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Singleton Environmental Impact Statement Draft Terms of Reference

Introduction

1. The Arid Lands Environment Centre (ALEC) is Central Australia's peak community environmental organisation that has been advocating for the protection of nature and growing sustainable communities in the arid lands since 1980.

2. Water is fundamental to the work ALEC is engaged in. This is unsurprising as water underpins everything: it dictates where people live, where biodiversity thrives and how culture is maintained. Water is life; everything comes back to water. In Central Australia, ephemeral rivers traverse landscapes tracking million year old paths, permanent waterholes sustain life and act as critical refugia in climatically stressed environments and ancient groundwater systems store water which connects and sustains much life on the surface.

3. ALEC welcomes the opportunity to provide comment on the Singleton Environmental Impact Statement Draft Terms of Reference (**Draft ToR**).

4. Fortune Agribusiness Fund Management Pty Ltd (Fortune) referred a proposed action to the Northern Territory Environment Protection Authority (**NT EPA**) in relation to the Singleton Station Horticulture Development (**Singleton Development**).

5. The Project was referred under s. 48 of the *Environment Protection Act 2019* (NT) (**EP Act**) as a proposed action that has the potential to have a significant impact on the environment. On 7 March 2023, the NT EPA determined the Project must be assessed at the highest level of assessment, being Tier 3 Assessment by Environment Impact Statement (**EIS**).

6. ALEC supports and applauds the NT EPA's decision that the Singleton Development must be assessed by way of an EIS.

7. ALEC's submission first considers the regulatory and legal context. The *Environment Protection Act* 2019 (**EP Act**) is a relatively new and untested act. ALEC reiterates the objects of the Act and the central focus of the principle of ecologically sustainable development(**ESD**). Then, ALEC goes through the application of ESD as described by Chief Justice of the New South Wales Land and Environment Court, Brian Preston, an authoritative voice nationally. In this context, the **NT EPA**'s Environmental Factors and Objectives Guidance is considered. This section is significant as it highlights that the application of ESD has major ramifications for what information is required in the Draft ToR, where 'there is a shifting of an evidentiary burden of proof. A decision-maker must assume that the threat of serious or irreversible environmental damage is no longer uncertain but is a reality. The

burden of showing that this threat does not in fact exist or is negligible effectively reverts to the proponent'.[1] This circumstance also ensures that a proponent cannot rely on adaptive management for a project the size and scale of the Singleton Development.

8. Then, the submission focuses on the current state of the environment at the Territory and regional level. To understand how the EP Act can apply, and the scope of Environment Impact Statement (**EIS**) for the Singleton Development, background context of the state of environment is essential. The Singleton Development is operating at a time of ecosystem collapse where there are various threatening processes degrading the semi-arid environment in the Western Davenport region.

9. Then, ALEC provides comment on areas that the Draft ToR can improve, namely around:

    a. Groundwater dependent trees, soaks, springs and swamps

    b. The GDV Guideline

    c. Benchmarks for environmental factors and objectives

    d. Baseline biodiversity assessments

    e. Threatened species

    f. Cumulative impact assessment

    g. Climate change risk assessment

    h. Communicating and mapping groundwater drawdown

    i. Shallow groundwater systems

    j. Greenhouse gas emissions and reporting

    k. Adaptive management

    l. Other recommendations

10. Central to ALEC's submission is that the ToR must conserve groundwater dependent trees, soaks, springs and swamps. The Draft ToR lacks clarity as to whether groundwater dependent ecosystems (**GDEs**) will be protected

Recommendations

11. There are 14 recommendations listed below as well as 18 technical details (found on page 22-23) that must also be considered.

[1] Preston CJ, 2006, p.17. *Judicial Implementation of the Principles of Ecologically Sustainable Development in Australia and Asia.*

Recommendation 1: ToR requires the completion of a peer reviewed assessment on the impacts of the Singleton Development on groundwater dependent trees, soaks, springs and swamps

Recommendation 2: The ToR must exclude from the list of guidance documents (appendix B) *The Guideline: Limits of acceptable change to groundwater dependent vegetation in the Western Davenport Water Control District*. The document must not be relied upon in any manner.

Recommendation 3: The ToR must not adopt as its benchmark the 30% rate of GDV destruction from within the *The Guideline: Limits of acceptable change to groundwater dependent vegetation in the Western Davenport Water Control District.*

Recommendation 4: benchmarks for environmental factors must protect groundwater dependent trees, soaks, springs and swamps. The arid zone is already undergoing ecological collapse and the most resilience and biodiverse habitat must be protected.

Recommendation 5: The ToR must require Fortune Agribusiness to conduct fauna and flora surveys, to support the development of a baseline for the region. The existing surveys were conducted in 2019 during a multi-year drought and the hottest year on record. This is not representative data and is a catastrophic failure in experimental design.

Recommendation 6: Surveys for flora and fauna should include a focus on threatened species habitat

Recommendation 7: ToR requires Fortune to conduct a cumulative impact assessment

Recommendation 8: Singleton development does not result in additional drawdown on Iliyarne ALT

Recommendation 9: ToR require Fortune to conduct climate change risk assessment

Recommendation 10: Climate change risk assessment must include consideration of the role GDEs play as climate refugia, as well as the cumulative impact of a changing climate on groundwater dependent trees, soaks, springs and swamps.

Recommendation 11: ToR requires the full impact to GDVs to be quantified and communicated (including in mapping). This means for maps highlighting the perimeter of total drawdown, drawdown contour lines for 1m, 2m, 3m, 4m, 5m and then every fifth metre thereafter.

Recommendation 12: The conditions that support GDEs should be protected. Thus, the entire shallow groundwater area is a GDE not just where an isolated tree occurs. It is noted that the vicissitudes of recent history (e.g. fires, overstocking and severe droughts) determine where individual trees grow. However the same underlying conditions (i.e. shallow groundwater) occur throughout the region.

Recommendation 13: ToR requires Fortune to conduct annual and total Scope 1, Scope 2, Scope 3 emissions for CO_2, CH_4 and N_2O, including impacts on GDEs within drawdown footprint.

Recommendation 14: The NT EPA cannot rely on adaptive management to remedy the uncertainty, risks and impacts of the proposed Singleton Development.

Regulatory and legal context

Environment Protection Act 2019

12. In refusing or granting environmental approvals, regulators must make decisions under the EP Act.

13. Section 3 lists the objects of the Act. They include:

    a. **to protect the environment of the Territory**; and [emphasis added]

    b. to promote ecologically sustainable development so that the wellbeing of the people of the Territory is maintained or improved without adverse impact on the environment of the Territory; and [emphasis added]

    c. to recognise the role of environmental impact assessment and environmental approval in promoting the protection and management of the environment of the Territory; and

    d. to provide for broad community involvement during the process of environmental impact assessment and environmental approval; and

    e. to recognise the role that Aboriginal people have as stewards of their country as conferred under their traditions and recognised in law, and the importance of participation

14. Part 2, Division 1 highlights the 'principles of ecologically sustainable development'. This includes the:

    a. Principles of ecologically sustainable development

    b. Decision-making principle

    c. Precautionary principle

    d. Principle of evidence-based decision-making

    e. Principle of intergenerational and intragenerational equity

    f. Principle of sustainable use

    g. Principle of conservation of biological diversity and ecological integrity

    h. Principle of improved valuation, pricing and incentive mechanisms.

15. In relation to the principles of ecologically sustainable development, S. 17(2) states that 'a decision-maker must consider and apply these principles in making a decision under this Act'.

16. The notion that the EP Act has no work to do in the context of environmentally precarious or environmentally uncertain developments, such as the Singleton development is absurd. As is

the notion that the EP Act has no work to do in the context of ecologically sustainable development, in relation to Singleton.

Application of the Principles of Ecologically Sustainable Development

17. Understanding the principles of ESD is key to the administration of the EP Act.

18. The judiciary has a key role to play in how laws and regulations are interpreted and administered, such as the application of ESD. Kaniaur et al make this clear:

> 'The judiciary plays a critical role in the enhancement and interpretation of environmental law and the vindication of the public interest in a healthy and secure environment. Judiciaries have, and will most certainly continue to play a pivotal role both in the development and implementation of legislative and institution regimes for sustainable development. A judiciary, well informed on the contemporary developments in the field of international and national imperatives of environmentally friendly development will be a major force in strengthening national efforts to realise the goals of environmentally-friendly development and, in particular, in vindicating the rights of individuals substantively and in accessing the judicial process'[2]

19. Brian Preston, Chief Justice of the Land and Environment Court of New South Wales (2005 - current) is an authoritative voice on the application of principles of ESD across Australia and the globe.

20. Preston CJ states that 'ecologically sustainable development is to be achieved through the implementation of at least four principles: the precautionary principle, intergenerational equity, conservation of biological diversity and ecological integrity and improved valuation, pricing and incentive mechanisms'.[3]

21. As outlined above, these principles and more are captured under the EP Act, where a decision-maker must consider and apply these principles.

22. To better understand the application of ESD, ALEC highlights the application of one principle in full, the precautionary principle.

<u>Precautionary Principle</u>

23. Preston CJ in *Telstra Corporation Limited* v *Hornsby Shire Council* provided detailed and comprehensive guidance on the application of the precautionary principle[4]. Application of the precautionary principle was summarised by Preston CJ in *Judicial Implementation of the*

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[2] D Kaniaru, L Kurukulasuriya and C Okidi, "UNEP Judicial Symposium on the Role of the Judiciary in Promoting Sustainable Development", a paper presented to the Fifth International Conference on Environmental Compliance and Enforcement, Monterey, California, USA, November 1998, p. 22 of conference proceedings
[3] Preston CJ, 2006, p.6. *Judicial Implementation of the Principles of Ecologically Sustainable Development in Australia and Asia.*
[4] 98 [2006] NSWLEC 133 (24 March 2006)

Principles of Ecologically Sustainable Development in Australia and Asia.[5] This is quoted in full:

a. 'The application of the precautionary principle and the concomitant need to take precautionary measures is triggered by the satisfaction of two conditions precedent or thresholds: a threat of serious or irreversible environmental damage and scientific uncertainty as to the environmental damage. These are cumulative.'

b. 'As to the first condition precedent, it is not necessary that serious or irreversible environmental damage actually have occurred – it is the threat of such damage that is required. The environmental damage threatened must attain the threshold of being serious or irreversible.'

c. 'The threat of environmental damage must be adequately sustained by scientific evidence.'

d. 'If there is no threat of serious or irreversible environmental damage, there is no basis upon which the precautionary principle can operate.'

e. 'As to the second condition precedent, the lack of full scientific certainty, the uncertainty is in relation to the nature and scope of the threat of environmental damage.'

f. 'The degree of scientific uncertainty that needs to exist in order to trigger application of the precautionary principle varies, depending on the magnitude of environmental damage used in the formulation of the first condition precedent of the precautionary principle. For the formulation of "serious or irreversible environmental damage", the correlative degree of certainty about the threat is "highly uncertain of threat" or "considerable scientific uncertainty".'

g. 'There must be reasonable scientific plausibility as to the threat of environmental damage. This condition would be fulfilled when empirical scientific data (as opposed to simple hypothesis, speculation or intuition) make it reasonable to envisage a scenario, even if it does not enjoy unanimous scientific support.'

h. 'If there is not considerable scientific uncertainty (the second condition precedent is not satisfied), but there is a threat of serious or irreversible environmental damage (the first condition precedent is satisfied), the precautionary principle will not apply. Measures will still need to be taken but these will be preventative measures to control or regulate the relatively certain threat of serious or irreversible environmental damage, rather than precautionary measures which are appropriate in relation to uncertain threats.'

i. 'If each of the two conditions precedent or thresholds are satisfied – that is, there is a threat of serious or irreversible environmental damage and there is the requisite degree of scientific uncertainty – the precautionary principle will be activated. At this point, there is a shifting of an evidentiary burden of proof. A decision-maker must

[5] Preston CJ, 2006, p.16-18. *Judicial Implementation of the Principles of Ecologically Sustainable Development in Australia and Asia.*

assume that the threat of serious or irreversible environmental damage is no longer uncertain but is a reality. The burden of showing that this threat does not in fact exist or is negligible effectively reverts to the proponent of the economic or other development plan, programme or project.'

j. 'The precautionary principle permits the taking of preventative measures without having to wait until the reality and seriousness of the threats become fully known. This is the concept of preventative anticipation.'

k. 'A zero risk precautionary standard is inappropriate. Not every risk is unacceptable and needs to be prevented. A preventative measure may be taken only if the risk, although the reality and extent of the risk have not been "fully" demonstrated by conclusive scientific evidence, appears nevertheless to be adequately backed up by the scientific data available at the time when the measure was taken.'

l. 'The type and level of precautionary measures that will be appropriate will depend on the combined effect of the degree of seriousness and irreversibility of the threat and the degree of uncertainty. This involves assessment of risk in its usual formulation, namely the probability of the event occuring and the seriousness of the consequences should it occur. The more significant and the more uncertain the threat, the greater the degree of precaution required.'

m. 'Prudence would also suggest that some margin for error should be retained until all the consequences of the decision to proceed with the development plan, programme or project are known. This allows for potential errors in risk assessment and cost-benefit analysis. Potential errors are weighted in favour of environmental protection. Weighting the risk of error in favour of the environment is to safeguard the ecological space or environmental room for manoeuvre.'

n. 'One means of retaining a margin for error is to implement a step-wise or adaptive management approach, whereby uncertainties are acknowledged and the area affected by the development plan, programme or project is expanded as the extent of uncertainty is reduced.'

o. 'The precautionary principle embraces the concept of proportionality. In applying the precautionary principle, measures should be adopted that are proportionate to the threats. Consideration of practicability need to be taken into account.There must be proportionality of response or cost effectiveness of margins of error to show that the selected precautionary measure is not unduly costly.'

p. 'The selection of the appropriate precautionary measure requires assessment of the risk-weighted consequences of various options.'

q. The precautionary principle, where triggered, does not necessarily prohibit the carrying out of a development plan, programme or project until full scientific certainty is attained.'

r. The precautionary principle should be viewed not in isolation, but as part of the package of principles of ecologically sustainable development. Precautionary

> measures selected should not only be appropriate having regard to the precautionary principle itself, but also in the context of the other principles of ecologically sustainable development.

24. The application of ESD is central to the administration of the EP Act.

Northern Territory Environment Protection Authority's Guidance: Environmental factors and objectives

25. The guidance document *NT EPA Environmental factors and objectives: environmental impact assessment general technical guidance* was prepared by the NT EPA 'to describe the environmental impact assessment process to all stakeholders'[6] The NT EPA has also 'developed environmental factors and objectives to improve certain, and increase transparency, within the environmental impact assessment process'.

26. The NT EPA has 'identified 14 environmental factors categories under five themes of Land, Water, Sea, Air and People'.[7]

27. It is stated that:

> 'Environmental factors are broad divisions of the environment that may be impacted by a proposed action. The factors and corresponding objectives offer a system for organising environmental information for the purpose of environmental impact assessment, and allow for the identification of values (**the important components of a factor**); the assessment of the significance of potential impacts to those values, and **the setting of benchmarks to protect those values**.' [emphasis added]

28. The NT EPA has not provided guidance on what is constituted as a 'benchmark' for the environmental factors and objectives. Nonetheless, we know that these factors and objectives must comply with the EP Act.

29. In setting benchmarks it is key to recognise the current state of the environment in the Northern Territory. This understanding highlights the current state of ecosystem function and health, the level of uncertainty that exists and the current key threatening processes contributing to landscape degradation. This is all relevant to understand how the application of ESD interacts with the objects of the EP Act 'to protect the environment of the Territory'.

30. How individual projects, such as the Singleton development, compound these impacts is critical to understanding how the EP Act is administered, when its objects are 'to protect the environment of the Territory' and 'to promote ecologically sustainable development so that the wellbeing of the people of the Territory is maintained or improved without adverse impact on the environment of the Territory'.

[6] P.4.
[7] P.5

State of the Environment

31. To be able to administer the EP Act, apply the principles of ecologically sustainable development, and provide relevant guidance for environmental factors and objectives, regulators and decision-makers must understand the existing threatening processes and current levels of uncertainty that exist across the Northern Territory's environment.

Lack of Northern Territory environmental regulation

32. The Northern Territory has no native vegetation legislation and has no biodiversity strategy.

33. The Northern Territory is the only state and territory to have never conducted any state of the environment reporting. [8]

34. In the absence of native vegetation legislation, the *Pastoral Lands Act* 1992 applies to nearly 50% of the Northern Territory's land. In land condition reporting that is conducted, pastoral land that contains woody thickets are described as land in 'poor condition', while land with 'no signs of woody thickening' and dominated by grasses is described as in 'excellent' condition.[9] Native woodlands and shrublands are described as land in poor condition.

35. These realities ensure that the health and state of the environment is not a mandatory consideration for many activities across the Northern Territory.

36. In fact, these factors have created a policy context, where there are limited local and regional baselines across the Northern Territory. This ensures that there are limited baselines on the identification of flora and fauna, threatened species and threatened ecological communities, groundwater systems, with limited understanding of how salinity and climate change will impact different regions.

Northern Territory state of the environment

37. The Western-central arid zone, georgina gidgee woodlands, tropical savanna and mangrove environments are all undergoing ecological collapse.[10] Collapse is understood as 'a change from a baseline state beyond the point where an ecosystem has lost key defining features and functions and is characterised by declining spatial extent, increased environmental degradation, decreases in, or loss of, key species, disruption of biotic processes, and ultimately loss of ecosystem services and functions'[11]

38. Key threatening processes across Central Australia include:

    a. Fire, where fire regimes are changing such that areas across the NT are experiencing landscape scale fires more often, for example, significant fires have occurred in

[8] Note that there is a current commitment to conduct state of the environment reporting in the NT, so that the Territory will be able to comply with environmental standards under the EPBC Act 1999.
[9] Pastoral Lands Board Annual Report 2021, p.9.
[10] Bergstrom, D, Wienecke, B, van den Hoff, J, Hughes, L, Lindenmayer, D, Ainsworth, T, Baker, C, Bland, L, Bowman, D, Brooks, S, and Canadell, J. (2021). Combating ecosystem collapse from the tropics to the Antarctic. Global Change Biology 27(9), 1692-1703.
[11] Ibid.

Tjoritja / West MacDonnell Ranges have been scorched in 2011/2012, 2019 and 2023. These fires are hastening the transformation of native shrublands, native woodlands and native grasslands, into fire-promoting grasslands.

b. Exotic species such as buffel grass which are recognised as 'the most threatening of the non-native transformer species'[12], buffel grass is the greatest invasive species threat to environment and culture, contributing to hotter, larger and more frequent wildfires. Buffel grass is already found in every mainland state and the Northern Territory and has the capacity to colonise up to 70% of the continent. Buffel inhibits the collection of bush foods, limits hunting practices and limits how people walk and spend time on Country. Buffel suffocates water holes, soaks and grows under the large trees in a landscape.

c. Cattle and other megafauna have contributed to extensive land degradation. 'Trampling and overgrazing has led to soil damage and changes in vegetation structure (e.g. lack seedling regeneration), increased erosion, habitat loss of reptiles and small mammals, and predation on native species…'[13]

d. Groundwater depletion and artificial watering points are contributing to further degradation.

e. Climate change will compound and cascade these impacts. The increase of extreme weather events that are frequent, intense and variable will compound the impacts of fire, exotic species such as buffel grass, cattle and the impacts of groundwater depletion of groundwater dependent locations.

39. There have been 11 recorded extinctions in the Northern Territory. All 11 of these have been based in Central Australia. It places Central Australia at the forefront of the extinction crisis nationally. Further, 10 of these species have been mammals, granting Central Australia the unwanted status as a world leader in mammalian extinctions.

40. The Commonwealth State of the Environment Report 2021 made clear that the NT is falling behind most states and territories in many biodiversity categories, nearly 40% of the Territory's inlands waters have no protections at all (highest of all states and territories), nearly double that of NSW/ ACT and South Australia.[14] While, over 20% of EPBC listed threatened species have no known distribution, and thus no means of protection in the NT. That level of uncertainty is at least two times higher than all other states and territories.[15]

41. These factors highlight that the arid and semi-arid zone is already sensitive to a diverse range of impacts. These stressors are affecting the health of the Territory's environment. Areas of ecosystem resilience in waterholes, waterways and shallow-groundwater landscapes are often already heavily degraded.

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[12] Bergstrom et al., 2021, p.32. Combating ecosystem collapse from the tropics to the Antarctic. Data.
[13] P.33.
[14] Murphy H & van Leeuwn S. (2021). Australia State of the Environment 2021: Biodiversity, Independent Report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra, 127.
[15] Ibid, 137.

Western Davenport Water Control District

42. There are old and escalating threats to ecosystem function across the region of the proposed Irrigation Development, including cattle, feral animals, fire, weeds, climate change, land clearing and groundwater depletion. These are well known key threatening processes that exist in a broader ecosystem that is undergoing ecological collapse. The proposed Irrigation Development will further exacerbate a decline in ecological condition.

43. The report *Biodiversity Assessment of the Western Davenport Area* (Stokeld Report) is useful in better understanding the state of the region, where:[16]

    a. 83% of sites within the Western Davenports were visibly impacted by cattle;[17]

    b. Over a quarter of sites contain buffel grass, where buffel is more likely to grow in alluvial soils and at the base of large trees in sandplain environments;[18]

    c. Many GDE sites have already been degraded by cattle;

    d. 'Much of the study area is under relatively intense cattle use with cattle impacts most evident where depth-to-groundwater is shallow (< 15 m), and therefore many sensitive and significant vegetation communities, GDEs and wetlands have been heavily degraded'[19]

    e. '22% of the study area was burnt in 2017 or 2018, 60% between 2010 and 2013, with 49% of the area burnt in 2011, although this study suggests much of Singleton has not burnt in the last decade;[20] and,

    f. 'Records of fauna are sparse within the study area'[21];

    g. 'Few fauna surveys have been undertaken in, or adjacent, to the study area prior to this investigation'[22]

    h. The Mapping the Futures surveys were done in the middle of drought;[23]

    i. Cattle, camels, cats and foxes exist in the region.[24]

<u>Mapping the future surveys 2019</u>

44. The mapping the future surveys that were completed as part of the Stokeld Report were completed during 2019, where:

    a. Floristic surveys were completed between March and August 2019; and,

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[16] Stokeld, D., Leiper, I., Brim Box, J., Jobson, P., Nano, C. and Box, P. (2022). Mapping the Future Project – Western Davenport. Biodiversity assessment of the Western Davenport area. Technical Report 30/2021. Department of Environment, Parks and Water Security. Darwin, Northern Territory. <https://territorystories.nt.gov.au/10070/868531>
[17] Ibid, p. 34.
[18] Ibid, p. 34.
[19] Ibid, p. 2.
[20] Ibid, p. 19.
[21] Ibid, p. 3.
[22] Ibid, p. 9.
[23] Ibid, p. 1.
[24] Ibid, p. 50.

b. Preliminary fauna surveys were undertaken in March to inform planned fauna surveys in October and November.

45. As mentioned above, the surveys were completed in the middle of drought which adds considerably to the lack of confidence in the data that was collected. This was stressed numerous times in the Mapping the Futures Biodiversity Assessment report, for example:

> 'Drought conditions experienced in the region prior to this study compounded observed impacts, with many areas in poor ecological condition during field surveys. The unfavourable environmental conditions adds a level of uncertainty with respect to identifying areas with enhanced biodiversity value in the study area.'[25]
>
> 'Because of the drought conditions experienced in the region in late 2018/2019, inflow dependent vegetation suffered significant water stress except where they were located in areas of shallow groundwater and could access the regional aquifer (Nano et al. 2021). By definition these latter are also considered GDEs (Cook and Eamus 2018b)'.[26]
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> 'Mammal diversity was exceptionally low in the study area with only five species of small mammal observed. Our observations did not indicate that groundwater depth or landscape influenced mammal species richness. Small mammals often persist in arid environments at low densities during periods of drought and erupt briefly after rain. Fauna sampling for this study was undertaken after several years of below-average rainfall when the environmental conditions in the study area were poor.'[27]
>
> 'The region experienced well below average rainfall for several years prior to our survey, with drought conditions evident in the study area during field surveys. Further to the poor weather conditions, much of the study area is under intense cattle use with cattle impacts most evident where there was a shallow depth to groundwater. The environmental conditions, in concert with cattle impacts, are likely to have influenced our survey findings and adds some uncertainty regarding what flora and fauna may be supported during 'normal' or wet periods, and with respect to identifying areas with high biodiversity value in the study area.'[28]

46. One isolated study cannot overcome knowledge deficits that have existed and compounded over decades.

<u>So how bad were conditions in the region in 2019?</u>

47. The Tennant Creek weather station is the closest weather station with complete data to the Irrigation Development. Its records began in 1970. 2019 was the:[29]

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[25] Ibid, p. 2.
[26] Ibid, p.19.
[27] Ibid, p. 35.
[28] Ibid, p. 58
[29] Australian Government, Bureau of Meteorology, 'Tennant Creek Airport' *Climate data Online* (Web Page) <http://www.bom.gov.au/climate/data/>; Australian Government, Bureau of Meteorology, (2020). 'Northern Territory in 2019: a very warm and dry year' *Annual Climate Summary for Northern Territory* (Article, 9 January 2020)

a. Driest year on record, where just 63.6mm fell. This represented just 14% of average annual rainfall. The old record was 170.0mm which had stood for 50 years;

b. Highest annual mean temperature on record;

c. Highest annual mean maximum temperature on record;

d. Highest annual mean minimum temperature on record.

48. 2019 followed 2018 which was:[30]

a. At the time the second hottest year ever on record;

b. the record highest December mean daily maximum temperature, beating the record by 1.5C;

c. the record highest December mean daily minimum temperature, beating the record by 1.1C;

d. the record highest December mean temperature where it had 28 days above 40C

e. Recorded just 62% of annual average rainfall

49. It is clear that these are exceptional conditions, supporting the commentary that was provided in the Stokeld Report.

50. The NT EPA *Guidelines for assessment of impacts on terrestrial biodiversity* states that 'sampling is to occur at suitable times of year and appropriate intensity to determine the presence of the species and obtain estimates of population abundance where the species occur… the adequacy of sampling needs to be demonstrated'.[31]

51. Whilst Fortune did no sampling of their own, it is apparent that the Mapping the Future exercise was during record conditions and cannot constitute a baseline. Furthermore it was focused on gaining a regional understanding and was not bespoke to the areas most at risk from this proposal. As a result there is significant uncertainty relating to the baselines of fauna species in the region, including threatened species. Whilst it is also important to note that data deficient and least concern annual flora species at Thring Swamp were not surveyed due to the prolonged severe drought conditions.

Proposed impacts due to the Singleton Development

52. The Singleton Development proposes to:

a. Extract 40,000 ML of groundwater every year at full production, the largest groundwater licence in Australia.

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[30] Australian Government, Bureau of Meteorology, 'Tennant Creek Airport' *Climate data Online* (Web Page) <http://www.bom.gov.au/climate/data/>; Australian Government, Bureau of Meteorology, (2019). 'Northern Territory in December 2018: Record-breaking heat; driest December since 2002' *Monthly Climate Summary for Northern Territory* (Article, 10 January 2019) <http://www.bom.gov.au/climate/current/month/nt/archive/201812.summary.shtml>

[31] Northern Territory Environment Protection Authority, (2013). *Guideline for Assessment of Impacts on Terrestrial Biodiversity,* p. 9. <https://ntepa.nt.gov.au/__data/assets/pdf_file/0004/287428/guideline_assessment_terrestrial_biodiversity.pdf>

b. Over 30 years, use up to 1 trillion litres of water. That is twice the size of all the water in Sydney Harbour

c. Lower the groundwater table by up to 50 metres

d. Lower the groundwater table by at least 5 metres across a 50km stretch of a shallow groundwater landscape. This will damage or destroy a 50km stretch of groundwater dependent trees, soaks, springs and swamps.

e. Threaten up to 40 sacred sites.[32]

f. The destruction of up to 50km stretch of grey falcon habitat. The grey falcon has been recorded in the area despite the limited fauna surveys that have occurred.

g. Bring up to 40,000 tonnes of salts to the surface every year at full production. This in the context of modelled salinity impacts for the region, where '[t]his predicted salinity increase has very significant implications for the long-term viability of irrigated agriculture in the region'.[33]

53. There is significant uncertainty around how the Singleton development will impact:

    a. Cultural values, including up to 40 sacred sites

    b. Ecosystem function across a 50km stretch of groundwater dependent ecosystems

    c. Flora, fauna and threatened species where ecological baselines do not currently exist that are representative and follow sound experimental design

    d. Land condition, groundwater quality and soil quality. There remains outstanding uncertainty on the impact of salinity on land condition, soil quality and groundwater quality.

54. It is evident that the size and scale of the Singleton development ensures that 'a threat of serious or irreversible environmental damage' is real and likely. In fact, many of these are the expected impacts. Further, it is evident that there is significant 'scientific uncertainty as to the environmental damage'. The precautionary principle applies to the Singleton Development.

55. As stated by Preston CJ, 'At this point, there is a shifting of an evidentiary burden of proof. A decision-maker must assume that the threat of serious or irreversible environmental damage is no longer uncertain but is a reality. The burden of showing that this threat does not in fact exist or is negligible effectively reverts to the proponent of the economic or other development plan, programme or project.' This has major implications for the ToR process and must be updated accordingly.

[32] Donaldson, S, 2023. Addendum: Aboriginal cultural values impact assessment Singleton Water Licence Drawdown Area. Singleton pastoral lease, neutral junction pastoral lease, Warrabri Aboriginal Land Trusts and Illiyarne Aboriginal Land Trust, Northern Territory, Australia.
[33] Ibid, p. 64.

Comments on the Terms of Reference: areas that must improve

Groundwater dependent trees, soaks, springs and swamps must be protected

56. The ToR must protect groundwater dependent trees, soaks, springs and swamps. This is unclear in the current Draft ToR.

57. Bergstrom et al., 2021 state that to mitigate ecosystem collapse across the western-central arid zone, that proposed actions should 'identify and protect freshwater and terrestrial refugia and their connections at a landscape scale'

58. Clearly the destruction of a 50km stretch of groundwater dependent ecosystems which function as key refugia will impact the Territory's environment.

59. There is a significant risk that groundwater depletion will result in irreversible impacts. Further there is significant uncertainty at the fauna and flora species that may be impacted across the drawdown area.

Recommendation 1: ToR requires the completion of a peer reviewed assessment on the impact of the Singleton Development on groundwater dependent trees, soaks, springs and swamps

The GDV Guideline must be excluded from the Terms of Reference

60. The NT EPA must exclude the Northern Territory Government guidance documents such as the *Guideline:Limits of acceptable change to groundwater dependent vegetation in the Western Davenport Water Control District* (GDV Guideline) and its rule which allows the 30% destruction of groundwater dependent ecosystems.

61. The GDV Guideline has no scientific basis, is non-binding and was created without public consultation.

62. Through a Freedom of Information request, ALEC understands:

    a. No draft of the Guideline was developed;

    b. DEPWS decided to not consult the Western Davenport Water Advisory Committee;

    c. There was no public consultation or participation;

    d. Fortune Agribusiness was the only stakeholder consulted in the development of the Guideline;

    e. The Guideline appears to be largely developed over one week in February 2020;

    f. Fortune received a finalised version of the guideline on 13/02/20, five months before the document was made publicly available online;

g. There appears to be little to no research basis to support this policy, in regards to research that is relevant to the semi-arid/ arid zone or groundwater dependent ecosystems.

63. The GDV Guideline does not comply with ESD (see Appendix A)

64. In fact, the GDV Guideline and the protection of GDEs has been a significant and live issue for the the Western Davenport Ti Tree Water Advisory Committee. So much so, that the entire WAC has not endorsed the current Draft Western Davenport Water Allocation Plan. ALEC is aware of no other instance, of a WAC unanimously opposing the water plan and intentionally not endorsing the document..

65. The reliance of the GDV Guideline must be prohibited by the NT EPA.

Recommendation 2: The ToR must exclude from the list of guidance documents (Appendix B) the *Guideline: Limits of acceptable change to groundwater dependent vegetation in the Western Davenport Water Control District*. The document must not be relied upon in any manner.

Benchmarks for environmental factors and objectives

66. Benchmarks for environmental factors and objectives must be based on evidence.

67. Where a lack of evidence exists a precautionary approach must be taken. If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

68. Adopted benchmarks must be in the public interest and reflect public values.

Recommendation 3: The ToR must not adopt as its benchmark the 30% rate of GDV destruction from within the *Guideline: Limits of acceptable change to groundwater dependent vegetation in the Western Davenport Water Control District*

Recommendation 4: benchmarks for environmental factors must protect groundwater dependent trees, soaks, springs and swamps. The arid zone is already undergoing ecological collapse and the most resilient and biodiverse habitat must be protected.

Baseline biodiversity assessments

69. The Draft ToR states that updated information for terrestrial ecosystems must include ‘metrics indicating the conditions and value of GDEs’ The subsequent footnote states that this is ‘to be

used as a baseline for detecting potential impacts from groundwater drawdown'. What is quantified as the 'baseline condition' is unclear.

70. As outlined above in Section 46, representative biodiversity baselines do not currently exist across the Western Davenport Water Control District.

71. The 2019 surveys were conducted during the hottest and driest year on record in the Barkly region. The experimental design of the Mapping the Future surveys is fundamentally flawed and cannot be relied upon as a biodiversity baseline for the region. The data collected during an extreme weather event is not representative data.

72. In particular, there are major knowledge gaps and limited sampling of fauna in the region.

73. What we do know about the region is that it is severely degraded, waterholes and shallow groundwater areas are not protected from impacts, groundwater dependent tree regeneration is affected and that 25% of the region is infested with buffel grass, a fire-promoting weed.

Recommendation 5: The ToR must require Fortune Agribusiness to conduct fauna and flora surveys, to support the development of a baseline for the region. The existing surveys were conducted in 2019 during multi-year drought and the hottest year on record. This is not representative data and is a catastrophic failure in experimental design.

Threatened species

74. Threatened species are not mentioned once in the ToR.

75. This is grey falcon (*Falco hypoleucos*) habitat. There have been several sightings of the grey falcon in the last 15 years, despite the paucity of fauna surveys that have occurred in this region.

76. The damage and destruction of 50km stretch of the groundwater dependent trees, springs, soaks and swamps may have a significant impact on the grey falcon. This is the destruction of its nesting trees.

77. There is major uncertainty how the destruction of 50km stretch of groundwater dependent trees will impact the grey falcon. Therefore a precautionary approach should apply, particularly since there is a paucity of data, and what data exists was largely surveyed during the driest and hottest year on record in the Barkly, which is not representative data and does not constitute a baseline.

Recommendation 6: Surveys for flora and fauna should include a focus on threatened species habitat

Cumulative impact assessment

78. The Draft ToR does not require Fortune Agribusiness to conduct a cumulative impact assessment

79. Section 10(2) of the EP Act makes clear that 'an impact may be a cumulative impact and may occur over time'.

80. Section 79(f) of the *Environmental Protection Regulations* 2020 (EP Regulations) makes clear that a cumulative impact assessment may be included as part of the environment impact assessment process.

81. As has been highlighted in Section 43-45, the environment around Singleton is already 'heavily degraded'[34],

    a. Singleton Station is already extensively degraded due to the grazing of cattle, which is ensuring there is limited regeneration of groundwater dependent vegetation. These ghost gums, coolibahs, river gums and blood woods that are dependent on the shallow groundwater below the surface provide ecosystem resilience and refugia in what is already an ecologically stressed landscape. The damage and destruction of a 50km stretch of GDVs will have a significant regional impact on the environment.

    b. Waterholes and the shallow groundwater landscape, sites of ecosystem resilience and refugia, are already heavily degraded due to the presence of cattle and other megafauna. The threat of wildfires is growing with the spread of fire-promoting weeds such as buffel-grass, which has been identified across 25% of the Water Control District. Climate change further fuelling the likelihood of fire weather.

    c. The threat of wildfires is growing with the spread of fire-promoting weeds such as buffel-grass, which has been identified across 25% of the Water Control District. Climate change further fuelling the likelihood of fire weather.

82. The proponent should be required to assess the cumulative impacts of the Singleton Development which is occurring on already severely degraded land. In particular the cumulative impact assessment must focus on how land condition, ecosystem resilience and abundance and diversity of species is impacted. Further, how climate change will cause compounding and cascading impacts.

83. Groundwater extraction proposals, notably the Iliyarne ALT have only gained approval on the basis that its impacts would be mitigated to a certain standard. ALEC is concerned that there is no more "play" in shallow groundwater areas like this. Accordingly the Singleton proposal should be required to demonstrate that it will not superimpose further drawdown in the area where Iliyarne's extraction is already occurring. This is especially important as it is not feasible to propose an adaptive management mitigation of changing pumping regimes given how remote the Singleton borefield is from this location, and so ultimately it will be the

[34] Stokeld, D., Leiper, I., Brim Box, J., Jobson, P., Nano, C. and Box, P. (2022). Mapping the Future Project – Western Davenport. Biodiversity assessment of the Western Davenport area. Technical Report 30/2021. Department of Environment, Parks and Water Security. Darwin, Northern Territory. <https://territorystories.nt.gov.au/10070/868531>

Iliyarne ALT that is required to turn off its borefield or reduce its pumping when ecosystems become stressed.

Recommendation 7: ToR requires Fortune to conduct a cumulative impact assessment

Recommendation 8: Singleton development does not result in additional drawdown on Iliyarne ALT

Climate change risk assessment

84. The ToR has very few requirements regarding climate change considerations;

85. The largest irrigated horticultural project in Australia should have to conduct a climate risk assessment.

86. From an environment to business certainty perspective, understanding how this landscape will be affected by climate across the 30-year licence period is essential to assess whether the Singleton Development can operate in an ecologically sustainable manner.

87. The climate change risk assessment should also consider how land condition, the water resource and ecological values will be impacted by a changing climate.

Recommendation 9: ToR require Fortune to conduct climate change risk assessment

Recommendation 10: Climate change risk assessment must include consideration of the role GDEs play as climate refugia, as well as the cumulative impact of a changing climate on groundwater dependent trees, soaks, springs and swamps.

Communicating and mapping groundwater drawdown

88. The updated information must ensure that the extent and area affected by groundwater drawdown is quantified and mapped. This should include all areas impacted by drawdown. Maps provided by DEPWS show 5 metre contours, but drawdown of less than 5 metres can have a significant impact on the environment amd complete disrupt ecosystem function.

89. For example the inland tea tree (Melaleuca glomerata), a groundwater dependent shrub is an obligate groundwater user and must have access to groundwater as it does not have drought

resistant traits and cannot survive prolonged periods without rainfall.[35] This means that if the groundwater table is lowered outside of the rooting depth of this species they will die.

90. Similarly, the lowering of groundwater table may completely destroy a groundwater dependent spring, soak or swamp.

91. Updated maps should include the perimeter for total drawdown and contour lines for a drop in 1m, 2m, 3m, 4m and every fifth metre.

Recommendation 11: ToR requires the full impact to GDVs to be quantified and communicated (including in mapping). This means for maps highlighting the perimeter of total drawdown, drawdown contour lines for 1m, 2m, 3m, 4m, 5m and then every fifth metre thereafter.

Shallow groundwater systems should be protected

92. Shallow groundwater creates the conditions for groundwater dependent trees, springs, soaks and swamps to exist. In essence, the underlying conditions which support individual groundwater dependent trees to exist at this point in time should be protected, not simply the existing GDVs themselves.

Recommendation 12: The conditions that support GDEs should be protected. Thus, the entire shallow groundwater area is a GDE not just where an isolated tree occurs. It is noted that the vicissitudes of recent history (e.g. fires, overstocking and severe droughts) determine where individual trees grow. However the same underlying conditions (i.e. shallow groundwater) occur throughout the region.

Greenhouse gas emissions and reporting

93. The Singleton Development threatens to destroy a 50km stretch of woody vegetation that includes old-growth sandplain and alluvial woodlands. These old-growth woodlands store significant amounts of carbon that are stored.

94. It is essential that greenhouse gas reporting is required. A total and annual reporting on carbon dioxide (CO2), nitrous oxide (N2O) and methane emissions (CH4) is required.

Recommendation 13: ToR requires Fortune to conduct annual and total Scope 1, Scope 2, Scope 3 emissions for CO2, CH4 and N2O, including impacts on GDEs within drawdown footprint.

[35] Nano, C., Jobson, P., Randall, D. & Brim Box, J. (2021) Ecological characteristics of potential groundwater dependent vegetation in the Western Davenport water Control District. Technical Report 19/2021. Department of Environment and Natural Resources, Northern Territory Government: Alice Springs, NT. ISBN 978-1-74350-310-2

Adaptive Management

95. It states that the NT EPA adaptive management guidance 'expects that [adaptive management] will only be considered in exceptional cases.' The onus of responsibility is on the Singleton Development to demonstrate that they are an exceptional case.

96. The Guidance goes on, 'It follows that adaptive management will not be considered by the NT EPA when one or more of the following limitations exist:[36]

    a. **Uncertainty is too great to enable a robust adaptive management framework to be established. For example, where there is significant uncertainty that the environmental outcomes can be met. This level of uncertainty may have broader implications for the acceptability of a proposal. [emphasis added]**

    b. There is insufficient baseline data about environmental conditions. [emphasis added]

    c. Suitable environmental outcomes cannot be defined (for example, there are irresolvable conflicts among stakeholders in defining explicit and measurable management objectives). [emphasis added]

    d. Monitoring cannot provide useful information for decision making (for example, there is no firm commitment to ongoing monitoring, or inability to design an effective monitoring program to test hypotheses).

    e. Risks associated with learning-based decision making are too high and a more prescriptive approach is required.

    f. **Adaptive management cannot remedy the consequences of impact before they become irreversible. [emphasis added]**

    g. **The proposed action is determined to be unacceptable and refusal is recommended (for example, when the worst case scenario resulting from a management action is unacceptable to stakeholders, or the opportunity to improve over time is at the expense of unacceptable shorter-term environmental impacts). [emphasis added]**

97. It is clear that adaptive management should not be considered by the NT EPA.

98. There are suitable environmental outcomes that cannot be defined (for example, there are irresolvable conflicts among stakeholders in defining explicit and measurable management objectives). For example:

    a. The Water Justice Project, directed by Katyetye Warlpiri woman Maureen Nampijinpa O'Keefe who was born and raised in Ali Curung, has demonstrated unanimous opposition to the Singleton Development from Ali Curung residents.

[36] GUIDANCE ON ADAPTIVE MANAGEMENT, 2018, p.7

b. Native Title Holders and ALEC have each independently taken the Northern Territory Government and Fortune to the NT Supreme Court.

c. Over 23,000 people signed an online petition opposing the Singleton water licence

d. The Western Davenport WAC has not endorsed the Draft Water Plan. This includes irrigators, scientists, industry peak body representatives, environmental representatives and land council representatives.

99. The significant impacts and uncertainty and mentioned in Section 51-52 of this submission impacted,

Recommendation 14: The NT EPA cannot rely on adaptive management to remedy the uncertainty, risks and impacts of the proposed Singleton Development.

Other technical recommendations

100. Section 2.2 – Proposal description

a. *Subsection 2.2.1* – The required information for operation should also include a description of the pesticides/herbicides and fertilisers as these are potential contaminants of concern.

b. *Subsection 2.2.2* – Sensitive environments also include groundwater dependent ecosystems (GDEs), creek floodouts, and areas of habitat for sensitive flora and fauna. These areas should also be specified for mapping.

c. *Subsection 2.2.5* – This section should be amended to include reference to restoration practices and requirements. Currently, the proponent has been asked to describe mitigation practices which does not equate to restoration.

d. *Subsection 2.2.6* - Consideration should be had to how the proponent's transition to future land use will address climate change. In relation to decommissioning and rehabilitation of the land, clear details must be provided regarding how the proponent will rehabilitate the land including replanting native flora, irrigation and monitoring.

101. Section 2.5 – Information requirements for environmental factors

a. *Subsection 2.5.1* – The first paragraph should be amended to read "associated changes in the *water quality* and hydrological regime of groundwater.

b. In relation to the required information for potential significant impacts in Table 3:

c. Climate change must be taken into account in relation to predictions of groundwater drawdown, noting climate change impacts in Central Australia are already well documented.

d. There is no temporal range specified for the maps of groundwater drawdown contours. These should be required for 5-year intervals for the entire period until groundwater levels are expected to return to ambient baseline conditions.

e. Potential significant impacts and risks (top of page 13) - the model should be fit for purpose to assess effects of borefield layouts which include bores screened in deeper sediments.

f. Further drilling and extended pump tests to determine aquifer parameters should be required for a fit for purpose model. It is not appropriate to simply rely on public information for a project of this magnitude.

g. Extent and risks of land subsidence associated with large and rapid aquifer drawdowns needs to be described and mitigations proposed.

h. *Subsection 2.5.2* – Table 4 should be amended to reflect the following:

    i. Environmental values - The statement on groundwater quality must be more specific and amended to include baseline characterisation of physical and chemical water quality parameters, including potential contaminants such as salts, metals, pesticides/herbicides, and nutrients.

    ii. Potential significant impacts and risks - A requirement to discuss the impacts of alterations in groundwater quality on stygofauna and on the native flora and fauna during operations and post operations should be included.

    iii. Monitoring and reporting – Should be expanded to characterise and remediate nutrient and chemical plumes in the surface water, soil, and groundwater resulting from operations.

    iv. Residual impact - Agricultural impacts on soil and groundwater are clearly documented in a large body of literature. This residual impact statement should be more detailed to ask for a plan that specifically speaks to those impacts. This includes the inevitable plume of elevated nutrients and pesticides, PFAS contamination (also emerging as an issue in agriculture), and salinity.

i. *Subsection 2.5.3* – Table 5 should be amended to reflect the following:

    i. Environmental values – surface water, soil, and groundwater systems should all be taken into account.

    ii. Potential significant impacts and risks – This area should be expanded to include not only salinity, but also nutrients or other contaminants (such as pesticides and herbicides).

    iii. It is noted that the draft TOR makes no reference to the consideration of the potential impacts from dust. When irrigation ceases, noting the clearing of vegetation in an arid environment, there is the potential for air pollution via dust storms.

Comments on the Terms of Reference: areas that have improved

102. ALEC welcomes some improvements in some areas. This includes in relation to:

103. Groundwater resource

a. More information is required on groundwater flow direction and rates

b. Information on hydrological connectivity, including with the surface via springs, swamps, GDEs or other

c. Updated depth to groundwater maps

d. Document groundwater quality based on field observations that have chemical, biological and physical parameters

104. Groundwater model

a. Update the model to align with field investigations, updated borefield design

b. Report on assumptions and parameters used in the model and justify their use, referring to literature

c. Discuss the drawdown predictions derived from the model and how these may change if critical assumptions are found to be incorrect

d. Quantify the significance and extent of impacts at the proposal level and cumulatively with other approved proposed water extraction

e. Independent peer review of the groundwater model

105. Groundwater dependent ecosystems (only an improvement if GDEs are wholly protected)

a. Updated information based on-ground surveys, prepared by a qualified individual, which shows the spatial extent of GDEs in the potentially affected area, the source of water sustaining the GDEs and metrics indicating the cognition and value of GDEs.

b. Information must provide a summary of all pathways of potential significant impact, including groundwater drawdown and salinity. Qualify the extent of potential impact and their significance locally and regionally.

106. Stygofauna

a. A report on stygofauna is required, based on field sampling and assessment of existing and new bores

b. Discuss potential impacts as a result of groundwater extraction on occurrence of stygofauna

c. Describe uncertainties and further work required to increase understanding of the changes to the hydrological regime and potential impacts on stygofauna occurrence

d. Requires potential changes to water quality to consider impacts on occurrence of stygofauna

107. Soil

a. Document the physical chemical and biological characteristics of soil types and quality, based on field observations

108. Salinity

a. Conduct salinity assessment report, that incorporate field observations (including soil salinity and groundwater salinity), takes into account salts in the leached irrigation water, assess cumulative impacts and how climate change may impact regional groundwater flow

b. 3-D solute transport model

c. Quantify predicted changes to salinity, likelihood and extent of salinity, including maps, and focusing on areas where vegetation may access the water an/ or soil

d. Requires the consideration of measures to present the accumulation of salts in soil and water beneath the irrigation area

109. Cumulative impacts

a. As required under the EP Act, some requirements have been identified. However, ALEC argues that this does not go far enough (see Recommendation 7)

110. Greenhouse gas emissions

a. Required to describe the current and projected greenhouse gas emissions profile from cropland and horticultural production in the NT. Provide details on the emissions intensity of the proposal. However, as mentioned in Recommendation 13, this does not go far enough.

111. Social impact assessment

a. Develop a community benefit plan, local and Indigenous employment and procurement plan, workforce management plan + accommodation strategy, informed by an analysis of social needs of the workforce, emergency management plan, traffic management plan, transition to future land use management: of impact on works + local community.

112. Residual impacts

a. Identify any significant residual impact of the proposal on the hydrological regime and dependent environmental values

b. Fortune is required to show how there will not be a significant residual impact across the environmental objectives.

113. Chemicals

a. Requires the potential impacts from release of agricultural chemicals via infiltration and runoff to be assessed

Kind regards,

Adrian Tomlinson

Chief Executive Officer

Alex Vaughan

Policy Officer

Appendix A: Review of compatibility of the GDE Guidelines with the principles for ecological sustainable development in the NT EP Act

Clause	Text	Comment
18	**Decision-making principle** (1) Decision-making processes should effectively integrate both long-term and short-term environmental and equitable considerations. (2) Decision-making processes should provide for community involvement in relation to decisions and actions that affect the community.	(1) No compensation for ecosystem loss (2) The GDV guideline does not require community consultation and does not cite any consultation in its development. Submissions on the NOI such as from CLC (refer NOD pages 170-171) express strong dissent to its use.
19	**Precautionary principle** (1) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. (2) Decision-making should be guided by: (a) a careful evaluation to avoid serious or irreversible damage to the environment wherever practicable; and (b) an assessment of the risk-weighted consequences of various options.	(1) N/A (2) The GDV guideline does not seek to avoid serious or irreversible damage to the environment, especially when applied in such a way that field assessment does not occur until after the approval.
20	**Principle of evidence-based decision-making** Decisions should be based on the best available evidence in the circumstances that is relevant and reliable.	No evidence is presented to suggest 30% loss of GDVs is appropriate
21	**Principle of intergenerational and intragenerational equity** The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of present and future generations.	Up to 30% less GDVs for future generations is not equitable

Appendix A: Review of compatibility of the GDE Guidelines with the principles for ecological sustainable development in the NT EP Act

Clause	Text	Comment
22	**Principle of sustainable use** Natural resources should be used in a manner that is sustainable, prudent, rational, wise and appropriate.	Up to 30% less GDV for future generations is not sustainable
23	**Principle of conservation of biological diversity and ecological integrity** Biological diversity and ecological integrity should be conserved and maintained.	No evidence is provided to suggest up to 30% less GDEs will maintain ecological integrity. It contains no mechanism to ensure the integrity of remaining GDEs.
24	**Principle of improved valuation, pricing and incentive mechanisms** (1) Environmental factors should be included in the valuation of assets and services. (2) Persons who generate pollution and waste should bear the cost of containment, avoidance and abatement. (3) Users of goods and services should pay prices based on the full life cycle costs of providing the goods and services, including costs relating to the use of natural resources and the ultimate disposal of wastes. (4) Established environmental goals should be pursued in the most cost-effective way by establishing incentive structures, including market mechanisms, which enable persons best placed to maximise benefits or minimise costs to develop solutions and responses to environmental problems	The GDV guideline does not consider any of this.