provide summaries of baseline studies' findings and impact

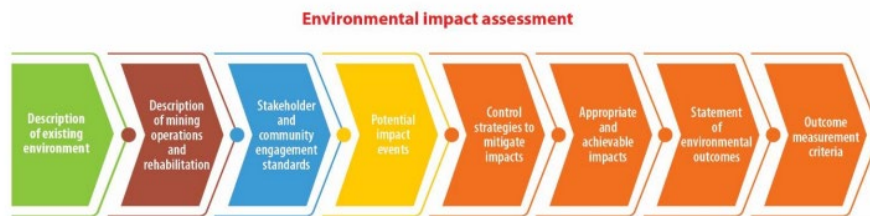
full presentation is found here: <https://ar3.com.au/5-4-23-ar3-corporate-presentation-april-2023/>

Jacqui described the regulatory process for applying for a mining lease/licence, noting the [Terms of Reference \(TOR006\)](#) (provided to the group) used by the Department for Energy and Mining (DEM), use to ensure there are no gaps in knowledge and understanding. The TOR006 dictates requirements for:

- A description of the existing environment
- A description of the proposed operations
- Consultation
- Management of environmental impacts.

Jacqui explained that the baseline assessments currently being undertaken will produce a description of the 'existing environment'. The criteria and scope of these assessments is largely driven by the requirements identified in the TOR 006 document (attached).

The Mining Lease Plan, once finalised, will give a description of the 'proposed operations and rehabilitation'; the information from both of these will inform an 'Environmental Impact Assessment' (EIA).



It is the intention of AR3 to update the group as information becomes available to ensure a thorough understanding of the proposed activity and potential impacts prior to submission of the mining lease application.

The following questions were raised from the group:

Q1: With regards the EIA process, is there a technical specialist that conducts studies to inform the baseline characterisation and impact assessment for each area of study referred to in the ToR?

A1: Yes for each material environmental and social aspect of the Project, AR3 has engaged technical specialists to describe the existing environment and determine the potential impacts.

Q2: Can we hear from each specialist?

A2: As studies are completed and findings available, AR3 will arrange each of the technical specialists to present to the group. Also, in the ML application process, the results of studies are included in the submission to DEM and publicly available.

Q3: When will the mining lease (ML) application, and associated studies, be completed?

A3: The original timing for the completion of the application was March 2023, but AR3 is committed to ensuring the application is thorough in how it considers the material environmental and social aspects. This takes time. For example, initial investigations into groundwater indicated that sinkholes were of particular importance in the Naracoorte area, so

assessment work as soon as practical.

<p>an additional study was commissioned to ensure the knowledge base on sinkholes was robust.</p> <p>Q4: Do the technical specialists talk with landholders to properly understand the relationship between sinkholes, aquifers, surface water, etc?</p> <p>A4: The scope of work for the study that will consider sinkholes is being finalised at the moment and will include engagement with landholders.</p> <p>Q5: In respect of the description of the environment (DEM ToR), if someone identified a potential gap in the description or feels something hasn't been adequately described, can they challenge it?</p> <p>A5: The application is made publicly available at the time of its submission and interested parties are invited to provide submissions to it to DEM. But AR3 aims to facilitate landholders to hear from specialists (via these fora) so that any gaps can be identified and filled before the application is submitted.</p> <p>Q6: When can interested parties submit their thoughts to DEM?</p> <p>A6: Submissions will be sought by DEM after the application is submitted. The application will be uploaded to both the AR3 and DEM websites. The DEM website will include instructions for how to make a submission. But AR3's objective is to thoroughly address all of the aspects that interested parties would expect before the application is submitted. This may mean holding more regular sessions of the Koppamurra Landholder Reference Group in the lead up to submission of the application in order to cover all the topics.</p> <p>Q7: Will we see a draft or something before it is submitted?</p> <p>A7: AR3 aims to bring the results of the studies and impact assessments to the group from the technical experts so that they can hear and ask questions of them ahead of the submission.</p> <p>Q8: What is the process of identifying possible gaps. Are the scopes of the studies made public?</p> <p>A8: The scopes of the studies are essentially set out in the TOR 006 from DEM. They are augmented by the use of experienced technical experts who also advise on the aspects that need to be addressed, particularly in consideration of the unique features of a particular region, like Limestone Coast / south-east region.</p>	
<p>2. Guest speaker – Dr Melissa Fraser</p> <p>Mel provided an extensive description of:</p> <ul style="list-style-type: none"> ○ Overview of the soil types across the landscape/ML ○ Update on the Trial Pit (and Clay spread sand hill) - what has been revealed by testing and analysis thus far <ul style="list-style-type: none"> ▪ Pre-trial activity condition/post-trial activity ▪ Impacts negative and positive <ul style="list-style-type: none"> - Physical - Biological - Chemical ○ Next steps for rehabilitation ○ Opportunities and learnings to inform mining plan and rehabilitation <p>A Report summarising Mel's Presentation is attached.</p>	<p>Contact details:</p> <p>Dr Melissa Fraser mel@soilfunction.com.au</p>

<p>A Summary of the Trial Pit Rehabilitation plan to date was provided to attendees on the night.</p>	
<p>3. Q&A</p> <p>The group was invited to participate in Q&A with Mel:</p> <p>Q9: Has the original vegetation that was established on sandy country developed differently because the soil was so nutrient poor?</p> <p>A9: Yes, different soil types across the region naturally support different types of vegetation. On sands you often see banksias and other shrubs that require very little phosphorus, or bracken fern, which grows on deep acidic sands. On the plains, where clay soils predominate, the vegetation was mostly sedges and tea tree, as these species can tolerate seasonal inundation.</p> <p>Q10: I've always understood that ploughing soil released carbon, causing carbon loss. The studies indicate no carbon was lost why is this?</p> <p>A10: Repeated cultivation can lead to soil carbon loss, but we're not repeatedly cultivating here, it's a once off disturbance followed by rehabilitation. When microbes are stimulated they consume carbon, so a more important measure is carbon throughput, which is driven by actively growing plants. Swift rehabilitation will allow for plants to re-establish to keep the carbon cycle active.</p> <p>Q11: The presentation (trial pit results) indicated that where there was compaction, the roots of plants were not able to go far into the ground. How could this be overcome?</p> <p>A11: To get the roots down deeper, we need to break up the tight subsoils. We will do this via deep ripping, but we've had to be careful not to do this when the soils were too wet as the outcome won't be ideal. Hence why we have waited until the end of summer before ripping the trial site. We could also achieve this through planting a greater diversity of plants with different root systems to have them active for more days of the year and promote that deeper root growth, but this would be a much slower process.</p> <p>Q12: With regards to the anaerobic environment and the drop in phosphorus, was that a function of the ironstone being mixed up in the soil?</p> <p>A12: Mixing the clay may have increased the soil's capacity to tie up phosphorus by increasing the phosphorus buffering index, but I can't tell you off the top of my head. I will have to take that question on notice and report back.</p> <p>Q13: When soil is stockpiled -if there are no plants in the soil, how do the microbes survive, given their important relationship to each other?</p> <p>A13: For four months over summer, we have very little pasture growth across much of this landscape, unless summer active species are established. We know that the microbial community becomes active again in winter once plants are feeding them, so swift rehabilitation will be key to re-establishing soil biological fertility. In its natural state, we saw soil microbial measures were below optimum thresholds, due to the chemical and physical constraints present (acidity and compaction).</p>	

<p>Q14: In terms of acidity, where lime is applied repeatedly, where does the calcium go (where is it lost to)?</p> <p>A14: Lime moves very slowly in soil, only about 1cm/year with rainfall, and we know that cultivation helps to speed up the reaction time and treat acidity at lower depths in the profile. It is the carbonate component of lime that reacts with acidity (hydrogen) in the soil and the calcium that is released is a beneficial by-product.</p> <p>Q15: The testing regime has been different at different places on the mining area. Is there a correct testing regime for the mining area?</p> <p>A15: This is exactly why we established the trial pit – to learn lessons that can be fed into the mining plan. Unlike other types of mining, with strip mining there is a lot we can control about how we treat the soil and how we can achieve better rehabilitation results.</p> <p>Q16: Could limestone be taken from the pit and applied to the topsoil to give it the next 200 years of buffering against acidity?</p> <p>A16: Yes, that could be an opportunity, depending on the chemical characteristics of the material. Layers of overburden that are alkaline and have higher clay content may be suitable for mixing in the sandier surface layers to increase the water and nutrient holding capacity, making them more productive and resilient for agricultural production in the long-term.</p>	
<p>4. Next meeting agenda (desired speakers)</p> <p>Following the presentation given by Mel on soils, the group discussed having guest speakers presenting impact assessment results and/or technical specialists on hydrological studies at the next meeting.</p>	<p>AR3 to schedule next meeting in July 2023.</p>