

ANNEX A

Review of action or decision made under Water Act 1992

Water Act 1992, section 30 and Water Regulations 1992, regulation 4

Form 30

This is an approved form in accordance with regulation 3 of the Water Regulations 1992.

A person aggrieved by an action or decision under the Water Act 1992 (Act) (refer s30(1)) or an applicant notified of a decision made by the Controller (refer regulation 4) can seek a review of that decision (review applicant).

A review of a decision by the Controller to give a remediation notice must be made by a review applicant within 14 days after the day the notice is given.

A review of another decision or action by the Controller must be made by a review applicant within 30 days after the day the applicant is notified or for a review of a decision made under the Act by an aggrieved person, within 30 days of the decision or action being notified publicly in a newspaper.

A review applicant may be required to appear before the Water Resources Review Panel, produce any relevant documents to the Review Panel, give evidence on oath and answer any relevant questions put by the Review Panel. Penalties apply for failure to comply with a notice issued by the Review Panel.

1. Review applicant and contact details

Business name and ABN:	Arid Lands Environment Centre ABN: 50 100 640 918
Contact person:	Alexander Vaughan
Postal address: Note: An Australian address must be provided	90 Gap Road, The Gap, Alice Springs, Northern Territory, 0870.
Phone:	(08) 8952 2497
Mobile:	0427573178
Email for all correspondence:	policy@alec.org.au
Do you consent to receiving service of all documents via the email address, provided above?	Yes
Do you consent to being contacted from time to time about work undertaken by Water Resources Division including; water monitoring activities, water management programs, water allocation plan development, and updates to policies and procedures?	Yes

2. Details of the review application

Select the most accurate description of the action or decision made under the Water Act 1992 for which a review is sought. Provide as much information as possible, including any reference number of a permit, licence, or notice (if applicable) and the property to which the review application relates.

Review type	Reference number and property
The decision to grant a permit, licence or consent Yes	WDPCC1000 Singleton Station NT Portion 653 12125 Stuart Hwy, Davenport The primary basis of this review is in respect of the decision to grant the licence, however the conditions of the licence and the amount determined under that decision are also of concern.
The refusal to issue a permit, licence or consent No	
A condition of the issue of a permit, licence or consent Yes	WDPCC1000 Singleton Station NT Portion 653 12125 Stuart Hwy, Davenport
A direction given No	
An amount determined Yes	WDPCC1000 Singleton Station NT Portion 653 12125 Stuart Hwy, Davenport
Other (describe) No	

3. Grounds for review application - you must attach a description of the grounds for review


The grounds for review are attached	Yes
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If you do not attach grounds for review, your application is incomplete and will be returned.

4. Declaration

The declaration must be signed by a person with the legal authority to sign it. To submit a review in joint names, each applicant must sign the declaration.

I hereby declare that the information provided in this application and accompanying document is to the best of my knowledge, true and correct.

	Applicant 1	Applicant 2
Signature:		
Name (print):	Alexander Vaughan	Jimmy Cocking
Position (if applicable):	Policy Officer	CEO
Date:	10 May 2021	10 May 2021

Where and how to submit this form

Email your completed form to the Minister responsible for the Water Act 1992 via:

- **email** to secretariat.DEPWS@nt.gov.au (preferred) or
- **post** to Secretariat, PO Box 496, Palmerston NT 0831, in which case the hard copy form must be received within the appropriate statutory timeframe.

Office use			
Date received:	/	/	Reference:
Received by:			
Acknowledged by:		Date acknowledged:	/

Attachment

Grounds for Review

The Arid Lands Environment Centre (**ALEC**) relies on the grounds set out in this document to support its application for a review of the Northern Territory Water Controller's (**Controller**) decision to grant licence WDPCC10000 (**Licence**) to Fortune Agribusiness Management Fund Pty Ltd (**Fortune**) on 8 April 2021 (**Decision**). The Licence was granted pursuant to section 60 of the *Water Act 1992* (NT) (**Water Act**). Fortune applied for the Licence (**Application**) for the purposes of the Singleton Horticultural Project (**Project**).

Statutory context

- 1 ALEC is an “aggrieved person” in relation to the Decision for the purposes of section 30 of the Water Act ALEC is Central Australia’s peak environmental organisation supporting local people in the protection of arid lands. The central object of ALEC is to protect the environment and ensure healthy futures for arid lands and peoples.¹ The Decision directly impacts the interests that ALEC seeks to protect and which underpin its central constitutional objective. ALEC was a member of the Western Davenport Water Advisory Committee and provided a submission on the groundwater extraction licence application in question.²³ The High Court has confirmed that the term “person aggrieved” is not a restrictive one, is of very wide import, and should not be artificially narrowed.⁴ ALEC accordingly applies for a review of the decision under section 30(1) of the Water Act.
- 2 These grounds for review are included as an attachment to the prescribed form (form 30) submitted in accordance with regulation 4(1)(a) of the *Water Regulations 1992* (NT) (**Regulations**). Regulation 4(1)(c) requires that an application for review be made within 30 days of the notification of the decision. Both the Licence and the Water Extraction Licence Decision (**Reasons**) are dated 8 April 2021. Section 28(2) of the *Interpretation Act 1978* (NT) provides that if the last day for doing a thing allowed by an Act falls on a Saturday, Sunday or a public holiday, that thing may be done on the first day following which is not a Saturday, Sunday or a public holiday. 30 days from 8 April 2021 is Saturday 8 May 2021, meaning that the application for review must be made by no later than Monday 10 May 2021.
- 3 The Water Act provides that in reviewing the Decision, the Minister may:
 - a. uphold the decision (s. 30(3)(a)(i));
 - b. substitute for the decision the decision that, in the opinion of the Minister, the Controller should have made in the first instance (s. 30(3)(a)(ii));
 - c. refer a matter back to the Controller for reconsideration of the action or decision with or without directions about new matters that the Controller shall take into account in that reconsideration (s. 30(3)(a)(iii)); or
 - d. refer the matter to a review panel with the request that it advise the Minister within the time indicated on what action the Minister should take in relation to the matter (s. 30(3)(b)).
- 4 The nature of the Minister’s review function under section 30 of the Water Act was the subject of proceedings before the Supreme Court of the Northern Territory in *The Environment Centre Northern Territory (NT) Incorporated v The Minister for Land Resource Management* [2015] NTSC

¹ [ALEC Constitution \(Schedule\)](#), page 18.

² Department of Environment, Parks and Water Security, 2020. Western Davenport Water Advisory Committee. Boards and Committees.

³ ALEC’s submission was submitted as ‘Fortune Agribusiness’ Western Davenport Water Allocation Request: ALEC comment’ on October 2 2020

⁴ *Argos Pty Ltd & Ors v Minister for the Environment and Sustainable Development & Ors* (2014) 254 CLR 394, 411.

30 (*ECNT v Minister*).⁵ In his judgment, Hiley J made it clear that in exercising the review functions under section 30 of the Water Act, the Minister is *required* to consider the Controller's decision on its merits.⁶

- 5 Hiley J also observed in relation to the Minister's review function under section 30 of the Water Act:
- a. *"the Minister is obliged to consider each of the matters raised in the application, whether or not they suggest some error of a legal or factual kind."*⁷
 - b. *"The extent to which the Minister is obliged to consider the Controller's decision or action, and any other materials whether or not they were before the Controller, will vary from case to case."*⁸
 - c. *"if the grounds do disclose error on the part of the Controller, the Minister should consider the possible effects of that error on the Controller's decision or action."*⁹
 - d. *"the Minister might consider that he or she needs to consider additional information before making a decision."*¹⁰
 - e. *"I reject the defendant's contentions to the effect that the Minister is not obliged to review the merits of the Controller's decision in the absence of some kind of error on the part of the Controller"*¹¹.
- 6 This means that the Minister is required to consider the merits of the Decision and is not confined to identifying errors of law. As a consequence, it is open to the Minister to consider whether the Decision was the preferable one in the circumstances. While the Minister has broad discretion regarding the scope of the review, the Minister must consider each of the matters raised in this application on its merits.
- 7 On the basis of the grounds of review set out below, ALEC submits that the Minister ought to exercise their discretion under section 30(3)(a)(ii) of the Water Act to substitute the decision to grant the Licence, with a decision to refuse the Licence. In the alternative, ALEC submits that the Minister ought to refer the matter to a review panel under section 30(3)(b) of the Water Act so that the Application can be assessed on its merits and in accordance with the law.

Grounds of review

- 8 Review of the Decision by the Minister is sought on the following grounds:
- a. **Ground 1:** The Controller failed to appropriately assess the Licence in accordance with the *Western Davenport Water Allocation Plan 2018-2021 (Plan)*.
 - b. **Ground 2:** The Licence is inconsistent with the PLAN and was therefore granted in breach of section 22B(4) of the Water Act.
 - c. **Ground 3:** The Controller should not have placed reliance on the document titled, *Guideline: Limits of acceptable change to groundwater dependent vegetation in the Western Davenport Water Control District (Guideline)*, in assessing the Licence and making the Decision because the Guideline:
 - i. is inconsistent with the Plan;
 - ii. is not a statutory document;

⁵ A copy of this decision is available [here](#).

⁶ See in particular, [160].

⁷ *ECNT v Minister* [152].

⁸ *ECNT v Minister* [152].

⁹ *ECNT v Minister* [154].

¹⁰ *ECNT v Minister* [157].

¹¹ *ECNT v Minister* [160].

- iii. was approved by the Controller herself in her capacity as CEO of the Department of Environment and Natural Resources after she had already received the initial application for the Licence in her capacity as Controller;
 - iv. is not based upon published, publicly available or peer-reviewed science; and
 - v. allows for the destruction of up to 30% of groundwater dependent ecosystems (**GDEs**) within the *entirety* of the Western Davenport Water Control District.
- d. **Ground 4:** The Controller should not have placed reliance on the document titled *Singleton Horticulture Project Groundwater Dependent Ecosystem Mapping and Borefield Design (Fortune Report)* in assessing the Project's likely impact to GDEs because the Fortune Report:
- i. is the result of a "desktop review" rather than fieldwork and has not been subject to peer review; and
 - ii. does not assess the impact to GDEs against the criteria required under the Plan.
- e. **Ground 5:** The Controller relied upon insufficient groundwater modelling for the level of extraction permitted by the Licence.
- f. **Ground 6:** The Controller failed to properly consider the possible deterioration of water quality in the groundwater system as is required under section 90(1)(h) of the Water Act.
- g. **Ground 7:** The Controller's reliance on the implementation of an adaptive management framework by Fortune to address future issues relating to water quality, cultural heritage and GDEs is unrealistic, gives rise to future uncertainty and compromises the health of GDEs.
- h. **Ground 8:** The Controller did not appropriately consider impacts from the Licence upon Strategic Aboriginal Water Reserves (SWR).
- i. **Ground 9:** The Controller should have assessed the impacts of the Licence upon cultural values.

Ground 1 – Failure to assess in accordance with the Plan

- 9 In making a water extraction licence decision, the Controller is required to take into account the factors listed in section 90(1) of the Water Act, including the following factor at 90(1)(ab):

"any water allocation plan applying to the area in question"

- 10 The Plan is the relevant water allocation plan for the purpose of the Licence. Section 8.2.1 of the Plan states that proposed extraction should not result in a change to groundwater conditions beyond the following limits within the GDE protection¹² area unless it can be shown that the vegetation is not accessing groundwater:

- a. *"Modelled extraction does not cause the maximum depth to water table to exceed 15 metres below ground level";*

¹² The GDE protection area is shown in figure 11 of the Plan and clearly encompasses almost all of NT Portion 653 (the exception is the southwest corner) which is the land to which the Licence applies. Compare: Plan, Figure 11 and Technical Report, Figure 1-1.

- b. *“Modelled extraction does not result in the maximum depth to water table declining by more than 50% below the levels that would be expected under a natural baseline scenario (no pumping scenario)”*; and
 - c. *“Modelled extraction does not result in a rate of groundwater drawdown that exceeds 0.2 metres/year.”*
- 11 The Reasons clearly demonstrate that this criteria has not been relied upon in assessing the Licence. For example, despite the requirement in the Plan that modelled extraction is not to cause the maximum depth to the water table to exceed 15 meters below ground level, the modelling in the Groundwater Extraction Licence Resource Assessment, Water Resources Division Technical Report 5/2021 (**Technical Report**) reveals that the Project will result in a maximum drawdown of **50 meters** over the 30 year Licence period.¹³ The NT Government’s own modelling therefore reveals that the Project is likely to breach the 15m drawdown limit set out in the Plan by over 300%.
 - 12 The Controller acknowledges at [66] of the Reasons that *“the Fortune Report indicates groundwater drawdown up to 50 meters after 30 years in the immediate vicinity of the irrigated activity reducing to less than 5m drawdown approximately 25km from the borefield”*. While the term “immediate vicinity” is open for interpretation, the Technical Report clearly indicates that the breach of the 15m drawdown limit is not confined to an isolated area but extends for kilometers in all directions from the centre of the proposed extraction area.¹⁴
 - 13 Further, while the Technical Report modelled the drawdown impact of the Project combined with the extraction from users, the assessment of the impacts (section 3.4) only considered the drawdown under Scenario SC17 which **excluded** other users. On this basis, the cumulative impact of drawdown from multiple extractors, including the Project, on other users, has been insufficiently addressed.
 - 14 The modelled limits discussed above apply within the GDE protection area unless it can be shown that the vegetation is not accessing groundwater.¹⁵ The information before the Controller did not show that impacted vegetation is not accessing groundwater so the Controller could not be satisfied that the exemption in Section 8.2.1 applied.
 - 15 Further, the Controller applied an inappropriate consideration at [39] when she considered the percentage of water lost against the starting aquifer storage volume, rather than the level of drawdown which will affect groundwater dependent vegetation and other water users.
 - 16 The Controller could not be *“satisfied that water resource management will be in accordance with the [Plan]”*¹⁶ when the NT Government’s own modelling clearly identifies that the drawdown criteria set by the Plan is breached by over 300% in areas where vegetation is likely to be accessing groundwater. At [45] of her reasons, the Controller indicates she has relied upon the Fortune Report to assess the negative impact of the proposed extraction on GDEs. However, the Fortune Report similarly confirms a maximum 50m drawdown will occur during the 30 year operational phase of the Project.¹⁷
 - 17 In summary, by ignoring the assessment criteria set out in the Plan, the Controller has clearly failed to assess the Licence in accordance with the Plan as required by section 90(1)(ab) of the Water Act. In reaching this conclusion, we note that the Federal Court has found that a decision maker must undertake *“proper, genuine and realistic consideration”* of factors that are required to be considered under legislation.¹⁸

¹³ Technical Report, page 18.

¹⁴ See figure 3-6 of the Technical Report.

¹⁵ Plan, 42.

¹⁶ Reasons, [36].

¹⁷ Figure 4-2 on page 16 of the Fortune Report.

¹⁸ *Khan v Minister for Immigration and Ethnic Affairs* (1987) 14 ALD 291 at 292; *Paramanathan v Minister for Immigration and Multicultural Affairs* (1998) 160 ALR 24 at 57; *Origin Energy Electricity Ltd v Queensland Competition Authority* [2014] 1 Qd R 216 at [93]. *Weal v Bathurst City Council* (2000) 111 LGERA 181 [80]

- 18 Based on the factors set out above, it clear that this test has not been met. The references to the Plan in the Reasons fall short of the required “proper, genuine and realistic consideration” of the Plan .

Ground 2 – Licence inconsistent with section 22B(4) of the Water Act

- 19 Section 22B(4) of the Water Act requires that:

“Water resource management in a water control district is to be in accordance with the water allocation plan declared in respect of the district.”

- 20 “Water resource management” is not defined in the Water Act, but the Controller states at [36] of the Reasons that she believes that a water extraction licence is a water resource management tool in itself. The Controller goes on in [36] to confirm that she is satisfied with regard to section 22B(4) of the Water Act, that “water resource management will be in accordance with the [Plan].”
- 21 However, as noted in Ground 1 above, the granting of the Licence clearly breaches the criteria set out in the Plan. Adopting the Controller’s own position that the Licence is a form of water resource management, it becomes obvious that the granting of a Licence, which is clearly inconsistent with the requirements of the Plan, is a failure to comply with the requirement under section 22B(4) that water resource management be in accordance with the relevant water allocation plan.

Ground 3 – Reliance on the Guideline

- 22 The Controller states at [95] of her Decision that:

“In response to the objectives of the [WRDP] to avoid as far as possible detrimental impacts to water dependent ecosystems as a consequence of consumptive water use, I have relied upon the Guideline. This Guideline reflects advances in the knowledge of GDEs since the Plan was declared and includes a higher level of detail as to when there may be potential for impact from water extraction, recognizing the significance of GDEs associated with a depth to groundwater of less than 10m. I consider that I am able to take into account the Guideline as a relevant factor because it constitutes new scientific knowledge, allowed to be considered by the Controller, which was contemplated by the plan.”

- 23 Under section 90(1)(k) of the Water Act, the Controller is indeed empowered to take into account “other factors the Controller considers should be taken into account or that the Controller is required to take into account under any other law in force in the Territory”. However, on her own admission, the Controller is not simply relying on the Guideline for the purposes of 90(1)(k). Rather, she is explicitly relying on it to inform her interpretation of the WRDP. This is evidenced in the Controller’s conclusion at [106]:

“Accordingly, I am of the view that the extraction of the application volume in accordance with the applicant’s preferred bore field design, Scenario 28, is within the thresholds for deleterious impact on GDEs as outline in the Guideline and meets the objectives of the Plan to avoid as far as possible detrimental impacts to water dependent ecosystems as a consequence of consumptive use.”

- 24 As discussed at [10] above, the criteria for assessing the impact of groundwater extraction on GDEs is clearly set out in section 8.2.1 of the Plan (**Plan Criteria**). The Controller entirely ignores any meaningful engagement with these criteria, and instead relies on the following criteria included in the Guideline:

*“70% of the current extent of GDEs in the Western Davenport Water Control District should be protected from negative impact”¹⁹ (**Guideline Criteria**)*

¹⁹ Guideline, page 8.

25 For the reasons set out below, the Controller should not have relied upon the Guideline Criteria over the Plan Criteria.

The Plan is a statutory document while the Guideline is not

26 The Plan is:

- a. a statutory document issued by the Minister in accordance with section 22B(1) of the Water Act;
- b. required to be considered by the Controller when making a water extraction licence decision as per section 90(1)(ab) of the Water Act; and
- c. to provide the framework for water resource management in the Western Davenport Water Control District in accordance with section 22B(4) of the Water Act.

27 The Plan makes it explicitly clear that:

“Groundwater extraction licence applications should demonstrate compliance with the criteria laid out in this [Plan].”²⁰

28 The Plan also states clear intentions around GDE protections:

- a. *“KPI/ goal: GDE condition and extent is maintained”²¹*
- b. *“groundwater allocations to the beneficial use of environment and non-consumptive cultural are intended to protect GDEs and cultural values relying on groundwater”²²*
- c. *“Environmental and cultural beneficial uses are protected by limits to change in groundwater levels within the GDE protection area. These will ensure consumptive use allocations do not cause aquifer drawdown at a rate that could impact on ecosystem health”²³*

29 Similarly, the July 2017 *Report on the Independent Review of Water Extraction Licences* states that:

“Provisions in the [Plan] that are expressed as rules for water licence decisions, must be applied by the Controller.”²⁴

30 The Controller has simply failed to give effect to this. Instead, the Controller has relied upon criteria set out in the Guideline, a document which has no statutory force.

31 The Controller’s justification for relying on the Guideline is that it *“constitutes new scientific knowledge, allowed to be considered by the Controller, which was contemplated by the [Plan].”²⁵* The Plan states:

“As new scientific knowledge about the water resources and water dependent ecosystems is obtained or the Department of Environment and Natural Resources becomes aware of requirements for protection of cultural values, this knowledge will be used in providing advice to the Controller. New information can be incorporated into a new [Plan] at the time of review or in certain circumstances an immediate review of the [Plan] could be triggered by the Minister.”

32 This makes it clear that the purpose of providing updated scientific knowledge to the Controller is to allow the Controller to either incorporate that new information into a Plan at the relevant time of review, or to rely on that knowledge to justify pulling the trigger for an earlier review of the Plan.

²⁰ Plan, Page 36

²¹ Plan, Page 64.

²² Plan, Page 8.

²³ Plan, Page 39.

²⁴ *Report on the Independent Review of Water Extraction Licences*, page 65.

²⁵ Guideline [95].

To the extent that new scientific knowledge may “*be used in providing advice to the Controller*”, the Controller may consider that new knowledge. However, there is no indication that this knowledge can be relied upon to *change the assessment criteria itself, which is set out in the Plan*.

The Guideline was approved by the Controller

- 33 Planning decisions are particularly vulnerable to perceptions of undue influence due to the inherently complex nature of regulatory frameworks and the oftentimes discretionary nature of decision-making in relation to individual developments. The Australian Government Productivity Commission has therefore emphasised that “*as far as possible, the bodies making policy should be separate from those administering it, whatever the level of government involved.*”²⁶
- 34 However, the Controller was directly responsible for approving the policy document containing the very criteria against which she then assessed the Application.
- 35 Specifically, The Guideline states it was approved by Joanne Townsend, who is both the CEO of The Department of Environment, Parks and Water Security (**Department**) and is also the Controller responsible for approving the Licence. In fact, there is no other “author” listed on the Guideline other than Ms Townsend.
- 36 Ms Townsend approved the Guideline at a point in time when the Department had already received Fortune’s initial licence application. While Table 1 of the Reasons provide that the date the licence was applied for was 18 August 2020, it is revealed in paragraph [10] that the initial licence application was made in December 2015.²⁷
- 37 The fact that the Project was assessed against criteria approved by the Controller herself, rather than the criteria set out in the Plan, undermines the credibility of the decision-making process. There is no way of knowing the extent (if any) to which the Controller’s knowledge of the Project influenced the preparation of the Guideline. This represents a clear failure to separate policy development and decision-making functions in relation to the Decision.

The Guideline is not based on published science

- 38 As discussed above, the Controller justifies her reliance on the Guideline on the basis that it constitutes “new scientific knowledge”. Similarly, the Guideline states on page 6:

“Since the water allocation plan was declared in 2018, additional research in the Plan area has increase [sic] our understanding of aspects of GDEs...”
- 39 However, the Guideline only cites *one* piece of published research, being a study completed in 2018.²⁸ This study is also cited in the Plan, so cannot be considered “new scientific knowledge” for the purpose of departing from the criteria set out in the Plan.
- 40 While it appears that the Guideline may be based on further unpublished investigations completed by the Department, these investigations are not available to the public and have likely not been subject to peer review.
- 41 In considering what constitutes the “best available science” in the context of the Commonwealth *Water Act 2007*, Brett Walker SC observed in the Murray-Darling Basin Royal Commission Report that:

²⁶ Australian Government, Productivity Commission, *Performance Benchmarking of Australian Business Regulation: Planning, Zoning and Development Assessments*, Volume 1, April 2011 at 407.

²⁷ The reasons state that consideration of the application was put on hold until completion of the Davenport Water Allocation Plan.

²⁸ Cook, P.G. and Eamus, D. (2018). The Potential for Groundwater use by Vegetation in the Australian Arid Zone. Department of Environment and Natural Resources, Environment, Northern Territory Government, Darwin

“Best’ science generally takes the form of peer-reviewed or published literature, expert advice and, importantly, an acknowledgement that revision is necessary as uncertainties, limitations and inconsistencies are to be addressed over time.

...

When scientific information is limited and levels of uncertainty are expressed, non-scientists may view this as not scientific. There is, therefore, a tension between the need to provide objectivity to decisions and the need to be transparent about any limitations or uncertainty involved.”²⁹

- 42 Failures to adequately disclose the scientific basis upon which decision-making has occurred in the context of the Murray-Darling Basin has led to highly publicised distrust in government and ultimately hindered water management processes. Against this backdrop, it is imperative that the Northern Territory Government ensures that scientific information is credible and transparent to avoid the erosion of public trust in decision-making processes.

Ground 4 – Reliance on the Fortune Report

- 43 The Controller relies almost exclusively on the Fortune Report in assessing the Project’s impact on GDEs. For example, the Controller concludes:

“Based on the Fortune Report and the department’s review of the Fortune Report, I am satisfied that the proportion of each GDE type that may be subject to negative impact is within the thresholds of acceptable change established under the Guideline.”³⁰

- 44 Notwithstanding the fact that the thresholds of acceptable change established under the Guideline are the wrong set of criteria to be applied (see Grounds 1, 2 and 3), the Fortune Report provides an egregiously deficient foundation for concluding that the Project *“meets the objectives of the Plan to avoid as far as possible detrimental impacts to water dependent ecosystems as a consequence of consumptive use.”³¹*

- 45 The Fortune Report should be considered with a degree of uncertainty commensurate with the qualifications expressed in the report itself. The Fortune Report is a self-proclaimed *“desktop assessment of the potential negative impact on GDEs associated with the [Project]”*,³² and includes the following qualifications:

- a. *“This report does not include any field validation of the inputs...”³³*
- b. *“Field validation is required to validate and refine a final map of the type and extent of GDEs within Singleton Station (and adjacent areas potentially affected by the development, if relevant). Field validation is also required to indicate ‘high value’ GDE patches as described in DENR 2020b.”³⁴*
- c. *“In the longer term, field validation of the DGW contours will also be required, and it is noted that the current data is based on limited data points. This will be undertaken by DENR and FAFM when new bores are drilled and maintained.”³⁵*

- 46 The Reasons provide no indication that the Fortune Report was subject to independent third-party review. Even the Technical Report, prepared by the Department, does not provide any commentary, analysis or even reference to the Fortune Report.

²⁹ Murray-Darling Basin Royal Commission Report, page 152.

³⁰ Reasons, [104].

³¹ Reasons, [106].

³² Fortune Report, page 69.

³³ Fortune Report, page 1.

³⁴ Fortune Report, page 69.

³⁵ Fortune Report, page 69.

- 47 The Technical Report made clear recommendations on further work required to understand the likely impacts of the Project.³⁶ In the absence of this information, the Controller could not be satisfied that the impact of the Project was acceptable and that the Licence ought to have been issued.
- 48 The sole basis upon which the Controller assesses impacts to GDEs is the Fortune Report, which was prepared by the applicant, has not been subject to any discernible rigorous review and is based upon insufficient modelling for the size of the Project.
- 49 Please refer to Appendix A, an expert report provided by Dr Jamie Cleverly. The report comments on assumptions and scientific uncertainty surrounding the Licence around groundwater level monitoring and health of GDEs.

Ground 5 – Modelling

- 50 The Technical Report makes it clear that there are critical limitations in the groundwater modelling on which the Licence application and Fortune Report are based, namely:

“Data and knowledge gaps have been identified through the assessment, model development and output analysis processes. Some of the critical issues are identified below:

- There is inadequate spatial coverage of groundwater levels across the model domain.*
- There are limited monitoring bores with data coverage that spans the planning timeframe. This data is critical to the eventual analysis of modelling output presented in this report.*
- Metered groundwater- extraction data is limited.*
- There are gaps in knowledge regarding the basement topography, and continuity and consistency of the aquifer across the region. This affects the aquifer’s hydraulic characterisation and representation in the model.”³⁷*

- 51 Further, the groundwater model used in the Technical Report does not account for evaporation and rainfall/recharge changes that will be expressed due to climate change. Nor is it clear that the Fortune Report adequately considered the highly variable nature of recharge events. Rather, it appeared to assume – and erroneously so – that rainfall and recharge events were regular in nature. These deficiencies could have significant consequences when attempting to assess environmental impacts and groundwater availability for other users over time.
- 52 The Controller also had the benefit of a submission from the International Association of Hydrogeologists Australia, Northern Territory Branch (**IAHANT**) in relation to the Project. The IAHANT highlighted that in the absence of relevant monitoring bores and very little exploratory groundwater drilling data in the vicinity of the Project, the level of confidence in the underlying model in the vicinity of the Project should be reduced. Further, the absence of local groundwater data was supplemented by only a few computer-generated drawdown scenarios which was itself based on very limited (actual) hydrological data. This suggests that a more comprehensive assessment was required.³⁸
- 53 The IAHA further suggested that the CloudGMS modelling data relied upon is probably best considered a class 1 model when applied to the Western Davenport area for the purposes of the

³⁶ Technical Report, page 32.

³⁷ Technical Report, page 30.

³⁸ Correspondence from the IAHA to the Controller of Water Resources dated 1 October 2020.

*Australian Groundwater Modelling Guidelines (Australian Modelling Guidelines).*³⁹ The Australian Modelling Guidelines state that:

*“A Class 1 model, for example, has relatively low confidence associated with any predictions and is therefore best suited for managing low value resources (i.e. few groundwater users with few or low-value groundwater dependent ecosystems) for assessing impacts of low-risk developments or when the modelling objectives are relatively modest.”*⁴⁰

- 54 In summary, the modelling relied upon is clearly deficient for assessing a proposal to extract water of the magnitude allowed under the Licence.

Ground 6 – Water Quality

- 55 Section 90(1)(h) of the Water Act requires the Controller to take into account:

“the adverse effects, if any, likely to be created by such drainage water resulting from activities under the licence on the quality of any other water or on the use or potential use of any other land”

- 56 In considering section 90(1)(h) the Reasons state:

*“The Department also advises (in separate advice to the Technical Report) that the size of the development, local climatic conditions and known elevated salt concentrations in some local bore water supplies predispose the landscape to an elevated secondary soil salinity risk.”*⁴¹

- 57 The Technical Report explains that *“the irrigation of 40,000ML p.a. of groundwater would bring 28,000 to 36,000 tonnes of dissolved salts to the surface annually”*⁴². It continues by stating that:

*“The application of irrigated water that will meet the plants’ requirements with adequacy to flush the salts past the root zone brings the potential for deep drainage of saline concentration to the underlying water table and the consequent deterioration of the water quality in the groundwater system.”*⁴³

- 58 Concerns regarding the Project’s impact on water quality were also raised by the IAHANT which noted in its submission to the Controller dated 1 November 2020 that:

*“instances of pollution of underground water supplies beneath horticultural developments from mobilization of salts by irrigation, metal contamination from pesticides and nitrate contamination from fertilizer application are documented throughout the scientific literature and elsewhere in the arid zone (e.g. Cook et al., 2017)”*⁴⁴

- 59 The Controller acknowledges that there is uncertainty as to how the Project may cause salts to impact the underlying groundwater source.⁴⁵ Despite this uncertainty, and notwithstanding the clear concerns raised by the Department and the International Association of Hydrogeologists, the Controller concludes that the risks can be *“adequately examined and addressed through conditions”* applied on the Licence.⁴⁶

³⁹ Correspondence from the IAHA to the Controller of Water Resources dated 1 October 2020; Australian Groundwater Modelling Guidelines, Sinclair Knight Merz and National Centre for Groundwater Research and Training, Waterlines Report Series No. 82, June 2012.

⁴⁰ Australian Modelling Guidelines, page 18.

⁴¹ Reasons, page 11.

⁴² Technical Report, page 29.

⁴³ Technical Report, page 29.

⁴⁴ The study cited is Cook, P.G., Knapton A. and White N., 2017. The Potential impact of irrigated agriculture on groundwater quality in the Rocky Hill Region, Northern Territory. National Centre for Groundwater Research and Training, Australia.

⁴⁵ Reasons, page 11.

⁴⁶ Reasons, page 11.

60 Among the relevant conditions imposed by the Controller is that:

“The licence holder must undertake an assessment of the potential salinity impacts to the Land and Water Resource from water taken and used under this licence and submit a report to the Controller.”⁴⁷

61 It is consequently unknown if the Project will be able to comply with the requirements of section 73 of the Water Act, which are set out in the following paragraphs.

62 First, section 73(1)(b) of the Water Act allows water quality standards, criteria or objectives to apply to water within a given area. Water quality objectives for groundwater within the Western Davenport Water Control District were declared by Gazette on 9 March 2016 as being those described in Chapters 3, 4, 5 and 6 of Volume 1 of the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (2000) (**Water Quality Guidelines**).⁴⁸

63 Second, section 73(2) of the Water Act mandates that it is a condition of all licences within an area to which relevant water quality guidelines apply that “*nothing is to be done or suffered or permitted to be done... which prejudices the beneficial use, quality, standard, criteria or objective specified...*”. It was a significant oversight that no consideration was given to the statutory Water Quality Guidelines when assessing the Licence.

64 Put simply, there is no certainty regarding potential salinity impacts of the Project. Further, it is not clear if the scope of the Project will have to be amended to ensure that it meets the Water Quality Guidelines. In these circumstances, the fact that the Controller did not require the preparation of a report (either by the Department or Fortune) into the potential salinity impacts *before* granting the Licence is inconsistent with requirements to assess the water quality impacts of the Project.

65 To grant the Licence in full knowledge of the uncertainty surrounding the salinity impacts of the Project compromises the future health of the aquifer and its dependent ecosystems.

66 The common law provides that a condition of consent cannot be deferred to the future if at the time of the issuing of the consent there is uncertainty as to the eventual outcome.⁴⁹ Deferring consideration of potential salinity impacts by imposing such a condition is clearly inconsistent with this principle.

Ground 7 – Adaptive Management

67 While adaptive management has an important role to play in ensuring long term sustainable use of natural resources, there have been considerable concerns raised about the application of adaptive management in relation to groundwater, and in particular its ability to overcome uncertainty regarding environmental responses to groundwater extraction.

68 Thomann *et. al.* (2020)⁵⁰ reviewed adaptive management principles and groundwater management case studies, identifying significant shortcomings in the application of adaptive management including a lack of definitions and guidelines for its use, a lack of substantive mitigation measures available to support adaptation, and a failure to undertake assessment of the potential for remediation should problems be identified.

69 The Controller at [51] identified the significant uncertainties underlying the Plan but failed to acknowledge that the Plan clearly identifies that the current lack of knowledge means that even after mitigation measures are applied, there are a number of high and one extreme risk that the current uncertainties in the Plan will result in unsustainable water allocations.⁵¹

⁴⁷ Licence, CP 6, page 6.

⁴⁸ See Northern Territory Government Gazette No. G11, 16 March 2016.

⁴⁹ *Television Corp Ltd v Commonwealth* (1963) 109 CLR 59 at 41 *Mison v Randwick Municipal Council* (1991) 23 NSWLR 734; *Winn v Director-General of National Parks and Wildlife* (2011) 130 LGERA 508

⁵⁰ Thomann, J., Werner, A., Irvine, D. and Currell, M. (2020) Adaptive management in groundwater planning and development: A review of theory and applications *Journal of Hydrology* 586 (124871)

⁵¹ Plan, section 9.

- 70 The reliance on an adaptive management framework is further undermined by the fact that the Project intends to grow perennial crops (mandarin, table grape, dried grape, onions, avocado, muskmelon and jujube) which provide limited flexibility in water use. A recent publication assessing water shortage risks in California's Central Valley emphasised that "*many perennial crops require more applied water each year, and consistent watering, without an option to cut back during drought years.*"⁵² There is very little which could be done under an adaptive management framework which would reduce the Project's reliance on groundwater without risking the loss of the perennial crops. This is particularly concerning due to the acknowledgment in the Plan that groundwater recharge in the Western Davenport water allocation area is highly sporadic: "*Groundwater recharge is highly episodic. Rare, peak rainfall years contribute disproportionately to groundwater recharge while in an average year, minimal, if any, groundwater recharge occurs.*"⁵³
- 71 Nonetheless, the Controller has relied on adaptive management to address the known uncertainties. However, the Licence conditions do not address the identified shortcomings in using adaptive management for this purpose. For example, the Licence conditions only require the development of an adaptive management plan after the approval has been granted. The objectives to be set under the adaptive management plan themselves refer to further work that is to be undertaken under the Licence conditions (CP7(a)(i) and CP7(d)(i)) – or do not meet the requirements of the Plan (CP7(a)(iii) and CP7(d)(iii)).

Ground 8 – Strategic Aboriginal Water Reserves

- 72 The Decision by the Controller considers SWR in [47]-[50]. However, the Controller has failed to consider the increased risk to SWR in approving the Licence. Under s.90(1) of the *Water Act*, the Controller must take into account an array of factors, including:

*"any adverse effects likely to be created as a result of activities under the permit, licence or consent on the supply of water to any person other than the applicant is entitled under this Act".*⁵⁴

- 73 The Plan is clear that there is uncertainty around its estimated sustainable yield (**ESY**) modelling.⁵⁵ There is a high-risk rating that the regolith resource which accounts for 35% of the consumptive pool in the Central Plains zone is downgraded in later WAPs as the resource is not well defined.⁵⁶ There is an extreme risk that there is:

*"insufficient water to provide water entitlements to eligible Aboriginal land owners under the SWR"*⁵⁷

- 74 There is no new information presented under section 7.4.6 of the Plan. On this basis, it is still understood that ESY is likely to be reduced in future WAPs. The approval of the Licence increases the risk that the:

*"SWR could become notional if the ESY is downgraded before the SWR is taken up".*⁵⁸

- 75 Until the certainty around the ESY limit is resolved with scientific rigor, in any decision for a licence that could impact the SWR, the Controller should give significant weight to the impacts upon SWRs and seek to minimise or mitigate those impacts through appropriate Licence conditions. If through this review process, the Minister decides to grant a new licence, in our submission that new licence should be a substantially reduced volume compared to the existing licence to reduce the likely impacts on SWRs.

⁵² Natalie K Mall and Jonathan D Herman 2019 Environ. Res. Lett. 14, 5.

⁵³ Plan, page 21.

⁵⁴ Water Act, S. 90(1)(c).

⁵⁵ Plan, page 56.

⁵⁶ Plan, page 56.

⁵⁷ Plan, page 58.

⁵⁸ Plan, page 58.

Ground 9 – Cultural Values

- 76 The Decision does not adequately address cultural values and does not protect them to the standard described in the Plan. This is despite their protection being one of the four objectives of the Plan.⁵⁹ The Plan outlines how cultural values should be considered in licences.
- 77 The Plan highlights that there is a distinct connection to country in this area and that the “*cultural landscape area includes physical (e.g. sacred sites, ancestor trees and other features such as stone arrangements) and non-physical (e.g. knowledge, practices, songs, ceremony) cultural values*”⁶⁰. The Plan continues stating that a “*decision criteria to protect cultural values are required for a range of sites, places and practices including but not limited to family trees, soaks where animals father and vegetation complexes relying on groundwater which support cultural practices*”.⁶¹
- 78 The Controller’s approval of the Licence has failed to consider cultural values. This is despite a KPI for cultural value protection as:
- “the condition and extent of cultural values dependent on water is maintained”*.⁶²
- 79 Paragraphs 40-46 of the Decision discuss guidance for GDE protection, which also assumed GDE loss of up to 30%. Cultural values are frequently tied to GDEs. Therefore, the adoption of the Guideline permits a large fraction of cultural values to be potentially be destroyed.
- 80 As outlined in Ground 3 above, the Controller should not have relied upon the Guideline over and above the Plan. The Controller should have considered the impacts of the Licence upon cultural values and ensured their protection as outlined in the Plan.

Other comments – Public Participation

- 81 It is noted that the Letters for the Environment Petition received over 22,000 signatures and over 220 comments, yet was not acknowledged in the Controller’s decision. ALEC asks the Minister and the Water Review Panel to consider concerns raised in the petition as well as to recognise the display of public opposition to the development.
- 82 The approval is not in the public interest. The public interest is a discretionary factor which the Controller may take into account under s 90(1)(k). Please refer to the application made by Jacqueline Arnold and Appendix C that was attached for further information.

Conclusion

- 83 Grounds 1 to 9 above demonstrate that the Licence was granted without due regard to legislative requirements and without adequate consideration of the merits of the project. In particular, the Project poses significant risks to water quality and groundwater dependent ecosystems throughout the Western Davenport Water District.
- 84 The Decision to grant the Licence failed to have regard to the Plan as required under various provisions of the Water Act. Instead, the Licence was assessed against criteria set out within the Guideline, which is not a statutory document, not based upon published research and was approved by the Controller herself. Despite consisting of only 10 pages and failing to refer to any new publicly available, peer reviewed science, the Guideline condemns up to 30% of GDEs within the Western Davenport Water District to death. Fortune has relied on the Guideline in an attempt to demonstrate its Project will not breach this 30% threshold. However, this approach ignores the fact that the Project is the application for a single licence within an entire district which will almost certainly be subject to future licence applications. If each future application was assessed against

⁵⁹ Plan, page 6.

⁶⁰ Plan, page 28.

⁶¹ Plan, page 28.

⁶² Plan, page 64.

this criteria, the cumulative impact to GDEs within the Western Davenport Water District would be catastrophic.

- 85 Further, the groundwater modelling throughout the Western Davenport Water District is clearly deficient for assessing an application of this magnitude. Reliance on an adaptive management regime is not an appropriate mechanism to address the clear uncertainty regarding the impact of granting the Licence. This is particularly concerning in relation to the water quality concerns which are clearly identified in the Reasons, but which are dealt with by imposing Licence conditions for further studies. The outcome of these studies are entirely unknown, and it remains to be seen whether the Project can actually operate on its intended scale while complying with the Water Quality Guidelines.
- 86 ALEC submits that the Minister must exercise their discretion under section 30(3)(a)(ii) of the Water Act to substitute the decision to grant the Licence with a decision to refuse the Licence. In the alternative, ALEC submits that the Minister ought to refer the matter to a review panel under section 30(3)(b) of the Water Act so that the Project can be assessed on its merits and in accordance with the law.

Expert report on a licence to take water by Fortune Agribusiness on Singleton Station NT

Name and address of expert

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Acknowledgement

I, James Cleverly, acknowledge that I have read the NT Supreme Court Practice Direction for Expert Reports and the Expert Witness Code of Conduct and that I agree to be bound by it.

Qualifications

I have 25-years of experience in the research of groundwater-dependent ecosystems and vegetation (GDEs and GDV, respectively). This experience includes:

- Research on water use by GDEs in the Middle Rio Grande, New Mexico, USA
- Expert witness on GDV extent and consumptive water use by GDEs in the Republican River Basin, Kansas v Nebraska v Colorado, US Supreme Court
- Contributor on water savings through restoration of GDEs to the Mid-Region Council of Governments Water Plan, New Mexico, USA
- Research and student supervision in the ecology and physiology of East Coast GDEs and GDV in the Southern Highlands, NSW, Australia
- Research on groundwater access and physiological activity in Australian species (*Eucalyptus camaldulensis*, *Corymbia opaca*), Ti Tree, NT, Australia
- Research on stress in GDV in response to drought and groundwater extraction, NSW coast, Australia
- Expert panel, oversight of plant stress monitoring during municipal groundwater extraction, Hunter Water Corporation, NSW, Australia
- Expert panel, oversight of responses to GDE springs communities in response to groundwater extraction for mining, QLD, Australia

This experience includes a background in the monitoring of groundwater levels and physiological/ecological responses of GDV and GDEs to changes in groundwater depth. For the purposes of this report, questions regarding groundwater modelling are outside of my field of expertise.

Structure of this opinion

This opinion will address individual points across the Licence to Take Water document and supporting materials, focusing upon details of (i) proposed groundwater monitoring and (ii) the

identification and proposed monitoring of GDEs. These areas relate to CP 7 of the licence conditions, namely objectives (i) and (iii):

- i. to achieve (or reduce) the predicted impact on groundwater levels as determined under CP 5, and
- iii. to protect 70% or more of the GDEs in each of the two major land forms classes (aeolian sandplain and alluvial plain) on the Land as determined under CP 5.

Groundwater level monitoring

Licence condition CP 8 of the Licence conditions lays out the requirements for a groundwater-monitoring program which includes monitoring of groundwater level. Some details of this monitoring program were lacking in the Fortune Report. Measurement methods should be provided (eg periodic surveys of monitoring bores, records of automated down-bore sensors). The nature of monitoring bores identified in Figure 4-1 of the Fortune Report is furthermore unclear—will observations be consistent across bores labelled in the Obs, Bean and WD groups be monitored in the same way? Are these monitoring bores all previously existing? or is there a strategy for the placement of new bores? The ability to identify and adapt to groundwater drawdown on GDEs is contingent upon these monitoring details.

Health of GDEs

The baseline depth-to-groundwater (DGW) for protection of GDEs has been accepted to be 15m (point 101, decision to grant the licence). Using this DGW as a basis for identifying GDV, predicted impacts on GDEs remains below the target impact of 30% (25% of alluvial GDEs and 15% of sandplain GDEs).

In section 3.5 of the technical report for the groundwater extraction licence resource assessment, the mapping shows that a majority of the GDEs in the central plains are located where DGW is between 5 m and 10 m as noted. However, there is a substantial portion of GDEs which are mapped where DGW is 15–20 m (Figure 3-14, technical report). These trees 'are believed to not be accessing' groundwater (section 2.1, Fortune report), which is consistent with previous investigations by (Cook and O'Grady, 2006; O'Grady *et al.*, 2006), although studies of water source where bloodwood grows over deeper groundwater have not been conducted to my knowledge. Even assuming that bloodwood and ghost gum trees are using deep soil moisture instead of groundwater where DGW is 15–20 m (O'Grady *et al.*, 2006), the potential impact of groundwater drawdown on deep soil moisture levels is largely unknown for this area. However, it well understood in systems overseas that changes in DGW can affect soil moisture in the vadose zone (Loheide *et al.*, 2009) and that soil water uptake in the vadose zone can enhance the drawdown of groundwater levels (Loheide *et al.*, 2005). Assuming that deep soil moisture supplies have an apparent dependence on groundwater where vegetation is above DGW 15–20 m (O'Grady *et al.*, 2006; O'Grady *et al.*, 2007), groundwater drawdown could have a negative impact on long-term health and survival of these trees.

If groundwater drawdown remains as expected by the modelling, impacts on GDV where DGW is between 15 m and 20 m will be minimal, excepting in only a small area (Figure 3-15, technical report). By contrast, if drawdown becomes larger than predicted and the true potential extent of GDEs through direct and indirect access to groundwater were extended into locations where DGW was 15–20 m, the protection target of 70% of GDEs in the aeolian sandplain could be at risk.

The DGW triggers laid out in sections 2.1.1 (GDEs over groundwater < 10 m deep) and 2.1.2 (GDEs over groundwater 10–15 m deep) of the Fortune report are reasonable and would continue to be so if section 2.1.2 were to address GDEs over groundwater 10–20 m deep. I am not aware of a basis for the drawdown rate trigger of 0.2 m/year in the particular vegetation on Singleton Station, thus this rate does not guarantee protection of GDEs. Nevertheless, this rate seems to be a reasonable estimate, and it is just as likely that a faster rate would generate no more impact than a slower rate. This uncertainty about the rate of acceptable aquifer drawdown suggests that the monitoring of GDE health is essential to ensure their protection.

Much of the uncertainty of impacts on the health of GDEs is centred on the methodology and assumptions used for identifying the extent of GDEs and their response to changes in DGW. Identifying GDEs by greenness and wetness indices is effective where the satellite signature is obvious, such as around dryland riparian corridors (Eamus *et al.*, 2015) or in alluvial plains. The same methodology is less likely to reflect groundwater access or GDE health over deeper groundwater without local calibration. For example, use of groundwater by bloodwood might be restricted to periods when other stresses are ameliorated, such as those caused by hot and dry atmospheric conditions (Cleverly *et al.*, 2016), and this is not likely to be detected through greenness and wetness indices even though the presence of groundwater is essential for long-term survival of these trees. Some commonly accepted measures of stress responses in GDV to groundwater drawdown include leaf or ecosystem carbon and water exchange, xylem water potential and water-use efficiency estimated through stable isotopes of carbon, the last of which has been proposed for identification of groundwater usage above and beyond access to precipitation only (Cleverly *et al.*, 2016; Zolfaghar *et al.*, 2017; Rumman *et al.*, 2018). A weakness of this project is that no direct measurements of the physiological activity in GDV has been taken as a baseline, nor have any such measurements been planned for future monitoring, as far as it is apparent in the available documentation.

Summary

Independently and before reviewing the letter of concern by Environment Centre NT dated 4 October 2020, I have come to some of the same concerns which were outlined in that document, namely regarding "considerable scientific uncertainty and a lack of evidence regarding ... uncertainty about the rate of acceptable aquifer drawdown, ... the nature and extent of groundwater-dependent ecosystems, [and] the impact of extraction on groundwater-dependent ecosystems."

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