# **ANNEX B**

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# Grounds for Review of water extraction licence decision – section 30 of the *Water Act* Fortune Agribusiness – WDPCC10000

The Environment Centre NT (ECNT) seeks a review (Review) of the decision of the Controller of Water Resources (Controller's Decision) to grant Fortune Agribusiness (Fortune) a groundwater extraction licence (Licence) to take 40,000 megalitres of water per annum under section 30 of the *Water Act 1992* (NT) (Water Act) in respect of Singleton Station (licence number WDPCC10000). ECNT submits that the Controller's Decision should be set aside and substituted with a decision to refuse the Licence under s30(3)(a)(ii) of the Water Act.

### 1. Grounds for Review

The grounds upon which ECNT submits the Controller's Decision should be substituted with a refusal to grant the Licence are:

- (a) The Licence is inconsistent with the Western Davenport Water Allocation Plan 2018-2021
   (WDWAP) and thus breaches s22B(4) of the Water Act;
- (b) The proper application of the factors in s90(1) of the Water Act suggests that the Licence should not be granted, namely:
  - a. there is insufficient water available in the area in question to grant the Licence (s90(1)(a));
  - b. the water allocation plan does not support the grant of the Licence (s90(1)(ab));
  - c. there are likely to be significant adverse effects to the supply of water to other persons entitled to it under the Water Act (s90(1)(c)); and
  - d. the designated beneficial uses of the water and the quality criteria pertaining to the beneficial uses mean that the Licence should not be granted (s90(1)(e)).
- (c) The following additional factors (s90(1)(k)) should be considered by the Minister and suggest that the Licence should not have been granted:

- a. the Licence is likely to cause significant deleterious impacts on groundwater dependent ecosystems;
- b. there would be a threat (and indeed a likelihood) of serious and irreversible environmental harm from the Licence;
- c. There is considerable scientific uncertainty and a lack of evidence regarding key matters, including, but not limited to, uncertainty about the rate of acceptable aquifer drawdown, impact on water quality due to salinity, the projected rate of recovery of aquifers, the nature and extent of groundwater dependent ecosystems, the impact of extraction on groundwater dependent ecosystems, the cultural impacts of extraction (including sacred sites), and the impacts of climate change on groundwater resources;
- d. there is insufficient information in the Application to form a rational basis for a decision to grant the Licence (including with respect to proposed adaptive management of impacts);
- e. there is considerable uncertainty regarding the adaptive management plan proposed by the proponent. Given the uncertainty with respect to the consumptive pool available in relevant water allocation plan, as well as likely environmental impacts, the Licence should not be granted in the absence of an approved and peer-reviewed adaptive management plan.
- f. The Controller's Decision should not have placed reliance on the *Guideline: Limits of* acceptable change to groundwater dependent vegetation in the Western Davenport Water Control District (**Guideline**);
- (d) There is an insufficient basis to increase the Licence term to 30 years under s 45(4) of the Water Act.

The basis for these grounds is provided below.

# 2. The task of the Minister under section 30 of the Water Act

Section 30(1) of the *Water Act* permits a person aggrieved by a decision under the legislation to apply to the Minister to review the matter. Of note, the Minister must undertake a merits review of the Controller's Decision (*The Environment Centre Northern Territory (NT) Inc v The Minister for Land Resource Management* [2015] NTSC 30). The Minister must make up her own mind about what to do, and is not confined to considering whether the Controller fell into legal error in granting the Licence: "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."



ECNT is a person aggrieved within the meaning of s30(1) of the *Water Act*. ECNT is the peak community sector environment organisation in the Northern Territory of Australia, raising awareness amongst community, government, business and industry about environmental issues and assisting people to reduce their environmental impact and supporting community members to participate in decision-making processes and action. ECNT has a close relationship with the subject matter, via a decades long history of making policy and law reform submissions on water law and policy in the Northern Territory. ECNT has submitted numerous comments (including objections) in relation to individual water extraction licence applications, and has legally challenged water extraction licence decisions in court (see *The Environment Centre Northern Territory (NT) Inc v The Minister for Land Resource Management* [2015] NTSC 30). ECNT conducts this work as a peak body in the Northern Territory, in the public interest.

#### 3. The legislative scheme

The Water Act is described in the long title as "an Act to provide for the investigation, allocation, use, control, protection, management and administration of water resources". Relevantly, "the property in and the rights to the use, flow and control of all water in the Territory is vested in the Territory and those rights are exercisable by the Minister in the name of and on behalf of the Territory" (s9(2)).

The purpose of the Water Act is to ensure that water is managed sustainably and in the public interest. This contention is supported by the Supreme Court case of *The Environment Centre Northern Territory (NT) Inc v The Minister for Land Resource Management* [2015] NTSC 30, where Justice Hiley stated that an "important consideration when construing the statutory powers of a Minister [with respect to a review under s30 of the Water Act] is the public interest in the proper management of the water". In that case the Supreme Court quoted from *ICM Agriculture Pty Ltd v The Commonwealth* (240 CLR 140) that in "Australia, water and rights to use water are of critical importance, not just to those who are immediately interested in particular water rights, but to society as a whole'. This broad characterisation of the purpose of the Water Act – that water should be managed in the interests of society as a whole, not just in the interests of particular water rights holders - should guide the Minister in her assessment of the Review.

Section 22 of the Water Act empowers the Minister to declare a part of the Territory to be a water control district. The relevant water control district (which wholly encompasses the area with respect to which the Licence applies) is the Western Davenport Water Control District. The beneficial uses for the Western Davenport Water Control District. The beneficial uses for the Western Davenport Water Control District ("WCD") were declared on 9 March 2016 under s22A of the Water Act and comprise the following uses for groundwater:

• agriculture;



- aquaculture;
- public water supply;
- environment;
- cultural;
- industry; and
- rural stock and domestic.

The declared objectives for the WCD are described in the document entitled "Australian and New Zealand Guidelines for Fresh and Marine Water Quality" dated 2000.

Pursuant to s22B of the Water Act, the Minister has declared the Western Davenport Water Allocation Plan (WDWAP) within the relevant WCD. Section ss22B(4) notes that water resource management must occur <u>in</u> <u>accordance with</u> the relevant water allocation plan. The purpose of a water allocation plan is to ensure that water is allocated within the estimated sustainable yield to beneficial uses (s22B(5)). Thus, the water allocation plan (in this case the WDWAP) is the key statutory document guiding the Controller's consideration of the Application and any groundwater extraction licences must comply with that plan.

Section 60(1) of the Water Act empowers the Controller to grant a groundwater extraction licence upon application. Section 90 of the Water Act sets out a list of mandatory factors the Controller must take into account when granting a licence. This is not an exhaustive list. Specifically, the Controller can consider other factors (s90(1)(k)).

#### 4. The Western Davenport Water Allocation Plan

The WDWAP states that its purpose to "ensure that water resources are managed in a way that protects and maintains environmental and cultural values while allowing water to be sustainably used for productive consumptive beneficial uses" (p 6).

There are three hydrogeological zones within the WDWAP area. The major groundwater resource occurs within the Central Plains Management Zone, where Fortune's project is to be located.

While the estimated sustainable yield for groundwater within the WDWAP as a whole is expressed to be 138,405ML/year, the estimated sustainable yield for the Central Plains Management Zone is 112,720ML/year. Of the estimated sustainable yield for the Central Plains Management Zone, 87,720ML/year is allocated for consumptive uses (the remainder is for environmental and cultural uses).



Of this amount, approximately 60,879ML/year is available for licensed beneficial uses such as agriculture and industry. The Licence thus represents 66% of the available consumptive pool for the Central Plains Management Zone (40,000 of 60,879ML/year). It is noted that the estimated sustainable yield in the WDWAP represents a very significant increase from the previous plan, in the order of 100,000ML/pa.

The estimated sustainable yield (and consumptive pool available for licensing in the Central Plains Management Zone specifically) is subject to a number of qualifications and constraints that suggest a degree of caution should be exercised when granting groundwater extraction licences. These primarily arise from a high degree of scientific uncertainty with respect to the resource, and the environmental and cultural impacts of extraction upon it.

First, the WDWAP states that it "is based on limited information. Further research, particularly in regard to accessibility of groundwater stored in the regolith and the location and individual requirements of GDEs is recommended to occur within the term of the WAP. Due to these data limitations, there is a significant risk that the consumptive pool could be reduced in future WAPs" (p10). The primary sources of uncertainty relate to the availability of water in the regolith, and impact on GDEs. ECNT addresses these deficiencies below.

The "regolith" is described (p23) as "the unconsolidated, weathered soil and gravel material overlying the aquifers. The regolith is saturated when the underlying aquifer is saturated and cannot accept any more recharge." The WDWAP's modelling with respect to the regolith appears to be the primary reason for the significant increase in the estimated sustainable yield for the Central Plains Management (compared with the previous water allocation plan). However, the scientific basis for the availability of this resource is scant, and the WDWAP stipulates that "further work is needed to refine the regolith resource and ecosystem access requirements" (p 23). In addition, the WDWAP foreshadows that the availability of water in the regolith resource is likely to be "downgraded in later WAPs" (p 56). ECNT submits that there is a great deal of uncertainty regarding the availability of water in the regolith. It is possible that the resource is no more than conceptual. Granting licences on the basis that water is available from the regolith is likely to adversely impact other prospective and current users in the area.

In relation to uncertainty regarding GDEs, the WDWAP explicitly requires that GDEs must be protected from deleterious impacts (p 25). In this respect, the WDWAP incorporates the Northern Territory Water Allocation Planning Framework, which requires that, in relation to groundwater extraction in the arid zone (where the project is proposed), "there will be no deleterious change in groundwater discharges to dependent ecosystems, and total extraction over a period of at least 100 years will not exceed 80 percent of the total aquifer storage at the start of extraction". The WDWAP states (p 14) that:



The review [of the previous water allocation plan] identified the need to ensure that the WDWAP aligns with the NT Water Allocation Planning Framework (NT Government 2018a) (a policy of the NT Government). As a consequence, this WDWAP makes allocations to support groundwater dependent ecosystems ahead of allocations to consumptive uses. This WDWAP is considered to be consistent with the NT Water Allocation Planning Framework.

ECNT submits that the WDWAP clearly requires that any licensing decisions must apply the benchmark of test of causing "no deleterious impacts on GDEs", consistent with the water allocation planning framework it applies.

The WDWAP sets out the following "limits" to change in groundwater conditions at GDEs caused by proposals to extract groundwater (p 8):

- The maximum depth to groundwater does not exceed 15m;
- The magnitude of change in the depth to groundwater is not more than 50%;
- The rate of change of the groundwater table is not more than 0.2m per year.

The rationale for this cautious approach is set out in the WDWAP, and is based on both scientific uncertainty about a range of key matters and the threat of irreversible damage to groundwater resources and GDEs if overextraction occurs.

ECNT notes the following additional serious deficiencies in the knowledge base underpinning the WDWAP:

- There are no site-specific studies underpinning the acceptable rate of drawdown of aquifers in the plan area, this instead being inferred from a single study conducted in Western Australia regarding banksias (p 27). It is difficult to see how a hydraulic assessment of the availability of water under the Licence or others can even be undertaken in the absence of this information, which should by definition involve an analysis of expected drawdown impacts compared to the acceptable levels of impact.
- The WDWAP does not incorporate data regarding the location and individual requirements of GDEs in the area (p 10);
- The WDWAP contains no climate change modelling, and indeed explicitly notes that the effect of climate change has not been considered in the plan (p, 22, p 35);
- There does not appear to have been a sacred site clearance or cultural impact assessment undertaken in the area, although the cultural importance of soaks to Aboriginal people is referred to (p 28).



The WDWAP also discloses the threat of serious and irreversible environmental harm if overextraction occurs. In particular:

- The WDWAP notes that "there is a high degree of connectivity between the aquifers within this zone. As a result, extraction from one resource is expected to impact the neighbouring aquifers (p 18). This means that the drawdown anticipated in the Application may have serious impacts in other areas;
- The WDWAP notes that there is a risk that hotspots of use may cause unacceptable local drawdown (p 35);
- The WDWAP notes that groundwater recharge is highly episodic, "rare and therefore difficult to predict" (p 23), and records that there was little recharge between 1900 and 1975 (p 21). This means that it may take many decades for aquifer levels to recover if there is unacceptable drawdown.

These uncertainties and threats mean that water management in this region must be approached with a high degree of caution. A precautionary approach is required.

#### 5. The reliance on adaptive management in the WAP and the Licence

To manage the evident uncertainty about the water resource and impacts upon it from extraction, the WDWAP suggests that an "adaptive management approach" will be used. In particular, "where groundwater drawdown trigger levels are exceeded or unacceptable impacts from groundwater drawdown on GDE health are observed (ie change in morphology, composition or loss of function) this will trigger an adaptive management response" (p 43). However, little detail is available about what adaptive management within the WDWAP area would entail. The "trigger levels" are not stipulated in the WDWAP beyond the brief comments identifying the "limits to change in groundwater levels within the GDE protection area" (p 39). A number of "implementation activities" are proposed from page 48 of the WDWAP, many of which do not appear to have been carried out. For example, page 49 of the WDWAP states that the Department will review and install by June 2019 an "annual monitoring program including compliance monitoring with adaptive management framework triggers". This does not appear to have occurred. No adaptive management plan has yet been approved or published with respect to the Licence or the WDWAP as a whole.

While the approval of such a plan has been imposed as a condition of the Licence, a growing body of scientific research suggests that adaptive management (particularly using drawdown "triggers" as the primary monitoring/management tool) may not be an effective management tool for groundwater management. Currell (**attached**) suggests that drawdown "triggers" are a misguided strategy for protecting



GDEs, because they "ignore fundamental principles of how aquifers respond to abstraction" (p 619).<sup>1</sup> In particular, there is often a significant delay between abstraction and drawdown impacts, and often there may be impacts on GDEs with minimal drawdown at the point of groundwater discharge. Saito et al (attached) also highlight the ineffectiveness of groundwater planning and management to safeguard natural systems, stating that "the complexity of groundwater systems creates substantial uncertainty about the impact that current or future groundwater withdrawals will have on ecosystems" (p 1).<sup>2</sup> They say that "effective triggers must be associated with appropriate monitoring in space and frequency... and require objective analyses of those data, institutional capacity empowered to take action, and an enforceable mandate to take action if triggers are reached, up to and including ceasing withdrawals" (p 4). ECNT submits that it is not clear that any of these requirements are met with respect to adaptive management of the WDWAP. Special care must be taken in arid environments, where there is potential to irreversibly impact GDEs if any surface moisture is lost: "even minimal drops in water levels, including those that occur incrementally over long time periods or those that are due to pumping wells at some distance from the target resources, can extirpate species and natural communities" (p 5). Finally, "water table declines can persist for years even after activating a trigger to cease pumping" (p 5), and modelling with sufficient temporal parameters must be undertaken to assess these long-term impacts.

It appears that, with respect to the Licence, "adaptive management" is being used as a proxy for genuine scientific study of the environmental impacts of water extraction within the WDWAP area. Thomann et al<sup>3</sup> suggest:

... that adaptive management has been used in some cases as a pretext to defer or avoid detailed up-front analysis of environmental impacts prior to development approval decisions. This has led to decisions regarding project approval and/or allowable project operations being made prematurely for reasons for budgetary constraints or political will that would otherwise have been appropriately delayed due to scientific uncertainty and/or a lack of viable strategies to reverse potential impacts from the development in question... Furthermore, adaptive management has also been used to defer difficult decisions in terms of responding to uncertain impacts, whereby development of mitigation measures is postponed until after an impact has occurred (p 3).

It is currently not possible to assess the likely success of adaptive management with respect to the Licence, because there is no adaptive management plan approved. Given the scientific uncertainty associated with

<sup>2</sup> Lauren Saito, B. Christian, J. Diffley, H. Richter, M. Rohde, S. Morrison, "Managing Groundwter to Ensure Ecosystem Function", *Groundwater*, February 2021.

<sup>3</sup> Jason Thomann, A. Werner, D. Irvine, M. Currell, "Adaptive management in groundwater planning and development: A review of theory and applications", *Journal of Hydrology*, 586 (2020).



<sup>&</sup>lt;sup>1</sup> Matthew J. Currell, "Drawdown 'triggers': a misguided strategy for protecting groundwater-fed streams and springs", 54(5) *Groundwater*, September-October 2016.

the resource, and the research referred to above which suggests adaptive management may not be effective for groundwater resources, ECNT submits that the Licence should not be granted until the effectiveness of the proposed adaptive management approach can be objectively ascertained and peerreviewed. To grant the Licence without an approved and peer-reviewed Adaptive Management Plan would clearly be inconsistent with the WDWAP, and with s22B(5) of the Water Act.

#### 6. The status of the "Guideline"

ECNT notes that the Department published in 2020 a document entitled "Guideline: limits of acceptable change to groundwater dependent vegetation" (Guideline). This Guideline is problematic in a number of key respects, and ECNT submits that it should not be applied, as to do so would lead the Minister into legal error. The Guideline incorrectly paraphrases the benchmark of "no deleterious impacts on GDEs" that forms the basis of the WDWAP, instead saying that deleterious impacts should be "avoided as far as possible". It incorrectly states the purpose of the WDWAP is to "provide for consumptive use of groundwater and that some impact on GDEs is unavoidable". It purports to change the principles underlying the WDWAP by asserting that only 70% of GDEs should be protected from negative impact. The Guideline has not been subjected to the extensive public consultation processes that informed the WDWAP. It is not clear how it has been developed. The studies it refers to that have purportedly added to the knowledge base about GDEs have not been cited, and it is not clear they have been peer reviewed. It has been approved by the Controller herself, inconsistent with the National Water Initiative principles that require separation of regulatory and policy-making functions with respect to water management. It is inconsistent with the WDWAP in key respects (outlined above). To apply this Guideline in granting the Licence would breach s22B(4) of the Water Act which requires water management to occur in accordance with declared water allocation plans.

#### 7. Environmental impacts of and scientific basis for the Licence

The Controller's Decision and supporting documents disclose a range of significant and likely irreversible environmental impacts, namely:

- There may be a projected drawdown of aquifers by up to 50 metres over 30 years (ie at a rate of 1-2 metres of drawdown per year) in the immediate vicinity of the project. This is clearly inconsistent with the requirement in the WDWAP that:
  - o the maximum depth to groundwater should not exceed 15 metres;
  - $\circ$  the magnitude of change in the depth to groundwater is not more than 50%;
  - $\circ$  the rate of change of the groundwater table is not more than 0.2 metres per year.



- There will be significant adverse impacts on GDEs (of up to 30%), which is inconsistent with the WDWAP. The Controller's Decision relies heavily on the Guideline, which should not be applied for the reasons detailed above including that it is inconsistent with the WDWAP and was approved by the Controller herself;
- There are likely to be significant impacts on water and land quality, with the project bringing up to 28,000 and 36,000 tonnes of dissolved salts to the surface per annum. This could have serious impacts on groundwater quality and ecosystem function in the region, which do not appear to have been adequately modelled or considered. The Controller acknowledges there is uncertainty as to how salinity may impact the underlying groundwater resource, but approves the licence anyway. Furthermore, the Controller has not taken into account the declared water quality objectives for groundwater within the Western Davenport Water Control District, which 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). This would appear to be inconsistent with s73(2) of the Water Act;
- There is no approved adaptive management plan underpinning the Licence in accordance with the WDWAP, so it not possible to ascertain whether proposed management tools will be sufficient to prevent unacceptable impacts.

Further, there are serious inadequacies and gaps in the scientific modelling and research upon which the Controller has based her decision, namely:

- The Controller's Decision relies heavily on Fortune's document "Singleton Horticulture Project Groundwater Dependent Ecosystem Mapping and Borefield Design (Fortune Report) in assessing the Project's likely impact to GDEs. This is deficient because it is a "desktop review" only, and demonstrates that the project will negatively impact GDEs beyond the threshold criteria set out in the WDWAP. It does not appear to have been subjected to peer review;
- There is scant scientific basis given for the assertion that aquifers would recover over a 30-year
  period following the conclusion of the project (and indeed this seems starkly inconsistent with the
  WDWAP's characterisation of the episodic nature of recharge in the area);
- there is no modelling for climate change impacts on groundwater resources or GDEs, and insufficient information about how cultural values and sacred sites will be protected.

The Technical Report appended to the Controller's Decision takes a more cautious approach than that taken by the Controller. In particular, the Technical Report:

• recommends further work to understand the impacts of the project;

- states that there are critical limitations in the groundwater modelling on which the Licence is 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 of the model" (p 30 of the Technical Report)."

# 8. Insufficient basis for the extension of the term of the Licence under s45(4) of the Water Act

The Controller has used her discretion to grant a Licence for a period of 30 years (instead of the usual 10 years). Given the high degree of scientific uncertainty underpinning the WDWAP, the imminent expiry of the WDWAP (in 2021), the statement in the WDWAP that future water allocation plans may have a reduced estimated sustainable yield due to uncertainty about the availability of the water in the regolith and impacts on GDEs, and the likelihood of serious and irreversible impacts, this extension is unwarranted, and puts the water resource at significant risk.

# 9. Summary

In summary, if it stands, the Licence will cause significant deleterious impacts on groundwater resources and GDEs. Indeed, the project seems likely to effectively drain an aquifer containing water that is thousands of years old, with likely serious and irreversible impacts. Promises to "adaptively manage" the impacts are no more than conceptual at this stage – without an approved adaptive management plan, subjected to public and scientific scrutiny, there is no way to ascertain whether the water is actually available for extraction without serious impacts. The Controller's Decision breaches s22B(4) of the Water Act, and incorrectly applies the criteria in s90 of the Water Act. The appropriate course for the Minister is



to set aside the Licence under s30(3)(a)(ii) of the Water Act and substitute it with a decision that the Licence be refused.

Yours faithfully,

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Kirsty Howey

Co-Director



Shar Molloy Co-Director

