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# Alligator Rivers Region Technical Committee

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ARRTC Secretariat  
GPO Box 858  
CANBERRA CITY  
ACT 2601

## Summary of Meeting Outcomes Meeting 48

23 August 2021

Darwin NT

### ARRTC Members

Professor Craig SIMMONS	Chair
Ms Julia CARPENTER	Independent Scientific Member
Professor Kingsley DIXON	Independent Scientific Member
Dr Libby RUMPF	Independent Scientific Member
Professor Fran SHELDON	Independent Scientific Member
Dr Jenny STAUBER	Independent Scientific Member
Professor Wendy TIMMS	Independent Scientific Member
Dr Scott WILKINSON	Independent Scientific Member
Professor John ZICHY-WOINARSKI	Independent Scientific Member
Dr Chris BRADY	Northern Land Council
Dr Gavin MUDD	Environmental NGO

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### ACRONYMS

ARRAC	Alligator Rivers Region Advisory Committee
ARRTC	Alligator Rivers Region Technical Committee, the Committee
CDU	Charles Darwin University
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DITT	Department of Industry, Tourism and Trade, Northern Territory
ERA	Energy Resources of Australia Limited
ERISS	Environmental Research Institute of the Supervising Scientist
ERWG	Ecosystem Restoration Working Group
GAC	Gundjeihmi Aboriginal Corporation
INTERA	INTERA Geoscience & Engineering Solutions (consultants for ERA)
KKN	Key Knowledge Need/s
NGO	Non-Governmental Organisation
NLC	Northern Land Council
RMCP	Ranger Mine Closure Plan
SSB	Supervising Scientist Branch, Department of Agriculture, Water and the Environment

## **2 Welcome and Opening Session**

### **2.1 Acknowledgement of Country & opening remarks**

- Chair Prof Craig Simmons opened the meeting with an Acknowledgement of Country.
- Prof Simmons advised that Dr Chris Brady has been re-appointed for a further 3-year term.
- Prof Simmons noted that stakeholder updates were not included on the agenda due to time constraints.
- Mr Keith Tayler (SSB) noted this was an interim meeting and thanked ARRTC members for making themselves available for the third meeting of the year.
- Mr Tayler advised the committee that the Pit 3 application has been delayed and will be submitted after the RMCP in October/November.

### **2.2 Disclosure of conflicts of interests**

- Dr Gavin Mudd noted he is undertaking review work for environmental stakeholders but noted this was not a conflict.

### **2.3 Attendance, apologies and observers**

- A list of observers present at the meeting is maintained by the ARRTC Secretariat.

### **2.4 Correspondence**

- Correspondence sent and received since the last meeting is available on the correspondence register in GovTEAMS.
- Prof Simmons noted that he is awaiting the Assistant Minister's response to his letter regarding outcomes from ARRTC46.

## **3 ARRTC 47 Outcomes**

### **3.1 ARRTC 47 – Summary record**

- The summary record of Meeting 47 was endorsed by the Committee.

### **3.2 ARRTC 47 – Actions arising**

- It was noted that some actions have been rolled over to ARRTC49 and some actions would be addressed during the course of the meeting.
- Dr Stauber queried completion 47.12 *ERA to respond to Dr Stauber question of why the GCT2 site wasn't sampled for metals when it was sampled for ASS (as outlined in the SAQP for sediment)*. ERA advised that as outlined in the stakeholder-agreed SAQP (2020), GCT2 was only identified for ASS sampling, not metals sampling and analysis.

## **4 Chair's report**

- Prof Simmons noted that he had attended meetings with various departmental members. He also noted he had been considering the composition of ARRTC.

## **5 Discussion on project and KKN close outs**

Close out discussion by exception only:

- **RES-2019-003:** Prof Wendy Timms thanked Ms Amie Leggett (SSB) for her thesis and noted the positive step forward in the mapping groundwater dependent ecosystems (GDE)s. Prof Timms and Dr Libby Rumpff agreed to close out the project.

- Prof Simmons queried where residual concerns would be captured. Dr Kath Smith (SSB) advised that residual concerns are captured in project documentation.
- **RES-2017-022:** Prof Woinarski noted the report needs to explain the disparity of the results for *Alphitonia excelsa* relative to information published in Canham et al. (2020). Mr Tayler (SSB) took the advice on notice and agreed the project was not ready to be closed out. Mr Tayler noted that NESP will present at ARRTC49 and will be asked to address concerns.
- **1250-08:** Prof Timms and Dr Mudd agreed to endorse close out of the project.
- **1250-11:** Prof Timms and Dr Mudd agreed to endorse close out of the project.
- **1221-11:** Dr Jenny Stauber noted that project documentation needs to explain that the scope of project only includes a sampling program and did not include interpretation of data. Prof Fran Sheldon noted that project numbers should be added to the report and there is a need to specify where the data will be used in the next step. Dr Stauber, Dr Mudd and Prof Sheldon agreed to close out the project.

## 6 Joint project list

- Ms Elmarie Fagan (ERA) noted there are 250 projects in total, all projects are linked to milestones (applications) and tracking well towards agreed timelines.
- Prof Kingsley Dixon flagged issues he will bring up at a later stage including genomics and understory mentioned in 1249-14.
- Mr Tayler noted the joint project list has been developed from initial risk assessment and therefore comprehensive, however, there is a need to reassess the list as knowledge increases. ARRTC should keep a close eye on the list so gaps can be identified.
- Ms Fagan noted that monitoring projects have not yet started and have not been scheduled yet.

## 7 ERA update

- Ms Sharon Paulka (ERA) provided the committee with a virtual tour of the Ranger mine including the Tailings Storage Facility, Pit 1 and Stage 13.
- Ms Paulka gave an overview of key closure activities including decommissioning of the processing plant, process water treatment, R3D final backfill, tailings dam, Pit 3 capping and backfill, revegetation of Pit 1 and seed collection of local native species.
- GAC and NLC have formed a cultural reconnection working group and ERA have hosted four visits to look at various sites.
- Ms Sarah Reid (ERA) provided an update on PFAS and noted that Cardno have been engaged to undertake the work and is currently undertaking a gap assessment and developing a sampling and analysis quality plan (SAQP) to identify where additional investigation needs to take place.
- Ms Paulka noted that one new patch of *Spigelia* has been mapped inside the surveillance area, the area and seed loads looks to be reduced and eradication project is on track. There is further work to be undertaken on mapping the creek line.
- Ms Paulka advised that the work to update closure criteria is progressing, the water criteria is pending ALARA and diet assessments.
- Prof Dixon advised he would like to discuss rehabilitation planning and logistics with ERA and SSB offline. He noted that native seed storage is not fully understood hence ERA needs to adopt best practice seed storage standards combined with regular monitoring of seed viability to assess if there are storage-vulnerable species. The policy of collecting 'fresh' seed closer to the time is

not standard operating procedure in restoration programs. Seed is collected over a number of seasons (including capitalising on 'good' seasons for seed production), and accumulated in a best practice storage facility. He further asked 'What are the strategies for those species where seed supply is limited to ensure they are supply for restoration?'

- Ms Meg Parry (ERA) advised that a conservative approach to seed collection had been taken as it is assumed that seeds are not viable after five years. A lot of seed will need to be collected fresh and there is a plan to do this closer to when they are needed.
- Mr David Staggs (ERA) provided an update on solute transport studies, supporting groundwater studies and the surface water model.
- Mr Staggs noted a presentation on the surface water model will be provided at ARRTC49.
- Dr Scott Wilkinson requested an update on landform including Pit 1 monitoring and evaluation at the next ARRTC meeting.
- Dr Rumpff requested an update on monitoring of Pit 1 plantings at the next ARRTC meeting.

## **8 ERA presentation: Ecosystem trajectories and developing an adaptive management plan**

- Ms Parry presented on how the ERA state and transition model can inform management of risks, particularly fire.
- Ms Parry noted that the framework was developed by Richards et al (2020) and the state and transition model has been drafted. Unearthed Environmental Services has been engaged by ERA to progress this work.
- An overview of the Trigger Action Response Plan (TARP) tool was provided. Ms Parry noted the different levels of response according to risk and this varies according to the ecosystem re-establishment phase i.e. early, intermediate and advanced.
- Prof Woinarski queried whether fauna would be included in the state and transition model. Ms Paulka advised there was a delay with fauna due to availability of consultants.
- In relation to the closure criteria, Prof Woinarski queried the proportion of closure criteria that are 'similar to' versus 'on a trajectory towards', and in what circumstances and with what degree of certainty the latter would be applied
- Further, Prof Woinarski queried how unplanned catastrophic wildfires would be mitigated. Ms Parry advised that ERA has a fire management plan to reduce the risk, but the degree of intervention would depend on the stage of revegetation.
- Mr Tayler noted that the target date for completing the research is linked to the final landform application, late 2022 to early 2023.
- Dr Rumpff advised she would provide Ms Parry with some additional references on decision making frameworks. Rapid and qualitative assessment of risks is a good preliminary approach.
- Prof Dixon advised that structured expert elicitation is a very important mechanism in the absence of all the information. Further, direct seeding and associated technologies will be important in the future for secondary plantings and responding to deviations, for example, replanting after catastrophic disturbance.
- Dr Wilkinson advised that adaptive management plans need to be developed to address potential issues, and there is concern that progressive rehabilitation will happen across site without strategies in place. Ms Paulka advised that the Pit 3 application would not cover the top 6 m of landform.
- Ms Paulka noted that ERA are now at the stage where mining-focused TARPS need to be translated into science-focussed adaptive management plans. ERA is looking for general guidance on what ARRTC expects.
- Dr Stauber advised ARRTC wants to see how projects/KKNs feed into assessment of applications and the framework that connects to monitoring and management plans.

- Prof Woinarski noted additional knowledge needs/risks are being identified as time goes on so there is a need to see these are captured. ARRTC also wants to see a well-targeted comprehensive monitoring plan for ecosystem restoration.

## **9 Final remarks**

- Mr Tayler reassured the committee that work that hasn't happened will be done in sequence.
- Ms Paulka thanked the committee for the feedback and general guidance on the adaptive management plan.
- Discussion ensued on the agenda for the next meeting, Dr Katherine Smith (SSB) noted the agenda for the November meeting is full and ARRTC will go back to two meetings in 2022.

### SUMMARY OF ACTION ITEMS

No.	Item	Responsible person/area	
47.2	Revisit scope of RES-2017-004 on Cataloguing the Natural World Heritage Values on the Ranger Project Area to take cultural values into account	SSB/ERA/GAC/NLC	Ongoing
47.3	Present on rehabilitation at Nabarlek. The presentation will cover the work of the UQ PhD student (Kate Harries) and the monitoring work being undertaken by S&M.	SSB	ARRTC 49
47.4	Supply questions noted about Kate Harries SERA presentation to ARRTC Secretariat so these can be provided to Kate.	ARRTC (Libby)	ARRTC 49
47.5	Prepare a presentation on Jabiluka covering key issues and research.	ERA	ARRTC 49
47.7	Add a standing agenda item that focuses on mining sites other than Ranger that are within the Alligator Rivers Region. Agenda item is to focus on key issues and noted research needs.	Secretariat	ARRTC 49
47.9	NESP Principal Investigators <ul style="list-style-type: none"> <li>through SSB counterparts to provide ARRTC with close-out documents between ARRTC47 and ARRTC48 relating to the finalization of NESP projects and</li> <li>to make presentations on their projects at ARRTC49</li> </ul>	SSB	ARRTC 49 (updated)
47.10	ARRTC to initiate and SSB, ERA, NLC etc. to review/augment a list of topics for discussion at future ARRTC meetings	ARRTC (Libby)	ARRTC 49
47.11	Provide radionuclide results as part of the 1221-06 Aquatics sediments project close out.	ERA	ARRTC 49
47.15	Distribute report on 1221-09 WS5A-BOTH <i>Water Pathway Risk Assessment (release pathways onsite)</i> for ARRTC's information.	ERA	ARRTC 49
48.1	Review Joint Project list and identify projects where there are gaps or where more information is needed Note: Joint project list will be added as a standing agenda item for future meetings.	ARRTC	
48.2	Provide update on learnings from and monitoring of Pit 1 which covers <ul style="list-style-type: none"> <li>Ecosystem restoration (esp. comparison of different planting trials)</li> <li>Landform design and performance</li> </ul>	ERA	ARRTC 49
48.3	Advise whether the new GW modelling included assessment of changes to the model run times, calibration, or convergence	ERA/INTERA	ARRTC 49
48.4	Provide presentation on strategy for monitoring program – to include priorities and an example	ERA	ARRTC 49
48.5	ERA to provide ARRTC with S&T model report (April 2020) along with SSB and NLC's comments	ERA	ARRTC 49
48.7	ARRTC to provide additional high-level references pertinent to risk assessment and/or State & Transition modelling and/or adaptive management etc.	ARRTC	ARRTC 49

## Outcomes of SSB and ERA proposed project and KKN close-outs at ARRTC48 (August 2021)

Type of item	Project Number	KKN	Title	Agreed	Comments
Project close-out	RES-2018-003	WS4A_SSB	Identification and mapping of Groundwater Dependent Ecosystems (GDEs)	agreed	-concerns around using it for monitoring with false positives and false negatives -risks assessment will be covered in other KKN's if required
Combined KKN & Project close-out	RES-2017-022	WS7H-SSB	Ecohydrology and sensitivity of riparian flora (NESP project)	No close out further information required	-concerns around contradictory results across 2 years -disparity not picked up and explained -report needs to note more explicit discrepancies -if necessary NESP may present at ARRTC49
Project close-out	1250-08	WS1A-ERA	Solute Source Area/Concentration Conceptual Model Update	Agreed	-comprehensive and will continue to evolve
Project close-out	1250-11	WS2A-ERA	Post closure Solute Transport modelling with uncertainty analysis	Agreed	-good articulation -moving from modelling to monitoring
Project close-out	1221-11	WS1A-ERA	(Non-aquatic) Contaminated sites sampling	Agreed to close out if location of data usage is added.	-report does not discuss results -no interpretation of data -this was listed as a sampling project -add where the data will go into the close out documents -Data used in 1250-08, and surface water -add project numbers to close out document