



CENTRAL LAND COUNCIL

**Submission to the Environmental Protection Agency of the
Northern Territory**

Ammaroo Ammonium Phosphate Fertiliser Project

**Referral for Significant Variation dated 9 November 2022 submitted
by Verdant Minerals Pty Limited**

ACKNOWLEDGEMENT

The Central Land Council (CLC) acknowledges the traditional owners of the Northern Territory who, with their ancestors, have been custodians and stewards of the Territory and its resources for tens of thousands of years.

EXECUTIVE SUMMARY

1. CLC submits that the project (comprising both the original phosphate mine and the recently referred fertiliser production plant and associated infrastructure) should be assessed as a single project at Tier 3 (Environmental Impact Assessment (EIS)) level by Northern Territory Environmental Protection Authority (**NT EPA**) so as to ensure that the cumulative impacts of the project are well understood. The project's cumulative environmental and cultural impacts must be assessed as a whole, not two separate parts.
2. If the NT EPA does not accept CLC's submission that the original phosphate mine and the recently referred fertiliser production plant and associated infrastructure should be assessed together, CLC makes the alternative submission that the fertiliser production plant and associated infrastructure component should be assessed at Tier 3 (Environmental Impact Assessment (EIS)) level by NT EPA.
3. This submission must be read with the advice set out at:
 - a) Part E to this submission (CLC Information – Cultural Values); and
 - b) Part F to this submission (**Wolfpeak Advice**). The Wolfpeak Advice has been prepared by Wolfpeak Pty Ltd (**Wolfpeak**). Wolfpeak is a specialist environmental and sustainability consultancy based in New South Wales. CLC adopts the Wolfpeak Advice, and it forms part of this submission.
4. CLC welcomes further discussion with the NT EPA about any matter outlined in this submission. Contact details are set out at Annexure C.

A. INTRODUCTION

5. Verdant Minerals Pty Ltd (**Verdant**) has referred a proposed action that significantly alters the Ammaroo Phosphate Project (**Referral**). The original project involved mining and beneficiation of ore to produce phosphate rock concentrate (**Phosphate Mine**). However, the proposed action subject to the Referral involves developing downstream processing facilities for producing ammonium phosphate fertilisers from the phosphate rock concentrate onsite (**Fertiliser Production Plant**). This requires the construction of a phosphoric acid plant, sulfuric acid plant, ammonia plant, granulation plant, and changes to amenity, storage, export/import and service infrastructure. The alterations will require the importation of 500,000 tonnes per year of elemental sulphur through the Port of Darwin, natural gas use to 8.7 petajoules per year, and an expanded bore-field to supply an extra 3.9 gigalitres per year of groundwater.
6. The documents which comprise the Referral are:
 - a) Ammaroo Ammonium Phosphate Fertiliser Project, Referral for Significant Variation, Verdant Minerals Pty Ltd, 9 November 2022; and
 - b) Ammaroo Ammonium Phosphate Fertiliser Project, Appendices, 9 November 2022,(together, the **Referral documents**).

B. CLC's ROLE

7. In making these submissions, the CLC represents and has considered the interests of:

- a) affected native title holders for Ammaroo Pastoral Lease, Elkedra Pastoral Lease, Murray Downs Pastoral Lease and Neutral Junction Pastoral Lease;
 - b) Kaytetye Alyawarr Awenyerraperte Ingkerr-wenh Aboriginal Corporation RNTBC (ICN 7655) (**KAAl**), Eynewantheyne Aboriginal Corporation RNTBC (ICN 7947) (**EAC**) and Kaytetye Tywerate Arenge Aboriginal Corporation RNTBC (ICN 7745) (**KTAAC**);
 - c) traditional Aboriginal owners of neighbouring Aboriginal land trusts (**ALTs**) including Aherrenge ALT and Alyawarra ALT; and
 - d) residents of surrounding Aboriginal communities and outstations which include Ampilatwatja, Honeymoon Bore, Imperrenth, Indaringinya (Antarrengey), Inkawenyerre (Rocket Range), Atwengerrpe and Irrultja,
- (together, the **affected Aboriginal constituents**).

Further information about the CLC's statutory functions and role is set out at Annexure B.

C. CLC's SUBMISSION

8. The Referral effectively splits the project into two parts, the Phosphate Mine (which was assessed after the 2017 EIS but has not been approved)¹ and the Fertiliser Production Plant (which is subject to the Referral). These two components are inextricably linked parts of one project. The project's cumulative environmental and cultural impacts must be assessed as a whole and not in two separate parts given the significance of the impacts of the project. That is, the project, comprising the Phosphate Mine and Fertiliser Production Plant aspects, should be assessed as a single project at Tier 3 (Environmental Impact Assessment (EIS)) level by NT EPA, to ensure that cumulative environmental and cultural impacts are well understood.
9. Alternatively, if the NT EPA finds that it should assess the Fertiliser Production Plant separately from the Phosphate Mine, the CLC submits that the Fertiliser Production Plant component must be assessed at Tier 3 Environmental Impact Assessment (EIS) level.
10. The reasons that a Tier 3 Environmental Impact Assessment (EIS) level assessment is required are as follows, and are further detailed in CLC advice at Part E of this submission and Wolfpeak Advice at Part F.
 - a) The project will have a significant impact on cultural and environmental values. In particular, the Referral fails to address the high risk that the project could result in potential disturbance to, or destruction of, Aboriginal cultural practices, ritual and sacred sites, which will have an immense detrimental effect on Aboriginal cultural values.
 - b) There are significant gaps in the information and analysis provided in the Referral documents. Information about these gaps are set out in the Wolfpeak Advice at Part F.

¹ The Northern Territory Environmental Protection Authority made it clear in the Assessment Report 87 (which is dated 2 October 2018) that "*this Report is not intended to provide an environmental approval although it will guide the decision for authorisation (by the Responsible Minister).*"

- c) Measures cannot be designed to avoid, mitigate or manage significant impacts that are not understood. Given the significant gaps in the information and analysis in the Referral documents outlined in the Wolfpeak Advice, there is a low level of confidence in the effectiveness of any proposed measures in the Referral documents to avoid, mitigate or manage significant environmental impacts of the project. There is also a low level of confidence in the effectiveness of any proposed measures to avoid, mitigate or manage significant cultural impacts given the issues outlined below at (d) and (e) and in Part E.
- d) Given the significant cultural impacts of this project, CLC is deeply concerned about the level of community engagement in relation to this project. CLC was provided with limited time to consider the voluminous Referral documents before Verdant submitted them to the NT EPA. There has been no opportunity for CLC to consult with affected Aboriginal constituents about the information contained in the Referral documents. Community engagement has been inadequate, particularly when considered with the project's significant cultural impacts detailed in Part E.
- e) Section 10 of Wolfpeak Advice at Part F sets out the inadequacy of information about the stakeholder consultation process. There have been no details provided regarding how Verdant has consulted with Aboriginal communities, and whether Verdant has undertaken its consultation in a culturally appropriate manner which is required under section 43(a) of *Environmental Protection Act* (NT) 2019. English is not the primary language for most residents in the project region, so there will be significant language barriers for those who live in the outstations and communities surrounding the project. Verdant has not indicated that they have engaged in a manner that overcomes the language barrier. Given the complexity involved with the project and its impact, there will be limited capacity for communities and individuals likely to be affected to access and understand information about the project and its potential significant impact.

D. CLC INFORMATION - CULTURAL VALUES

- 11. The project is located on country traditionally belonging to Alyawarr and Kaytetye people associated with the Aharreng, Angkeperretyey, Akaneng, Arnerre, Arlpaw, Arnapwentye Imangker and Antarrengeny landholding groups.
- 12. The Referral fails to address the high risk that the project could result in disturbance to or interference with or destruction of sacred sites, which will significantly and adversely impact Aboriginal cultural practices and values and the almost certain significant impacts that will occur on the cultural landscape in the vicinity of the sites.
- 13. The Referral also fails to address the potential impact of the project on key Aboriginal cultural values. The project will potentially significantly impact Alyawarr and Kaytetye people's ability to observe their traditional Law and practice ritual activity in situ and to exercise their cultural obligations to maintain spiritual connections to country and protect sacred sites.

Impact of noise on ritual activity, teaching and cultural responsibilities

- 14. There are at least ten recorded sacred sites located within the proposed pit for the Phosphate Mine and direct vicinity of the Phosphate Mine and proposed Fertiliser Production Plant. These sites will need to be regularly accessed by traditional owners

for ritual activity, cleaning sites, removal of grass, ritual actions, singing of songs and sharing traditional stories of the sites with younger generations.

15. Under Aboriginal tradition, teaching and instructing younger people around songs and stories associated with sites must occur at site. The ability of traditional owners to effectively communicate knowledge and sing songs to younger generations will be impacted by noise. Further information is contained in section 3 of the Wolfpeak Advice.

Visual impact on ritual activity, teaching and cultural responsibilities

16. Further consultation and consideration is required as to the visual impact that the project will have on Aboriginal cultural values. There is currently a restricted men's site in the proposed pit which is not visible from a distance at ground level due to surrounding vegetation. However, there is a risk that the infrastructure will allow others with visual access to the restricted men's site thus impacting their ability to conduct ritual activity, teaching and other cultural responsibilities.
17. This will deeply concern traditional owners as they have a cultural obligation to protect sacred sites and many cultural practices are gender restricted, secret and sacred. Access to sites may also be gender and ritual-status restricted.
18. Significant distress and cultural repercussions may occur if people of the incorrect gender or ritual-status are at or in the vicinity of such sites or witness to ritual activity. Some of the repercussions of this are those set out in paragraph 33.
19. Further information on visual impacts is contained in section 5 of the Wolfpeak Advice.

Culturally important biodiversity

20. For traditional owners, land, people, and local plant and animal species are spiritually interconnected. Loss of biodiversity from an area is often seen by traditional owners as an indication that there is disturbance to spiritual equilibrium and interconnectedness of the spiritual and physical world. When species are lost, traditional owners often feel deep grief associated with that loss. Loss of biodiversity could have a significant impact on Aboriginal cultural values, including cultural responsibilities to care for country.
21. Further information on biodiversity is contained in section 6 of the Wolfpeak Advice.

Culturally sensitive ground and surface water dependant sites

22. There are at least 72 culturally sensitive and groundwater dependent sites within the P90 1m drawdown contour. The potential impacts of the significantly increased groundwater drawdown associated with the project need to be carefully assessed in an EIS. See Annexure B for the map (2022-316d) showing the community bores and sites within the water table drawdown for ML 31713, ML 29463 and ML 29854.
23. These culturally sensitive groundwater dependent sites include soaks, creeks, flood outs, swamps, and trees which continue to be valued by traditional owners today as the physical manifestations of the Altyerr (Dreaming) ancestors. Traditional owners continue to visit these sites to conduct ritual activities and to teach their younger generations about the spiritual value of these sites. While these sites are primarily valued and revered for their intangible religious qualities, they are also valued by Affected Aboriginal constituents as being critical sources of water and associated natural resources (e.g. plant and animals, bushfoods and bush medicines).

24. Disturbance to and destruction of sacred sites that consist of vegetation (such as trees due to the lowering of the water table) has a significant adverse affect on Aboriginal cultural values. Further information regarding these serious impacts is set out in paragraph 33.

Access to sacred sites

25. The project will place significant limitations on traditional owners' ability to access significant sacred sites. Traditional owners have advised CLC that they will need to continue to access these sites regularly to undertake the ritual activity, teaching and cultural responsibilities set out in paragraphs 14 and 15. Any limitations on traditional owners' ability to access sites will have a significant effect on Aboriginal cultural values, including the maintenance of tradition and the intergenerational transmission of cultural knowledge.

Significant cultural impacts of Murray Downs Road Re-alignment

26. In previous consultations (related to the original project) with traditional owners, they expressed concerns about the proximity of the proposed road realignment to restricted men's sites, and that this could put women and children (and un-initiated men) at risk of inadvertently trespassing on restricted men's sites. There are serious cultural repercussions for such trespassing for both those undertaking the trespassing and those who experience it including negative impacts on health and physical wellbeing and other impacts set out in paragraph 28 below.

Impact of sacred site interference, damage and destruction

27. The project will result in significant damage to a cultural landscape that consists of interlinked sites of living spiritual importance, ten of which are located in the project footprint or adjacent to it. There is also a high risk of damage or destruction of discrete sacred sites, particularly those within the proposed pit area. While exclusion zones offer some protection, history has shown that there is a risk of companies not complying and that damage and destruction can occur despite efforts to protect sacred sites.
28. Some of the significant cultural impacts of site damage, interference or destruction include (but are not limited to):
 - a) Due to the spiritual interconnection between traditional owners and the sacred sites that are the physical manifestations of Dreaming ancestors, any damage, interference with or destruction of a site negatively impacts the health and physical wellbeing of the traditional owners of a site. Traditional owners often describe particular instances of sickness, injuries and death as resulting from sacred site damage, interference or destruction and the associated physical harm caused to the Dreaming ancestor/s embodied in the site.
 - b) Sacred site damage, interference or destruction also causes significant emotional distress, anger and grief for traditional owners. This has obvious consequences for psychological and physical wellbeing and can lead to ongoing intergenerational trauma.
 - c) Sacred site damage, interference or destruction can permanently undermine the ability of traditional owners to maintain and transmit their traditions to the next generation.
 - d) Sacred site damage, interference or destruction can cause major social disruptions. Regardless of the circumstances of damage, interference or

destruction and even when it is clearly caused by external factors, traditional owners will be held accountable by their extended kin. This can lead to arguments, fights and tensions centred on the attribution of blame. It can also result in some traditional owners 'acting up' in their behaviour towards others and/or engaging in potentially destructive self-inflicted activities as they attempt to deal with their feelings of shame in not being able to protect their sacred sites.

- e) Traditional owners also believe that sacred site damage, interference or destruction can cause destructive environmental phenomena e.g. floods, fires, storms. These are understood as being the repercussive actions of the Dreaming ancestors in response to the damage, interference or destruction of sacred sites.

E. WOLFPEAK ADVICE (ATTACHED)

REVIEW OF AMMAROO PHOSPHATE PROJECT REFERRAL ADVICE

CENTRAL LAND COUNCIL

DECEMBER 2022

Authorisation

Author Name:	Steve Fermio	Reviewer / Approver:	Tim Stubbs
Position:	Principal Environmental and Earth Scientist	Position:	Principal Environmental Engineer
Signature:		Signature:	
Date:	19/12/22	Date:	19/12/22

Document Revision History

Revision	Date	Details
0.1	5/12/22	Draft advice for initial CLC review
0.2	15/12/22	Final draft advice in response to CLC comments on Rev 0.1
1.0	19/12/22	FINAL REPORT

Report Name: Review of Ammaroo Phosphate Project Referral

Project No.: 677

Prepared for:
Central Land Council

Prepared by:
WolfPeak Pty Ltd

T: 1800 979 716

W: www.wolfpeak.com.au

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EXECUTIVE SUMMARY

WolfPeak considers that the proposed Project (phosphate mine and fertiliser production plant) should be assessed at the Tier 3 (Environmental Impact Assessment) level for a range of reasons summarised below.

Firstly, the Referral states that the original Project (phosphate mine and beneficiation plant) was approved under the 2017 Environmental Impact Statement (EIS). On the evidence we have reviewed this is incorrect. This is important as the Referral effectively splits the Project into two parts:

- the phosphate mine and beneficiation plant that is said to be already approved (the “Approved Project”), and
- the “Proposed Project” i.e., ammonium phosphate fertiliser production plant, which is yet to be assessed and approved.

We believe it is critical that the Project’s cumulative environmental and cultural impacts be assessed as a whole, not in two separate parts (2017 EIS and 2022 Referral), as the additional impacts of fertiliser production and associated changes are very significant.

Secondly, there are significant inconsistencies and gaps in the information and analysis provided in the Referral and 2017 EIS documents that require further clarification, consideration, assessment and consultation with Traditional Owners represented by the Central Land Council (CLC). These include, but are not limited to:

- *Cultural Heritage*: The Referral’s conclusion that the fertiliser production plant will not have significant impacts to Aboriginal archaeological values is inconsistent with the findings of the 2017 EIS (Extent) report that approximately 75% of the known archaeological landscape will be directly or indirectly impacted by the proposal that was the subject of the 2017 assessment.
- *Visual impacts*: There has been no consultation on, nor assessment of, the potential visual impact of what will be a new highly industrial facility - with several stacks between 65 to 80m (20 to 24 stories) high - in an otherwise relatively flat and natural landscape, causing view impacts from at least ten culturally sensitive sites.
- *Biodiversity*: The Referral claims that the proposed Project will not exceed the clearing limit in the EPBC Act approval issued by the former Federal Department of Energy and Environment in June 2018, which was based on the land clearance envelope in the 2017 EIS. However, the addition of a fertiliser plant will trigger the need for a GHG Abatement Plan under NT’s *New and Expanding Large Emitters’ Policy* introduced in 2021. That Plan is likely to include requirements to install renewables (wind, solar, batteries, transmission lines and supporting infrastructure), which will likely result in additional land clearance exceeding the 2018 EPBC approval threshold. Should the original clearing limit be exceeded, this would trigger referral back to the Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW).

The increase in greenhouse gas emissions also triggers the need to assess the *Key Threatening Process (Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases)* under the EPBC Act on other species including, but not limited to, the Grey Falcon which could also trigger the need to refer the Project back to the DCCEEW.

- *Ground and surface water:* The potential disturbance or destruction of sacred sites such as the death of sacred trees due to a lowering of the water table would have an immensely detrimental effect on Aboriginal cultural values. Based on mapping provided by the CLC, there are at least 72 culturally sensitive, groundwater dependent sites within the P90 1m drawdown contour. Other sites may also need to be investigated following further consultation with Traditional Owners. The potential impacts of groundwater drawdown on these sites has not been addressed in the EIS or Referral.
- *Greenhouse gases:* The location of land allocated for renewables needs to be clarified as this will have major consequences for the Proposed Project's GHG emissions through removal of sequestered carbon (clearing of vegetation) and potential impacts on threatened and migratory species and cultural heritage in the project area. This needs to be further assessed in an EIS to aid in the proper consideration of, and consultation with Traditional Owners on, the full environmental and cultural impacts of the proposed Project.
- *Local indigenous employment:* The proposed Local Indigenous Employment Participation Plan should be included in an EIS for the Project to ensure opportunities are appropriately consulted on with the Traditional Owners and more meaningful options considered such as providing support for developing outstations and youth leadership programs.
- *Air quality (non GHG):* The air quality assessments undertaken so far are focussed on human health impacts and do not consider the impact on sacred sites with rock features, sites with stone formations or sites with important vegetation. The cultural heritage and vegetation related air quality impacts need to be considered in a revised air quality impact assessment, undertaken in consultation with Traditional Owners, that forms part of a new EIS for the Project.
- *Noise impacts:* Given the nature of the activities that take place at many cultural sites, which include teaching and singing, culturally sensitive sites located within the Mining Lease should be considered as sensitive receiver sites. Several of these sites are likely to be significantly impacted by operational noise given their very close proximity to the mine pit and production areas. The impact of construction and operational noise emissions on ritual activities taking place at sites located within the Mining Lease needs to be reviewed in consultation with Traditional Owners and properly considered in an EIS for the proposed Project.
- *Final landform and rehabilitation:* The Traditional Owners should be consulted in setting the final rehabilitation and land use objectives for the area impacted by the project and on any additional clearing that is likely to be required for renewable energy generation, via a new EIS for the Project

1. INTRODUCTION

On behalf of the Central Land Council (CLC) WolfPeak Pty Ltd (WolfPeak, we) have reviewed the following documents (the Referral documents) prepared by Verdant Minerals (the Proponent) in support of its Ammaroo Phosphate Project (the Project):

- Ammaroo Phosphate Project, Referral for Significant Variation, Verdant Minerals Pty Ltd, 9 November 2022 (GHD)
- Ammaroo Phosphate Project, Appendices, Verdant Minerals Pty Ltd, 9 November 2022 (GHD)

We have also reviewed the 2017 Environmental Impact Statement (EIS) and EIS Supplementary Report prepared by GHD for the original phosphate mine and beneficiation plant.

Under the Northern Territory *Environment Protection Act 2019* we understand that the Project is in the Referral phase, during which the Northern Territory Environment Protection Authority (NT EPA) decides the level of environmental assessment required (i.e., Tier 1, 2 or 3).

We consider that there are significant gaps and inconsistencies in the information and analysis provided in the Referral documents that require further consideration, assessment and consultation and accordingly, that the Project should be assessed at the Tier 3 (Environmental Impact Assessment) level. This would enable the issues identified in this report to be fully considered and for contemporary consultation on the impacts of the whole Project with Traditional Owners and others affected by the changes to occur.

1.1 Background To WolfPeak

WolfPeak is a specialist environmental and sustainability consultancy based in NSW with its main offices in Sydney and Port Macquarie and staff located in Melbourne, Coffs Harbour, Wollongong and Moree.

Our focus is on providing environmental, ecological, sustainability and auditing project and strategic advisory services to government and communities, proponents and design and construction contractors in the private and public infrastructure sectors, including but not limited to:

- Inland Rail Project (Australian Rail Track Corporation)
- Sydney Metro (Transport for NSW, WeBuild, Gamuda, John Holland, CPB etc)
- Wollongong Coal
- Snowy 2.0 (Future Generation Joint Venture)
- Coffs Harbour Bypass (Gamuda Ferrovia Joint Venture)
- NSW Northern Rivers Reconstruction Corporation
- Port Authority of NSW
- Local councils in the Mid North Coast region of NSW
- NSW National Parks and Wildlife Service
- Geodynamics Geothermal Development Area (Cooper Basin, SA)

- Wild Dog Fence Extension Project (NSW/Qld Border).

We are regularly appointed as independent Environmental Representatives and Auditors by the NSW Department of Planning and Environment (DPE) on major development and infrastructure projects including Inland Rail, NSW Department of Education school upgrade projects, NSW Health hospital upgrade projects and Port Botany operations to name a few. In these roles we are trusted to act and advise in an independent capacity and our reports are made publicly available and relied on for assurance purposes by government agencies, proponents and the community.

Steve Fermio (report author) is also an independent environmental expert appointed by the NSW DPE to the Wollongong City and Lane Cove Council's Independent Local Planning Panels. These Panels determine development applications within those two local government areas that are of a contentious nature or where significant departures from planning controls are proposed.

Accordingly, we have approached this review with the same level of diligence and analysis that we apply to all of our work, where we are expected to deliver and uphold a high standard of independent professional advice and expertise.

We have also utilised the services of experts in the fields of cultural heritage and ground and surface water, to review the Referral and EIS documentation and provide input to this advice. Their details are provided below:

- Cultural Heritage: Tim Hill (BA Hons. Archaeology and Palaeoanthropology University of New England). Heritage Management and Planning Pty Ltd
- Ground and surface water: Dr. Ryan I.J. Vogwill, Doctor of Philosophy (Applied Geology) - Curtin University, Member Australian Institute of Geoscientists. Hydro Geo Enviro Pty Ltd.

1.2 Environmental approvals

The Referral states that the original Project (phosphate mine and beneficiation plant) was approved under an EIS prepared in 2017. However, apart from having been assessed and recommended for approval in 2018 by the NT EPA (NT EPA Assessment Report 87), we are not aware of any approval or authorisation having been issued under NT legislation¹.

Section 1.4.1 of the NT EPA's Assessment Report 87 states that at the time that report was written, the Mining Management Act (MM Act) was the primary legislation for the authorisation of mining activities and the regulation of mining sites in the Territory. Section 1.1 of the Assessment Report makes clear that it in itself is not intended to provide an environmental approval. The conditions recommended by the NT EPA in its Assessment Report would have formed the basis for any authorisation issued under the MM Act. However, as we are not aware of any such authorisation having been issued, it seems incorrect to say the original project described in the 2017 EIS was "approved" under NT legislation.

If no NT approval or authorisation was issued for the original Project described in the 2017 EIS, there is no reason why the whole Project and all of its potential, new and foreseeable impacts should not be the subject of a new EIS prepared under contemporary NT and Federal legislation

¹ EPBC approval (no 2014/7260) was issued by the then DoEE on 19 June 2018 for the clearing associated with the phosphate mine as described in the 2017 EIS

and policies, and for proper consultation with Traditional Owners and others impacted by the Project to occur. The Proposed Project's impacts need to be considered as a whole, rather than in two parts, as they are inextricably linked.

The whole Project should be reassessed and considered in light of the significant changes to its impacts (as detailed in the sections below), which have been brought about by the addition of the fertiliser plant, and changes to NT and Federal environmental and GHG policies and legislation that have occurred since the EIS was prepared in 2017. This would be best achieved via a new Tier 3 EIS process.

2. CULTURAL HERITAGE (Archaeological Sites)

Our advice only addresses archaeological aspects, noting that cultural heritage also includes intangible and living heritage, such as sacred sites. The potential disturbance or destruction of sacred sites would have an immensely detrimental effect on Aboriginal cultural values and this aspect has been addressed separately in the CLC's submission on the project.

2.1 Involvement of Traditional Owners

The Referral does not confirm that the CLC, as representatives of the Traditional Owners, were engaged in the archaeological survey, significance/impact assessment or the development of the Cultural Heritage Management Plan, or provide a summary of the recommendations of the CLC, as representatives of the Traditional Owners, to mitigate impact to Aboriginal archaeological values within the proposal footprint.

2.2 Adequacy of previous archaeological assessment

The Referral does not confirm that the additional fertiliser production plant was included within the area of the 2017 archaeological survey/assessment undertaken by Extent Heritage and as such it is not possible to make an informed view on the report or its recommendations with regard to the Project as a whole.

Furthermore, the methods to identify and differentiate sites are not clearly defined in the Referral, making it difficult to make an informed view on the nature and extent of archaeological sites. The Referral report has not demonstrated that the 'isolated artefacts' are not connected or form part of a larger cultural site complex (i.e. the quarry sites, stone artefact scatters and isolated artefacts form part of the same 'site'). The Referral notes that the quarries are located in the Chabalowe Formation but does not consider the relationship between the quarry sites and the numerous smaller sites or isolated artefacts on the surrounding red earths and sands. In the absence of material differences in the sites or clear delineation of landforms that might determine site boundaries, the conclusion that 76 artefacts are 'isolated' requires reconsideration.

2.3 Assessment of significance

The Referral report states that the assessment of significance is based on 'archaeological' significance as determined using the ICOMOS Burra Charter (Australian ICOMOS 2013). None of the archaeological sites are assessed as being of 'High or Exceptional' significance.

However, the Referral has not considered the connection between the archaeological sites and the sacred sites or considered that the archaeological sites may form part of the cultural/ spiritual landscape. Additional information is required to understand the weighting of the significance assessment criteria and how the assessment of 'Spiritual' significance was undertaken.

The location of Aboriginal sites outside of sacred sites exclusion/ restricted areas cannot be taken as evidence that the archaeological sites are not also of spiritual significance. In Central Australia,

a complex of sites as described by the referral report would be assessed as moderate - high based on the following considerations:

- Representativeness.
- Rarity.
- Research potential.
- Intactness.

This takes into account the relative paucity of archaeological surveys and research in the Sandover/Plenty region and the ongoing use and connection of Aboriginal people to the landscape.

2.4 Impact assessment

The increment of change to the archaeological/cultural landscape has not been adequately considered when determining the impacts of the Project. The Referral notes that of the known sites (n=110), 20 (18%) will be directly impacted and a further 61 (55%) sites have the potential to be indirectly impacted. As such, the potential proportion of the known archaeological assemblage that will be damaged, or potentially damaged, from the proposal is in the order of 75%. This increment of change to the known archaeological assemblage would be moderate to high, which is inconsistent with the statement in the Referral that the impacts from the proposal are low to medium.

2.5 Mitigation measures

The primary mitigation measure is identified as 'avoidance' which is inconsistent with the conclusion that only 25% of the sites are subject to avoidance.

The management response is primarily based on the significance assessment that has ranked isolated artefacts and low-density stone artefact scatters as being of low conservation significance when compared to quarries and larger stone artefact scatter. However, the mitigation measure does not appear to have taken into consideration the accumulated impact of the proposal. If the potential impact to the archaeological assemblage is in the order of 75%, the isolated artefacts and low-density artefact scatters will be subject to damage at a proportionately higher rate. An appropriate management response is to ensure that a representative sample of site types is conserved through site avoidance, which may involve additional investigation to identify low density artefact scatters and isolated artefacts outside the project footprint.

2.6 Conclusions

- The Referral does not confirm that the additional fertiliser production plant was included within the 2017 archaeological survey / assessment undertaken by Extent Heritage and as such it is not possible to make an informed view on the report or its recommendations with regard to the Project as a whole.
- The Referral does not confirm that the CLC, as representatives of the Traditional Owners, were engaged in the archaeological survey, significance/impact assessment or the development of the Cultural Heritage Management Plan, or provide a summary

of the recommendations of the CLC, as representatives of the Traditional Owners, to mitigate impact to Aboriginal archaeological values within the proposal footprint.

- The conclusions of the Referral report with respect that the fertiliser production plant will not have significant impacts to Aboriginal archaeological values are inconsistent with the findings of the Extent (2017) report that approximately 75% of the known archaeological landscape will be directly or indirectly impacted by the proposal subject to the 2017 assessment.

3. NOISE IMPACTS

In its submission on the Referral the CLC will also address the significant effect that noise impacts will have on Aboriginal cultural values and the intergenerational transmission of knowledge.

3.1 Assessment

Mapping provided by the CLC indicates that there are at least ten culturally sensitive sites located within or very close to the Mining Leases. However, it cannot be definitively stated that there are only ten culturally sensitive sites located within the Mining Leases, as these sites only represent those previously recorded by CLC.

Based on advice from the CLC, Traditional Owners have indicated that they will need to continue to access these sites regularly, and the 'type of use' of these sites includes ritual activity (cleaning sites, removal of grass, ritual actions, singing of songs and sharing traditional stories of the sites with younger generations).

Under Aboriginal tradition, these types of ritual activity must occur in situ at the site, and elders emphasise that the culturally correct way of instructing and teaching the younger generation about the songs and stories associated with sites is for this teaching to occur on country at the relevant site. Noise impacts are likely to affect the ability of traditional owners to effectively sing songs and communicate site information to younger generations, particularly for those sites within and in close proximity to the proposed pit and fertiliser production areas. It is also unclear how safe access to such sites will be maintained during the construction and operation of the proposed Project.

We note that there are three sites within Exclusion Zone 5 that appear to be situated within or in very close proximity to the pit and processing areas and it appears from overlaying the available mapping² that these sites are located within the 40dBA – 50dBA operational noise contours. This indicates that daytime noise levels are predicted to exceed the *Project specific assigned noise trigger level*³ (daytime), of 40 LAeq (15 min) for sensitive receivers at the three sites. Exceedances of the evening and night time trigger level of 35 LAeq (15 min) are even greater.

Given the nature of the activities taking place at these sites, which include teaching and singing, they should be considered sensitive receiver sites and, on the evidence available to us, the impact of operational noise on these sites – in the absence of any attenuation measures - is likely to exceed the *Project specific assigned noise trigger levels* (day, evening and night), and have a deleterious impact on cultural learning activities taking place at the sites.

We note that the noise assessment in the Referral completely ignores these sites and places the nearest sensitive receiver as the Accommodation Village which is located 3.6km from the mine and fertiliser production area. This is a significant omission which needs to be addressed in a new EIS.

² Noting that the operational noise map in the Referral does not identify the location of the cultural sites

³ Under the NT Noise Management Framework Guideline (2018) the project specific assigned noise level is a recommended mandatory limit and if exceeded will require noise management mitigation actions to be taken by proponents of commercial or industrial premises.

3.2 Conclusions

- Given the nature of the activities taking place at these sites, which include teaching and singing, culturally sensitive sites located within the Mining Lease should be considered sensitive receiver sites and a revised noise assessment undertaken which recognises them as such.
- The impact of construction and operational noise emissions on ritual activities taking place at all of the culturally sensitive sites located within the Mining Lease should be reviewed in consultation with Traditional Owners and presented in a revised noise assessment provided in a new EIS for the Project.
- Further consultation with Traditional Owners is required to understand how safe access to cultural sites located near to the proposed mine and fertiliser areas could be maintained during its construction and operation should it be approved.

4. AIR QUALITY EMISSIONS (NON GHG)

4.1 Assessment

The potentially corrosive impacts of nitrogen and sulphur dioxides and sulphuric acid on vegetation and rock art are a significant issue on the Burrup Peninsular in Western Australia which have led to numerous studies and assessments in that area (e.g. Perdaman Urea Project).

We have reviewed a map of cultural sites recorded by CLC and NT Aboriginal Areas Protection Authority which is not exhaustive of all sites in the area, only those that have been recorded in areas subject to previous work programs. Based on the mapping available, at least ten culturally sensitive sites located within or in very close proximity to the Mining Leases and of these, seven are groundwater dependent and may therefore be vegetation related.

The CLC has advised that the nearest rock art sites are located approximately 35km from the Project site but that there are sites closer to the mine that have features (rock related, vegetation etc) that could be affected by emissions from the mine or fertiliser production plant.

Without knowing the nature, extent or impact of emissions on rock surfaces in the vicinity, it is difficult to say what impact the emissions will have on the cultural values of sacred sites in the vicinity that have rock features, but are not necessarily conventional rock art sites. The cultural significance of sites that are exposed stone formations may also be irrevocably damaged by the emissions over time.

The air quality assessments provided in the 2017 EIS and Referral documents are primarily focussed on human health impacts and do not consider the impact on sacred sites with rock features, sites with stone formations or sites with important vegetation. The cultural heritage and vegetation related impacts need to be considered in a revised air quality impact assessment that forms part of a new EIS for the Project.

We also note that section 7.2 of the air quality assessment included in the Appendices to the Referral states:

“The emission rates, and source locations used for the new MAP/DAP plant were based on early-stage design information, and included:

- *Some emission guarantees provided by Licensors.*
- *Emission estimates based on best available techniques.*
- *Source locations based on current plant layout maps.*

As the design of the plant progresses, and as more detailed information emerges, the emissions and source locations used in the modelling exercise may be subject to change. However, given the margin of compliance with key pollutants from the MAP/DAP plant, it is expected that only major changes to the design would lead to changed impacts which would exceed the criteria levels.

It is recommended that an updated air quality assessment is completed during detailed design, to verify the progressed design’s compliance with the relevant air quality objectives from the fertiliser production process are a new aspect in the revised Project.”

Accordingly, there is sufficient uncertainty in the emission rates and sources that would necessitate a further assessment of air quality impacts were the Precautionary Principle to be applied as part of the environmental assessment process.

4.2 Conclusions

- The air quality assessments undertaken for the proposed Project are primarily focussed on human health impacts and do not consider the impact on sacred sites with rock features, sites with stone formations or sites with important vegetation. The cultural heritage and vegetation related air quality impacts need to be considered in a revised air quality impact assessment, undertaken in consultation with Traditional Owners, that forms part of a new EIS for the Project
- An EIS should include an updated air quality assessment based on more detailed design to verify compliance with the relevant air quality objectives, and any potential impacts on cultural sites located within the Mining Leases.

5. VISUAL IMPACTS

5.1 Assessment

Neither the EIS nor the Referral reports have considered the visual impact of the Project from the perspective of Traditional Owners.

There are at least ten culturally sensitive sites located in or in very close proximity to the Mining Leases and a significant number of additional sites that are very likely to have a direct line of sight to the Project's infrastructure - including several stacks between 65 to 80m (20 to 24 stories) in height - due to the relatively low topographic relief of the area.

There has been no consultation on, nor assessment of, the potential visual impact of what will be a new industrial facility imposed on this natural landscape.

The significant height of the stacks (and any visible emissions from them) means they may be clearly visible from many culturally sensitive sites and may impact on the ongoing use of the sites by Traditional Owners.

5.2 Conclusions

- An EIS should include an assessment of the potential visual impact of proposed mine and fertiliser production facilities (including perspective drawings, photo montages etc.) – and in particular, the stacks and any emissions from them - on the landscape and ongoing use of culturally sensitive sites that are within sight of them. This should include consultation with Traditional Owners.

6. BIODIVERSITY

In the general context of Aboriginal cultural understandings of spiritual interconnections of land, people and local plant and animal species, the loss of species can be perceived by Aboriginal people as a symptom of a disturbance to the spiritual equilibrium and interconnectedness of the spiritual and physical world.

Species loss/extinction can also provoke a sense of sadness and loss in reflecting on what species of plants/animals were once observed in the landscape compared to the present day. Accordingly, the loss of biodiversity could have a significant impact on Aboriginal cultural values. We understand that the CLC will also make a separate submission on this impact.

6.1 Land clearing

A total of 3775 ha of native vegetation clearance was granted EPBC approval (no 2014/7260 issued on 19 June 2018) for the phosphate mine. The Referral claims that the Proposed Project will not exceed this EPBC Act approved clearance, as the additional fertiliser production plant infrastructure will be constructed within the previously allocated disturbance area.

However, the proposed changes to the project will cause it to be classified as a Large Greenhouse Gas (GHG) Emitter under NT's New and Expanding Large Emitters' Policy introduced in 2021. This will require a GHG Abatement Plan to be put into place, including the installation of renewables (wind, solar, batteries, transmission lines and supporting infrastructure). Consequently, there will likely be additional land clearance required for the Proposed Project which is yet to be defined (see also section 9.3 of this report).

Accordingly, it is entirely foreseeable that the EPBC Act approved threshold for land clearance will be exceeded by the proposed Project. Vegetation clearance was listed as a significant impact on Matters of National Environmental Significance (threatened and migratory species) in the original EIS, triggering referral under the EPBC Act in the first place.

Any additional land clearing will need to be assessed to determine whether it will have a significant impact on the potentially occurring threatened and migratory species in the project area. If the impact is deemed significant, referral back to the Department of Environment, Energy, Climate Change and Water (DEECCW) will be required.

6.2 Grey Falcon now listed under EPBC Act

The Grey Falcon (*Falco hypoleucos*) was listed as Vulnerable under the EPBC Act in July 2020. The original EIS only assessed impacts on this species under NT legislation, and the Referral did not provide further assessment under the EPBC Act. An updated desktop search detailed one additional EPBC-listed species, the Ghost Bat, which the Referral did assess, however the Grey Falcon was not included.

An assessment of significance under the EPBC Act needs to be completed for the Grey Falcon to determine the likelihood of a significant impact occurring. If a significant impact is likely, the Proposed Project will need to be referred back to DEECCW for assessment and approval.

6.3 Key Threatening Processes

The Proposed Project qualifies for Large GHG Emitter status, and as such an additional Key Threatening Process (KTP) listed under the EPBC Act needs to be addressed:

- ***Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases***

This KTP consists of reductions in the bioclimatic range within which a given species or ecological community exists due to emissions induced by human production of greenhouse gases⁴. Arid environments are included in the ecosystems in which this KTP occurs.

Although a KTP does not trigger the EPBC Act¹, the impact this KTP may have on a Matter of National Environmental Significance (i.e. threatened or migratory species) may be significant, warranting referral under the EPBC Act.

For example, the Grey Falcon was considered a likely potential occurrence in the 2017 EIS. Current conservation advice lists Climate Change, more specifically “increased temperatures in arid and semi-arid Australia,” as a Very High threat for the Grey Falcon⁵. This impact was not assessed in the 2017 EIS or Referral.

All potentially occurring threatened and migratory species need to be assessed against the impacts of climate change caused by increased GHG emissions from the project.

6.4 Proposed airfield

A new airfield has been proposed to be built adjacent the accommodation village. Although required land clearance has been considered (to occur within approved disturbance area), impacts of air strike on threatened fauna have not been addressed in the Referral.

Threatened species potentially impacted:

- Grey Falcon (Vulnerable - EPBC Act & TPWC Act)
- Glossy Ibis (Migratory EPBC Act)
- Rainbow Bee-eater (Migratory EPBC Act).

This is important given the significant increase expected in flights to/from the proposed site associated with the stated uplift in numbers of construction and operational personnel for the fertiliser production facility.

6.5 Threatened species potential - Greater Bilby

The Greater Bilby was considered to have a low likelihood of occurrence in the western half of the access corridor, and a significance assessment under the EPBC Act concluded it would have no significant impact on this species. However, there is a potential for the level of impact on this species to change when the additional impacts (including land clearing associated with

⁴ DCCEEW (2022). Key threatening processes under the EPBC Act. <https://www.dcceew.gov.au/environment/biodiversity/threatened/key-threatening-processes>

⁵ DCCEEW (2022). Species Profile and Threats Database. <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

foreseeable renewable energy generation, GHG emissions and associated Climate Change) is included.

Furthermore, Traditional Owner's observations and records of this species were ignored in their submission (via the CLC) on the 2017 EIS and in our view greater effort should be expended to collect and properly consider any and all new information on the Greater Bilby in a new EIS for the whole Project that includes all of the likely foreseeable clearing associated with renewable energy infrastructure.

We consider that several key components proposed in the Referral require a greater level of assessment on their impacts to biodiversity than what is currently provided. A number of these require assessment at a federal level (under the EPBC Act), including assessment of the Grey Falcon, as well as updated assessment of all threatened species listed in the Referral with respect to extended land clearing and higher greenhouse gas emissions.

In light of the above, we consider it is highly likely the Proposed Project will have a significant impact on one or more of these components, and as such will need to be referred back to the DEECCW for assessment and approval under the Federal EPBC Act.

6.6 Conclusions

- Several key components proposed in the Referral require a greater level of assessment on their impacts to biodiversity than what is currently provided. A number of these require assessment at a federal level (under the EPBC Act), including assessment of the Grey Falcon, as well as updated assessment of all threatened species listed in the Referral with respect to extended land clearing and increased greenhouse gas emissions.
- The proposed Project qualifies for Large GHG Emitter status, and as such an additional Key Threatening Process (KTP) listed under the EPBC Act (*Loss of climatic habitat caused by anthropogenic emissions of greenhouse gases*) needs to be addressed.
- In the 2017 EIS the Greater Bilby was considered to have a low likelihood of occurrence in the western half of the access corridor, and a significance assessment under the EPBC Act concluded it would have no significant impact on this species. However, there is a potential for the level of impact on this species to change when the additional impacts (including land clearing associated with foreseeable renewable energy generation, GHG emissions and associated Climate Change) is included. This needs to be the subject of a fresh assessment in an EIS.
- Traditional Owner's observations and records of the Greater Bilby were ignored in their submission (via the CLC) on the 2017 EIS. Greater effort should be expended to collect and properly consider any and all new information on the Greater Bilby in a new EIS for the whole Project that includes all of the likely additional clearing associated with renewable energy generation.

7. FINAL LANDFORM AND REHABILITATION

7.1 Assessment

The Referral provides little detail on mine closure or rehabilitation other than the following statement in section 5.5:

“The Mine Closure Report (Appendix Q of the Approved EIS) will be updated to include the Proposed Development for submission with the Mine Management Plan (MMP), under the MM Act. This will include details of the closure and rehabilitation plans for the Proposed Project. Generally, the closure and rehabilitation will comprise the activities below in addition to the closure activities for the Approved Project:

- *Capping of the GSA.*
- *Decommissioning and disassembly of plant and associated infrastructure.*
- *Re-profiling of the final surface.*
- *Subsoil and topsoil re-spreading and contour ripping.*
- *Revegetation and weed control.*
- *Ongoing monitoring”.*

There is no mention of the role or interests of the Traditional Owners in setting the final rehabilitation and land use objectives for the area impacted by the project. Additional clearing that is highly likely to be required for renewable energy generation is something that Traditional Owners will be very interested in, however, this issue has not been addressed in the Referral.

7.2 Conclusions

- The Traditional Owners should be consulted in setting the final rehabilitation and land use objectives for the area impacted by the project, and on any additional clearing that is likely to be required for renewable energy generation, via a new EIS for the Project.

8. GROUND AND SURFACE WATER

Comparing the original Project as conceived in 2017 to the proposed Project, groundwater consumption has almost doubled, from 4.6GLpa to 8.5GLpa. This is an enormous change with potential for impacts to the water supply for the community of Ampilatwatja, and potential disturbance or destruction of water dependent sacred sites (such as the death of sacred trees) from the lowering of the water table. The latter would have an immensely detrimental effect on Aboriginal cultural values.

8.1 Groundwater Modelling

The groundwater modelling has been peer reviewed, as per the Australian Groundwater Modelling Guidelines and aquifer testing (time-drawdown not individual borehole or slug tests) undertaken and the results used to parametrise the groundwater model, providing guidance for hydraulic parameters near the site. Notwithstanding, there is still significant uncertainty in hydraulic parameters across the rest of the study area which is explored (in terms of impact potential) in the predictive uncertainty analysis.

The modelling exercise investigates the groundwater model's predictive uncertainty both in terms of hydraulic parameters (including recharge) and conceptual uncertainty in terms of the hydraulic status of boundary conditions. The range of drawdowns predicted under the uncertainty analysis at the identified receptors should be manageable in terms of impact potential.

However, there is currently a lack of observation data (groundwater levels) in the southern part of the model domain which reduces the model's veracity in this part of the domain (which includes the area in the vicinity of the community of Ampilatwatja). Given that the highest impacts are predicted in the northern part of the model domain this reduces the implications of the lack of data in the southern half of the model domain. Although the P90 drawdown at the water supply bore for Ampilatwatja's production bore is still predicted to be approximately 3 metres.

It would be preferable if transient (time varying) heads were available to calibrate/condition the model, to test the model more effectively against recharge and storage properties. This can (and should) be undertaken in the future once more data has been collected. Revisiting the model once more data becomes available should be undertaken for model validation purposes.

Groundwater levels have been averaged across all readings at each individual bore and then used to generate the model's initial head conditions via steady state modelling. The depth to groundwater/hydraulic head data used in model conditioning (and calibration) is based on a data set that has not been well described in terms of the time period individual readings were collected. This reduces the dataset's usefulness as synaptic snap shot as groundwater levels will vary through time as a function of recharge and discharge processes. Current groundwater levels will vary from those used in the modelling.

The Referral states that the depth to groundwater is greater than 15m across the entire area and that there is no potential for groundwater dependant vegetation to be impacted by drawdown. Studies in the nearby Ti Tree Basin have suggested that groundwater use can occur at a depth of up to 20m but is most likely when groundwater levels are 15m or less. Accordingly, any high value (biodiversity or cultural values) with a pre project depth to groundwater of 20m or less should be identified and monitored if drawdown at any of these sites is going to be significant.

We suggest that the P90⁶ drawdown 1m contour would be a suitable extent for “significant drawdown”. According to the model’s output (Referral Appendix E page 264), there are some areas with depth to groundwater near 15m. This is not based on a sufficiently robust dataset to preclude any or all vegetation in the study area from using groundwater.

Given that depth to groundwater mapping based on measured data is not provided, and is a regional assessment, the less than 20m and less than 15m depth to groundwater areas cannot be currently exhaustively identified. Depth to groundwater data at any potential groundwater dependant vegetation needs to be based on measured, not modelled, groundwater levels when using such definitive cut offs for groundwater dependence.

Given the lack of site-specific modern data on groundwater levels, groundwater dependent cultural sites located within the P90 1m drawdown area should be investigated (unless a nearby site (within 1km) has groundwater level data and the depth to groundwater is considerably greater than 20m) for the impact of groundwater drawdown. Based on mapping provided by the CLC, there are at least 72 culturally sensitive, groundwater dependent sites within the P90 1m drawdown contour and other sites may need to be investigated following further consultation with Traditional Owners.

The potential disturbance or destruction of sacred sites such as the death of sacred trees due to a lowering of the water table would have an immensely detrimental effect on Aboriginal cultural values. Accordingly, the potential impact of groundwater drawdown at these sites should be further assessed in consultation with Traditional Owners and be fully addressed in a new EIS for the proposed Project.

8.2 Surface Water

A summary of the Surface Water Modelling is provided in the Referral, but the full report was not available at the time of this review. This creates some uncertainty as the full model details were not available. However, based on what is provided the modelling meets industry standards and risks to surface water environment are low, and manageable with industry standard surface water interventions (diversions, sedimentation basins etc).

The Referral report states that there is a lack of surface water receptors with environmental value, however, if any areas of high cultural value exist in the surface water drainage downstream of the site they should be assessed. A scan of the Water Observations from Space data⁷ suggests that there are no areas which retain surface water for significant periods (defined as inundated more than 1% of the time) post the ephemeral episodic surface water flow that is typical of the hydrology of the area. This reduces the risk of impact from surface water contamination, as during periods of flow there will be a significant dilution effect and no discrete receptors (wetlands, river pools etc).

The project is well-sited and is as far away as possible from the ephemerally active drainages with the greatest risk of impact from flooding apparent on the air strip and external mine access roads. The mine and associated infrastructure are not anticipated to be directly impacted by external flood water, and the realigned Sandover-Murray Downs Road will also provide some additional flood protection along with flood levees and alignment drains. Internal flows in the site during high

⁶ P50 is the 50% probability (50% of the uncertainty scenarios predict more drawdown). This is commonly considered a best estimate or base case. P90 is the 90% probability (only 10% of the uncertainty scenarios predict more drawdown). This is commonly considered a worst case scenario.

⁷ <https://www.nationalmap.gov.au>

magnitude rainfall events will need to be managed to prevent off site discharge of contaminants or unsafe working conditions, but this can be achieved with the industry standard techniques that are proposed to be applied.

8.3 Conclusions

- The potential disturbance or destruction of sacred sites such as the death of sacred trees due to a lowering of the water table would have an immensely detrimental effect on Aboriginal cultural values. Accordingly, the potential impact of groundwater drawdown at such sites should be further assessed in consultation with Traditional Owners and be fully addressed in a new EIS for the proposed Project
- Given the lack of site-specific modern data on groundwater levels, groundwater dependent vegetation cultural sites located within the P90 1m drawdown area should be further investigated for the impact of potential groundwater drawdown.
- Based on mapping provided by the CLC, there are at least 72 culturally sensitive, groundwater dependent sites within the P90 1m drawdown contour and other sites may need to be investigated following further consultation with Traditional Owners.
- The Referral states that there is a lack of surface water receptors with environmental value, however, if any areas of high cultural value exist in the surface water drainage downstream of the site they should be assessed. This should be undertaken as part of a new EIS.
- Further assessment of the impact on groundwater drawdown at the Ampilatwatja primary production bore (main water supply for community of Ampilatwatja) - which is predicted to be 3 metres (and potentially the Atnwengerrpe community bore) - is required with details provided on how any impacts will be remedied. This should be undertaken in consultation with the relevant community and included in a new EIS for the proposed Project.

9. GREENHOUSE GASES

9.1 GHG emissions and net zero commitments

The Referral states that the Project will increase the Northern Territory's total annual emissions by 2.84% each year. This includes the Project's Scope 1 and 2 emissions which only account for 33% of the total annual operational emissions for the project. The complete GHG impact of the proposed Project including supply chain scope 3 emissions is more significant and the potential GHG contribution conflicts with the net zero emissions targets committed to by the Northern Territory Government, the Australian Government and 140 countries around the world.

It is not clear how the Project will reduce its operational emissions and contribute to achieving net zero targets. The Referral includes several emissions abatement strategies as 'under consideration' but there is a lack of clarity on what the Proponent will commit to within the lifetime of the proposed Project. Given the feasibility challenges that exist for key emissions reduction technologies such as green ammonia, further detail is required to demonstrate how the Proponent will address these challenges. Without further consideration, there is a real risk that no reductions will be achieved.

It is important that the investment in emissions abatement strategies is clarified prior to approval so this can be incorporated into the economic feasibility of the proposed Project. In our experience, sustainability plans that are developed after project approval can be less robust due to budgetary and timeline pressures. A detailed GHG management plan should be submitted as part of an EIS to ensure there is a feasible and realistic pathway for the Project to achieve net zero emissions by 2050.

9.2 Renewable energy feasibility

There is a gap in information on the economic analysis of renewable energy technology for the Proposed Project. Solar PV, and to some extent battery storage, is a technologically and economically viable solution, yet these are expected to be integrated in the Project within the next decade, rather than from the outset.

Renewable energy has been the cheapest form of newly installed energy in Australia since 2018⁸. Several solar PV farms currently exist in the region to support local communities, indicating the region has viable solar resources. Further evidence is required to justify the decision to postpone the installation of this proven and affordable technology.

9.3 Land clearance for renewable energy infrastructure

As noted in Section 3.1 of this report, the proposed installation of renewable energy technology will likely require additional land clearance beyond what was approved under the EPBC Act in 2018.

The scope and impact of the additional land clearance for renewables is inconsistently discussed in the Referral and 2017 EIS documents. For example, in the Referral, Table E2 – Summary of Scope Changes (Land Clearing) states that *"No allowance has been made for the installation of*

⁸ <https://www.csiro.au/en/news/News-releases/2022/GenCost-2022>

significant renewables infrastructure (solar PV, wind turbines, batteries) that may be required in the future to meet any requirements under a Greenhouse Abatement plan” and in the comments section of the table that “There may be significant additional land clearance required for installation of renewable (wind, solar and batteries) associated with meeting a full GGAP when economic to do so – This is yet to be defined”. This contradicts Section 5.4 of the Referral which states the Project has made a nominal disturbance allocation of 350 hectares of land to accommodate up to 100 MW of Solar PV / wind farms as an initial allocation to meet GHG abatement plans. However, this also contradicts *Table 2-1 Disturbance area calculations – project footprint* of the 2017 EIS in which no allowance has been made for clearing for renewable infrastructure. The 100 MW renewable facility is not mentioned elsewhere in the Referral, including the Atmospheric Process section.

The location and area of land allocated for renewables needs to be clarified as this will have significant additional potential impacts on:

- the proposed Project’s GHG emissions through removal of sequestered carbon (clearing of vegetation)
- threatened and migratory species in the project area and
- cultural heritage sites.

This should be included on the relevant project maps and further assessed in an EIS to ensure the proper consideration of the full environmental and cultural impacts of the proposed Project occurs.

9.4 Carbon offsets

To reach net zero emissions, the Project’s GHG abatement plan (GGAP) will likely include the procurement of carbon offsets. Based on the current price of carbon offsets, this could range from \$1.5 million to \$15 million per year⁹. However, carbon offset prices are projected to increase 2 to 5 times the current price by 2035¹⁰ due to increased demand and supply scarcity. The financial impact and overall feasibility of the use of carbon offsets as a GHG abatement strategy needs to be included in the economic modelling for the proposed Project.

9.5 GHG emissions inventory

The Referral provides an overview of the estimated emissions of the Project at the construction and operational phases. There is limited detail regarding the methodology used for the emissions calculations, including assumptions, justified exclusions and data input quantities. A comprehensive GHG emissions report that meets international reporting standards should be provided in an EIS to verify that the reported emissions are a complete and accurate representation of the proposed Project’s GHG impact.

⁹ <https://carboncredits.com/carbon-prices-today/>

¹⁰ https://assets.ey.com/content/dam/ey-sites/ey-com/en_au/topics/sustainability/ey-net-zero-centre-carbon-offset-publication-20220530.pdf

9.6 Conclusions

- It is not clear how the Project will reduce its operational emissions and contribute to achieving the NT and Federal government's net zero targets. Given the acknowledged feasibility challenges that exist for key emissions reduction technologies such as green ammonia, further detail is required in an EIS to demonstrate how the Proponent will address these challenges.
- There is a gap in information on the economic analysis of renewable energy technology for the proposed Project. Solar PV, and to some extent battery storage, is a technologically and economically viable solution, yet these are expected to be integrated in the Project within the next decade, rather than from the outset. Further evidence is required in an EIS to justify the decision to postpone the installation of this proven and affordable technology.
- The location of land allocated for renewables needs to be clarified as this will have major consequences for the Project's GHG emissions through removal of sequestered carbon (clearing of vegetation) and potential impacts on threatened and migratory species and cultural heritage in the project area. This should be included on the relevant project maps in an EIS to aid in the proper consideration of the full environmental and cultural impacts.
- A GGAP is required to demonstrate how the project will contribute meaningfully to the Territory's target of net zero emissions by 2050. The NT Government's default position for a meaningful contribution is an expectation that projects commit to an overarching target of net zero emissions by 2050, or justify why an alternative target is appropriate. This is clearly an issue for further consideration and a detailed GGAP should be included in a new EIS that demonstrates a feasible pathway to achieve net zero emissions by 2050.
- To reach net zero emissions, the Project's GGAP will likely include the procurement of carbon offsets. Based on the current price of carbon offsets, this could range from \$1.5 million to \$15 million per year. However, carbon offset prices are projected to increase 2 to 5 times the current price by 2035 due to increased demand and supply scarcity. The financial impact and overall feasibility of the use of carbon offsets as a GHG abatement strategy needs to be included in an EIS.
- There is limited detail regarding the methodology used for the emissions calculations, including assumptions, justified exclusions and data input quantities. A comprehensive GHG emissions report that meets international reporting standards should be provided in an EIS to verify that the reported emissions are a complete and accurate representation of the proposed Project's GHG impact.

10. SOCIAL AND ECONOMIC

10.1 Opportunities for local Indigenous employment

The stakeholder consultation conducted for the Referral highlighted support for the proposed Project due to the employment opportunities from the local community in Ampilatwatja and the access to benefits payments for the community. There is limited detail on what types of employment opportunities will be available and how these will be matched to the skills and capacity of the local community, particularly without impacting employment in existing local businesses.

The Proponent has proposed to develop a Local Indigenous Employment Participation Plan to support local employment opportunities. In our experience, successful implementation of these types of plans requires significant investment, planning and ongoing commitment. Given the importance of this aspect to the community's support for the proposed Project, the Local Indigenous Employment Participation Plan should be included in an EIS. This will ensure local employment opportunities are appropriately considered and consulted on with the communities affected so they can be realised through the Project.

There is much scope for further consideration of what 'value' the proponent could give to the community, aside from providing local employment and think more expansively, and inclusively, about what 'value' could look like for the specific (and respectively diverse) communities and outstations impacted by the proposed Project.

There is an opportunity to go beyond the generic employment model typically used in mining agreements by aiming for something that involves a more in depth understanding of what desires and motivations already exist for the different generations and communities in the area. For example:

- Provide support for developing outstations.
- Offer youth leadership programs.
- Provide infrastructure, support etc to strengthen and enhance the stated goals, desires and motivations of the community through identifying the good work already being to meet these.

10.2 Community consultation and support

The Referral includes a review of the Economic and Social Impact Assessment (ESIA) that was prepared as part of the 2017 EIS and some key stakeholders were re-engaged. The social and economic impacts of the proposed Project compared to the 2017 Project are substantial and a review of the original ESIA is insufficient. The Project's impacts need to be considered as a whole, rather than two parts, as they are inextricably linked.

The Referral and Appendices do not include adequate detail regarding the consultation that was conducted for the Referral. It is unclear who was consulted, what they were consulted on, and the specific opportunities and concerns raised by each stakeholder group. The NT EPA's Assessment Report 87 states that all members of the community who are likely to be affected by, or to have an interest in the Proposal, should be identified and appropriately consulted. The Referral does not clearly demonstrate adherence to this requirement.

Similarly, Recommendation 12 of the NT EPA's Assessment Report includes the establishment of a Community Consultation Group to provide a forum for ongoing consultation and information sharing with Aboriginal, pastoral and other relevant stakeholders. This has not been addressed in the Referral.

A thorough social and economic impact assessment which includes appropriate consultation with all affected stakeholders should be included in a new EIS for the proposed Project.

10.3 Scope of employment

There are inconsistencies (both in numbers and how jobs are referred to) in the Referral and Appendices in the jobs created during the construction and operation of the proposed Project. The economic impact assessment in Appendix Q states that 2,832 FTE jobs will be created during the three years of construction and 556 full time jobs in each year of operation. *Table E1 – Project comparison* of the Referral states that there will be a peak of 1,600 jobs during construction and 400 jobs during operation. It is also not clear what proportion of these jobs will be occupied by local residents and Indigenous people (see Section 6.1). Section 15.1 of the Referral states that there will be an average of 830 FTE jobs during construction and 556 FTE direct worker jobs in each year of operation.

The increase in construction and operational jobs compared to the 2017 Project is substantial (Table E1, Referral) and lacks supporting evidence. A more detailed economic impact assessment should be conducted as part of a new EIS process to clarify the stated employment opportunities, and the number and types of employment opportunities for local communities in the region who will be most impacted by the proposed Project, and / or who could most benefit from employment and training opportunities.

10.4 Regional capacity for goods and services

The workforce required for the construction of the proposed Project is over five times higher than the 2017 Project, and two and a half times higher in relation to operations (Table E1, Referral), yet the proposed mitigation measures for managing the increased demand for goods and services, housing and other services in the region have not changed from the 2017 EIS.

Further consultation with service providers in the local region and major cities including Alice Springs, Tennant Creek and Darwin should occur as part of a new EIS process to assess the capacity of these towns to support the mobilisation of construction and operations workforce.

10.5 Conclusions

- The Proponent has proposed to develop a Local Indigenous Employment Participation Plan to support local employment opportunities. Given the importance of this aspect to the community's support for the proposed Project, the Local Indigenous Employment Participation Plan should be included in a new EIS. This will ensure local employment opportunities are appropriately considered and consulted on with the Traditional Owners so they can be realised through the Proposed Project.
- There is much scope for further consideration in a new EIS of what 'value' the proponent could give to the community, aside from providing local employment and think more expansively, and inclusively, about what 'value' could look like for the

specific (and respectively diverse) communities and outstations impacted by the Proposed Project. There is an opportunity to go beyond the generic employment model typically used in mining agreements by aiming for something that involves a more in depth understanding of what desires and motivations already exist for the different generations and communities in the area. For example:

- Provide support for developing outstations.
- Offer youth leadership programs.
- Provide infrastructure, support etc to strengthen and enhance the stated goals, desires and motivations of the community through identifying the good work already being to meet these.
- The Referral and Appendices do not include adequate detail regarding the consultation that was conducted for the Referral. It is unclear who was consulted, what they were consulted on, and the specific opportunities and concerns raised by each stakeholder group. The NT EPA's Assessment Report 87 includes the establishment of a Community Consultation Group to provide a forum for ongoing consultation and information sharing with Aboriginal, pastoral and other relevant stakeholders, which has not been addressed in the Referral. A thorough social and economic impact assessment which includes appropriate consultation with the Traditional Owners and other affected stakeholders should be included in a new EIS for the Project.
- There are inconsistencies in the Referral and Appendices in the number of jobs that will be created during the construction and operation of the proposed Project. It is also not clear what proportion of these jobs will be occupied by local residents and Indigenous people. The increase in construction jobs compared to the 2017 Project is substantial and lacks supporting evidence. A more detailed economic impact assessment should be conducted as part of a new EIS process to verify and clarify the stated employment opportunities and provide clarity on the availability of employment for the region.
- The workforce required for the construction and operation of the Project is significantly higher than the 2017 Project, yet the proposed mitigation measures for managing the increased demand for goods and services, housing and other services in the region have not changed from the 2017 EIS. Further consultation with service providers in the local region and major cities including Alice Springs, Tennant Creek and Darwin should occur as part of a new EIS process to assess the capacity of these towns to support the mobilisation of construction and operations workforce.
- Greater emphasis and explanation is needed on how the Proponent can support the goals and initiatives identified by the community, rather than pressing its own goals, initiatives, etc on the community. This would require significant further consultation with Traditional Owners during the preparation of a new EIS for the proposed Project.

11. OTHER ASPECTS

We have not completed a detailed review of other aspects of the Referral or 2017 EIS documents such as the Environmental Risk Assessment, Transport, Radiology, Waste Rock, Tailings and Hazardous Chemical and Human Health and Safety.

Accordingly, other than the issues outlined below – which are based on a preliminary review of the information provided - we have no other comments on the Referral or 2017 EIS documentation.

- The rail level crossing of Taylors Creek Road will be a point of conflict between road users accessing local communities (and the proposed Project itself) and trains transporting materials to and from the proposed Project site. Other than referring to NT Government standards for such crossings, there is no detail provided on how the safety of road and rail users will be ensured in the design of this crossing, or other minor road crossings along the proposed rail line. More detail is needed in an EIS on the design of level crossings along the rail line as this likely be of interest to those people and communities that travel this area to know how their safety will be ensured
- Experience on the construction of the Inland Rail Project in NSW has shown that significant erosion can occur downstream of culverts where water velocities and flows are concentrated after heavy rainfall events. More detail should be provided in the EIS on the design of scour protection downstream of the 17 drainage culverts along the proposed rail line and the extent of vegetation clearing associated with the scour protection works.
- It is unclear if any vegetation clearing associated with the rail line culvert scour protection works have been included in the disturbance area calculations in Table 2-1 of the 2017 EIS. As these are permanent works the clearing associated with their construction should be included in a new EIS.

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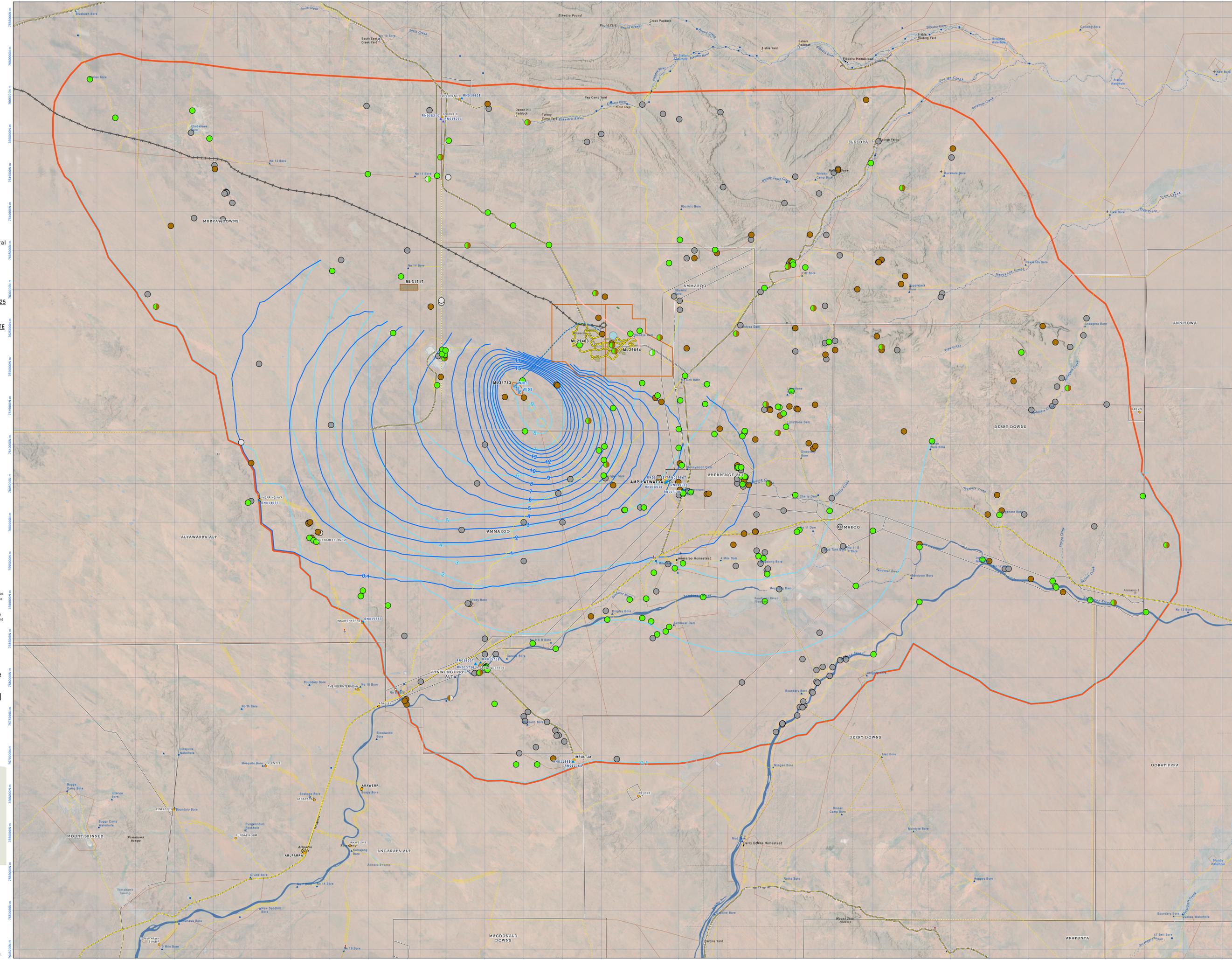
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ANNEXURE A - MAP

- Notes**
- Project Data**
- NTG Bores selection
 - Production
 - Investigation
 - Unknown
 - Site Type
 - Groundwater dependant
 - Groundwater dependant and mineral
 - Other and groundwater dependant
 - Mineral
 - Mineral and other
 - Other
 - Unknown
 - Postulated extent of drawdown
 - Drawdown Contours at Operations Year 20
 - Projected P50 Contours
 - Projected P90 Contours
 - VERDANT MINERALS - AMMAROO PHOSPHATE
 - Production Bores
 - Water Supply from Borefield
 - Proposed Railway
 - Murray Downs Road Diverted (approx. alignment)
 - Beneficiation Plant (BP)
 - Temporary Waste Stockpiles
 - Pit Extent
 - Tailings Storage Facility
 - ROM
 - Accommodation Camp
 - Ballast Area
 - MINERAL TITLES
 - MLA

- CLC Corporate Data**
- Towns & Roadhouses
 - Major Community
 - Minor Community
 - Homestead
 - Town Camp
 - Unknown Community Level
 - Major Road (Unsealed)
 - Minor Road (Unsealed)
 - Major Track
 - Track
 - State Border
 - Homestead
 - Landmark
 - Casasite
 - Bore
 - Windpump
 - Waterhole
 - Spring
 - Rockhole/Tank
 - Landing Ground
 - Building
 - Ruin
 - Registerable Mining Lease
 - Reserve
 - Right To Freehold Title
 - Special Purpose Lease
 - Unregistered Crown Land
 - Vacant Crown Land
 - Freehold
 - Aboriginal Freehold
 - Proposed
 - Flats
 - Watercourse Area
 - Major Watercourse
 - Minor Watercourse
 - Yard
 - Mine Area
 - Walking Trail
 - Fence
 - Cleared/Seismic Line
 - Sand Dune
 - Contours
 - Vegetation
 - Tenure
 - Building Lease
 - Crown Lease Perpetual
 - Crown Lease Term
 - Government
 - Grazing Licence
 - Pastoral Lease
 - Perpetual Pastoral Lease
 - Registerable Mining Lease
 - Reserve
 - Railway
 - Gas Pipeline
 - Oil Pipeline
 - Reservoir
 - Lake
 - Pondage Area

2022-316d Community bores and Sites within water table drawdown area for ML31713, ML29463 and ML29854



ANNEXURE B – ABOUT THE CLC

29. The CLC is a statutory authority established under section 21 of the *Aboriginal Land Rights (Northern Territory) Act 1976* (Cth) (**Land Rights Act**) and has functions and duties under Land Rights Act. These functions include:
- a) ascertaining and expressing the wishes and opinion of Aboriginals living in the area of the CLC's responsibility as to the management of Aboriginal land in the area;
 - b) protecting the interests of traditional Aboriginal owners of, and other Aboriginals interested in, Aboriginal land in the area of the CLC's responsibility; and
 - c) assisting Aboriginals in the taking of measures likely to assist in the protection of sacred sites on land (whether or not on Aboriginal land) in the area of CLC's responsibility.²
30. The CLC is also the recognised Aboriginal/Torres Strait Islander body for the southern region of the Northern Territory pursuant to section 203AD of the *Native Title Act 1993* (Cth) (**Native Title Act**) which includes Ammaroo Pastoral Lease, Elkedra Pastoral Lease, Murray Downs Pastoral Lease and Neutral Junction Pastoral Lease. The function of a native title representative body includes performing assistance and facilitation functions set out in section 203BB of the Native Title Act. Such functions are carried out pursuant to service agreements between CLC and the registered native title bodies corporate.
31. Ammaroo Pastoral Lease, Elkedra Pastoral Lease and Murray Downs Pastoral Lease are subject to a native title determination, *Apetyarr v Northern Territory of Australia [2014] FCA 1088* (**Sandover River Determination**). KAAI is the prescribed body corporate for this determination for the purposes of section 57(2) of the Native Title Act. KAAI performs the registered native title body corporate functions contained in section 57(3) of the Native Title Act in relation to the Sandover River Determination. The CLC assists KAAI with its functions.
32. Neutral Junction Pastoral Lease is subject to two native title determinations:
- a) *Pwerle v Northern Territory of Australia [2016] FCA 304*; and
 - b) *Arnerre, Wake-Akwerpe, Errene and Ileyarne Landholding Groups v Northern Territory of Australia [2011] FCA 765*,
- (together the **Neutral Junction Determinations**).
33. EAC and KTAAC are prescribed bodies corporate for the Neutral Junction Determinations for the purposes of section 57(2) of the Native Title Act. They are the registered native title bodies corporate which perform the functions in section 57(3) of the Native Title Act in relation to the Neutral Junction Determinations. The CLC assists EAC and KTAAC with their functions.

² Section 23(1) of the Land Rights Act

ANNEXURE C – CLC CONTACTS

Chinwe Ezeigbo

Senior Minerals and Energy Officer

Telephone: (08) 8951 6262

Email address: Chinwe.Ezeigbo@clc.org.au

Kate O'Brien

Senior Lawyer, Projects

Telephone: 08 8951 6236

Email address: Kate.O'Brien@clc.org.au