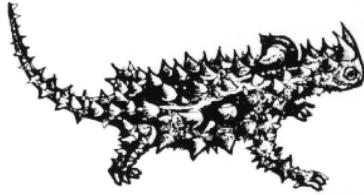


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Attention to Lisa Bradley

Arid Lands Environment Centre (ALEC)

Submission to the Northern Territory Environment Protection Authority on the Draft Environmental Impact Statement of the Chandler Facility

The Arid Lands Environment Centre (ALEC) is the peak regional environmental organisation servicing Central Australia. ALEC's vision for 'healthy futures for arid lands and people' is supported through its work on community education, strategic policy advocacy and engaging with Government and Industry to deliver strong and lasting environmental outcomes. ALEC has a long history of engaging with resource projects in arid areas and the environmental assessments associated with mining. ALEC has provided critical insights for regulators of resource projects to minimise any adverse impacts upon the environment.

ALEC welcomes the opportunity to make a submission on the proposed Chandler Facility. The scale of this project is unprecedented for the Territory and represents a significant legacy issue of waste considering the capacity of the void. The life span is uncertain; there is an official prediction of 50 years but the deposits have the potential to provide for centuries of production and storage.

ALEC recognises and values the breadth and detail of the EIS documents. Generally speaking the EIS has comprehensively addressed the environmental risks associated with the project. However there is a significant issue of regulatory uncertainty and contradiction in the various documents of the EIS relating to the licensing and approval of processing, discharge and storage of waste. Considering the NT Government is currently conducting consultation for widespread environmental regulatory reform, the approval and licences applicable to this project are liable to change during the operation of the project.

The fundamental concern of the project to ALEC is the issues of groundwater contamination events resulting from an uncertain regulatory regime, uncertainties regarding hydraulic backfilling and lastly proper transparency standards regarding the waste acceptance criteria (WAC).

In the interests of proper standards of accountability and transparency, as necessary for proper environmental governance, we are requesting clarification around the nature, volume and concentration of wastes that will be processed and stored on site.

Specifically we are requesting clarification about how these processes will be regulated in relation to the requirements under the *Water Act* and the *Waste Management Pollution Control Act* (WMPC). The facility proposes to discharge liquid wastes into the ground water which will require multiple licences, including an underground waste disposal licence and environmental protection licence.

ALEC requests further information on:

1. Licences that are going to be applied for and when: discharge nature and volumes. Waste disposal will be occurring on a commercial basis so the statutory provisions of the WMPC Act apply.
2. The method of hydraulic backfilling to be used: flushing or viscous
3. A comprehensive assessment of the suitability of hydraulic backfilling has not been undertaken; this needs to be demonstrated before the project can proceed to the next stage.
4. Potential for storage of shale bed methane waste material meaning that Tellus would be facilitating the development of unconventional gas resources in the Northern Territory. Also, clarification on which projects CSG waste will be sourced from.

Regulatory Framework

The principal concern for this project is how the transportation, treatment and storage of waste will be conducted without the appropriate regulatory approvals having been acquired and disclosed. Acknowledging that mining actions are exempt from the environmental protections afforded by the WMPC Act there is a significant contamination concern relating to the waste produced by mining actions as they are able to be discharge without appropriate disclosure and monitoring.

Chapter 4 of the EIS, Approval Pathways notes that the WMPC applies by requiring the proponent to acquire licenses in regards to waste but then this is no longer mentioned elsewhere in the EIS documents. Storage of waste for commercial purposes attracts regulation under the WMPC Act but the waste issues relating to mining are exempt under the Act. It is necessary to clarify which wastes will be regulated under the Act and accordingly required a licence and which will not be disclosed in the licence and the reasons for this. The water management plan does not address the granting of licences under the WMPC Act but other EIS documents note the need to acquire licences under the Act. This contradiction should be clarified by the proponent to demonstrate there is not unlawful discharge of contamination occurring.

Licences

The proponent is required to apply for a waste water discharge licence, groundwater withdrawal licence and an environmental protection licence (s 74 licence). While the proponent has made general references to these licences it is not clear exactly what licences are already pending and what have yet to be applied for. As a result of this it is not clear the exact nature of the discharges that the proponent is proposing. Non-discrete chemicals are at this stage only listed categorically. There is limited quantitative data provided on the waste materials that are proposed for storage, the

WAC only outlines categories of waste not specific volumes or concentrations. Thus an increased level of transparency is necessary to ensure public oversight of waste disposal and that appropriate safeguards are in place.

An underground waste disposal licence will be required. It is not clear if this licence will apply to the waste disposal component of the project or waste disposal that is ancillary to the mining of salt. It is of significant environmental concern that the proponent intends to rely on the statutory exemptions applicable to mining projects under the WMPC Act and the Water Act, considering these exemptions are likely to be abolished in the near future.

Furthermore, the EIS makes reference to the need to acquire a licence for the discharge of contaminated water: “where required the proponent would apply for a licence under the *Water Act* for the discharge of any potentially contaminated mine waters from its tenements” at page 4-210 of the EIS. The proponent needs to explain in what circumstances it is contemplated that contaminated waters would need to be discharged from the tenement.

The proponent needs to publicly disclose the substance of the following licences:

- Waste discharge licence (s. 74 Water Act)
- Underground waste disposal licence (s. 63 Water Act)
- Environmental protection licence and approvals (s. 34 of the WMPC Act)
- Groundwater withdrawal (s. 60 Water Act)

The proponent is yet to demonstrate full commitment to proactive and transparent management practices for waste discharge and processing.

Hydraulic back fill processing

ALEC is concerned about the undertaking of hydraulic backfill processing, which is being proposed as an additional method to isolate wastes (page 4-207 of the EIS). The proponent intends to utilise hydraulic backfill processing to store up to 50% of all the waste received but is yet to conduct the appropriate investigations to determine if this method is appropriate in the context and what method of back fill will be used.

Hydraulic processing increases the environmental risk of the waste disposal aspect of the project because it increases the volume of leachate and thus the possibility of groundwater contamination (waste materials: appendix F). Target wall creep, formation of volatile gases and breakdown of containment structures are all additional risks related to hydraulic backfilling (Appendix I). While the proponent has commissioned a report on the feasibility of this technique of disposal, the report notes it is not able to make a final determination as to feasibility, without a complete understanding of host rock suitability and the relevant regulatory measures (Appendix I). Before gaining approval for hydraulic backfilling the proponent needs to demonstrate the appropriateness of the facility for the use of this method and the proper safeguards it intends to utilise in preventing contamination events in the void spaces by validating the assumptions made about host rock suitability and containment structures.

There is a secondary concern relating to the origins of wastes from resource sector refineries which is of particular importance to ALEC. Acknowledging that the shale bed methane industry has not proceeded past exploration phase, and the production potential of the industry is in doubt amongst wide spread community opposition, it is necessary to highlight the potential linkages with the Chandler Facility and the problem of produced water from potential fracking operations. We seek clarification on the possible waste materials that would be sourced from resource sector refining processes and further an undertaking that the proponent will not be accepting produced water sourced from any hydraulic fracturing operations. In accepting CSG waste material the Chandler Project will in effect be facilitating the expansion of unconventional gas industry in the Northern Territory. The proponent should be mindful of this relationship and the social consequences of storing materials from an industry that does not have a social licence to operate.

ALEC supports the recommendation of further geomechanical investigations into the halite formation once results of the geochemical analysis are made available to the public. However, ALEC does not have high confidence in sufficiently robust monitoring of hydraulic processes considering the statutory exemptions on waste disposal. While there may be protocols in place, these are not legislatively mandated safeguards and therefore compliance is not guaranteed in law, especially as hydraulic processing is only in the pre-feasibility stage.

Water

The project will use significant quantities of water in hydraulic processing, operations and dust suppression. ALEC is concerned about the impact of drawdown on groundwater systems because there are significant gaps in baseline data along the Finke River. There are no bores adjacent to the river so monitoring cannot be conclusive of no harm to shallow aquifers supporting groundwater dependent flora and fauna species of the spring.

Furthermore surface water discharge and increased magnitude of high flow events will present a threat to surface water contamination if hazardous materials are stored on the surface during such a time. How will they be contained on the surface? Hazardous waste listed under Schedule 2 includes Arsenic, Cadmium, Lead and Mercury. If these are in solution form and stored on the surface they represent a significant risk of environmental contamination during a high rainfall event. Research from CSIRO modeling suggests that the 1 in 100 year ARI is likely to change as a result of climate change. The magnitude and frequency of extreme rainfall events is predicted to increase, with high confidence. Over the entire life span of the project the hydrological regime accounted for in modeling will thus become less and less valid over time.

The proponent needs to ensure that contemporary climate change modeling information is incorporated into monitoring strategies and that the impact of extreme rainfall events is accounted for in aspects of the project, such as the surface storage of wastes.

Acknowledging that there is potential for connectivity between shallow alluvium aquifers through gradients with deeper groundwater sources means there is potential for connectivity to the south-east along the Finke River 20km from the

Chandler Facility (Appendix G pg 10). There are no bores along the river so this is a substantial gap in the ability of the proponent to monitor down gradient impacts of changes to surface and groundwater flows. This undermines the ability of the proponent to adequately monitor changes to ground and surface water flows including the ability to monitor the migration of potential contaminants.

Biodiversity

The project generally has a very comprehensive analysis of the flora and fauna at risk and a discussion of appropriate mitigation strategies. There is however a notable lack of discussion on invertebrates. Only one species of invertebrate has been recognised as having a low likelihood of occurring on site. Resource projects in the NT need to expand the biodiversity impact assessment to include the impact on invertebrates.

There are localised pockets of introduced weeds within the project site. These are likely to extend their presence in the area if construction went ahead as they would exploit the disturbance of the natural ecology. Disturbance coupled with increased industrialisation, trucks and other infrastructure would increase the risk of further spreading weeds which already represent a major threat to the ecological integrity of the arid regions.

Several of the identified threatened species are recognised as being data deficient and because of this it is difficult to assume that the asserted conclusions on the populations are reliable. Considering the cumulative issues of ecosystem fragmentation, weed invasion, industrialisation and climate change induced variation in rainfall patterns the monitoring regime on site should continue for many years into operation and expand on the area monitored.

Energy

The proponent is intending to power the facility through a solar/diesel hybrid power plant. 2MW of energy will be sourced from Solar PV and 3MW from diesel combustion, with the remaining standby and emergency provisions also supplied by diesel. This energy composition is commendable but is not consistent with the NT Government's commitment to 50% renewable energy.

The proponent has not undergone a complete lifecycle assessment of the greenhouse emissions of the mine. It is therefore difficult to account for the carbon footprint of the mine in the broader context of the emissions profile of the Territory. Mining operations account for the biggest share of isolated diesel production in the Territory, so it is therefore imperative that the proponent is encouraged to increase the solar PV capacity of the mine to at least 50%.

Considering that the Territory has the highest emissions per capita in Australia, the proponent must be required to complete a lifecycle assessment of the carbon footprint of the project. This is necessary to ensure compliance with national emissions reduction and renewable energy targets.

Decommissioning and rehabilitation

A rough estimation of the lifespan of the project has been determined by the proponent but this estimate may be extended significantly considering the scale of the target formation. It is a very real possibility that the lifespan of the mine will indeed extend far beyond that what is initially envisaged and this will provide a significant challenge to monitoring and management processes over the decades following decommissioning.

The identified rates of room creep convergence are very high, indicating that the roof of the rooms (especially those rooms located near the edges of the panel) may be unstable in the long term (pg 40 of Appendix K). There are also identified risks of sidewall spalling and roof failure following the 30 years of modeled stress response.

The possibility of committing to a monitoring plan long enough to encapsulate the full potential lifetime of the project is thus a significant long term task that is vulnerable to market volatilities. It is still unclear who will be responsible for the monitoring and rehabilitation of the site after the projected 45-year lifespan as the commencement of the institutional control period is yet to be determined.

The proponent must be required to set aside significant funds to ensure monitoring of underground containment structures continues well after the mine has been decommissioned so that the taxpayer is not paying for rehabilitation after the proponent has relinquished ownership.

Recommendations

In summary ALEC recognises the depth and quality of the investigations undertaken in preparing the EIS. The proponent has considered a multitude of risks and variables generally in line with best practice. However due to regulatory uncertainty and contradiction in the approval and licencing processes ALEC remains concerned about the adequacy of ground and surface water protection and the projects enabling ability on the unconventional gas industry in the Northern Territory. We seek further clarification and disclosure on the following issues:

- **Greater clarity on the WAC: concentrations, volumes and chemical analysis that will be conducted on site to ensure compliance with the WAC.**
- **Completed geomechanical investigations demonstrating wall spalling and roof instability will not increase risk of contamination events.**
- **Confirmation of the hydraulic backfill method determined and the consequent mitigation and monitoring strategies.**
- **Undertaking that the project will not accept waste materials from fracking operations in the NT.**
- **Improved certainty over surface and groundwater connectivity along the Finke River by compiling more baseline data.**
- **More comprehensive surveys of threatened species which are recognised as being data deficient.**

- **Complete public disclosure and certainty of the licences required under the WMPC Act and the Water Act.**
- **Commitment to finance ranger services and feral animal management programs, including culling of cats, donkeys, camels and horses.**
- **Independent accredited translators are used by the proponent in all future consultations with the Tjitjikala community.**

It is hoped that the above discussion has highlighted key areas of the project that require further attention from the proponent. ALEC requests that the comments are genuinely taken into consideration and help inform the proper environmental management and governance of the project as it progresses. Considering the department's commitment to transparency and accountability as a fundamental component of best practice environmental management there must be full and frank disclosure of waste processing and storage over the entire life span of the project. This is to ensure that vast quantities of hazardous wastes proposed for storage will not enter the biosphere or threaten the quality of ancient groundwater aquifers in such a fragile and groundwater dependent ecosystem.

Thank you for taking your time to consider this submission,

Sincerely,

Arid Lands Environment Centre