

Submission on the referral

Fortune Agribusiness Funds Management Pty Ltd – Singleton Horticulture Project

This submission is made under regulation 53 of the Environment Protection Regulations 2020

Government authority: Aboriginal Areas Protection Authority

Summary:

Fortune Agribusiness Funds Management Pty Ltd (FAFM) was issued with an Authority Certificate (C2019/083) by the Aboriginal Areas Protection Authority (AAPA) in 2019. The Certificate only applies to works on a defined parcel of land nominated by FAFM in their application to AAPA. However, the detailed groundwater modelling contained in the referral report shows that impacts of the project extend well beyond the area of land covered by the Authority Certificate.

Additionally impacts on Aboriginal sacred sites arising from the proposed project are likely to be inconsistent with the terms of the Authority Certificate C2019/083. A number of conditions in that Certificate stipulate that 'no work shall take place and no damage shall occur' to Aboriginal sacred sites whose features range from trees, swamps, creeks, sand ridges, water holes and soakages.

Moreover, the reported impact area of the project identified in the referral is only based on the allowable levels of change to groundwater levels with respect to GDEs in the water allocation plan. This contrasts with the broader impact area that is relevant to the consideration of impacts to Aboriginal sacred sites and Aboriginal cultural heritage, which is the full modelled drawdown area, represented by the 1m drawdown contour exported from the groundwater model, rather than the limits in the water allocation plan.

Further, there are acknowledged uncertainties with the groundwater model and so AAPA considers that a further minimum 5km buffer to the 1m drawdown area should be used to assess impacts to Aboriginal sacred sites and Aboriginal cultural heritage.

AAPA has identified numerous Aboriginal sacred sites and places of important cultural heritage within this broader impact area that are groundwater dependent and would not be tolerant to any water table change. This includes, for example, soaks, water holes, swamps, and trees that are anticipated to be groundwater dependent. A site by site assessment of current water table depth, predicted drawdown, and rooting depth of trees in these areas needs to be undertaken.

In addition, there are significant portions of the broader impact area where AAPA has not yet consulted with Aboriginal custodians to record Aboriginal sacred sites, and where no previous Authority Certificates have been issued. This means that the full impact of the project on Aboriginal sacred sites and Aboriginal cultural heritage is not yet known and requires further survey work and consultation with Aboriginal custodians.

Salinity is an additional risk to Aboriginal sacred sites and Aboriginal cultural heritage arising from the project, and which may persist in the aquifers for significantly longer than the predicted recovery in groundwater levels.

The staged nature of the water extraction licence is welcomed. AAPA recommends the ongoing verification of the conceptual and numerical models by monitoring data over the first 3 years, and consequential updates to survey areas for Aboriginal sacred sites and Aboriginal cultural heritage, to ensure the requisite protection measures are adopted.

The additional aquifer knowledge that will be gained in the first 3 years may show full hydraulic continuity between the target aquifer for extraction and shallow aquifers underlying sacred sites, which would raise the probability of impacts from water table drawdown; or show hydraulic disconnection, which would increase the risks of salinity in the shallow aquifers due to lack of dilution from regional groundwater inflows, and change the terrestrial and aquatic ecological balance at Aboriginal sacred sites and places of important cultural heritage over time.

Therefore, there are multiple risk pathways that may affect the integrity of Aboriginal sacred sites and Aboriginal cultural heritage. The risks to water dependent sacred sites described above will have significant implications for the community and the individuals who are responsible for the care of sites. Donaldson (2023) describes the effects including shame, social isolation and physiological ill health on individuals seen to have failed in their obligations to sacred sites and country; and long term, intergenerational emotional and spiritual loss and even death. Furthermore the Iliyarne people as a whole may be seen by other Kaytetye groups as allowing their country to 'get sick'.

It is noted that engineered mitigation measures have been proposed by FAFM, such as additional extraction and irrigation at Aboriginal sacred sites. However, these may not be appropriate to the cultural integrity of the sites and would require detailed design work, further consultation with Aboriginal custodians and an Authority Certificate issued by AAPA. These proposed engineered mitigation measures are not permitted by the terms of Authority Certificate C2019/083; as are the impacts that the measures seek to mitigate.

AAPA notes that FAFM has indicated that they intend to apply for a further Authority Certificate from AAPA in relation to the groundwater drawdown area, however, this action has not yet been taken by FAFM.

AAPA notes that without an Authority Certificate, the removal of water from an Aboriginal sacred site through water drawdown, or other adverse impact to an Aboriginal sacred site, may amount to a criminal offence under the *Northern Territory Aboriginal Sacred Sites Act 1989*.

Specific comments on aspects of the main report and appendices are provided below.

Section of Referral	Theme or issue	Comment
Executive Summary	Aboriginal and Cultural Heritage	<p><i>FAFM has obtained an Authority Certificate from AAPA that identifies the sacred sites within the immediate project area and also much of the surrounding area that may be subject to groundwater drawdown</i></p> <p>This statement by FAFM is incorrect.</p> <p>The Authority Certificate provided to FAFM is limited to a defined parcel of land identified by FAFM in their application for their Authority Certificate. That application was not accompanied by information relating to the extent of the proposed water</p>

Section of Referral	Theme or issue	Comment
		<p>extraction, or any detailed water drawdown modelling. Accordingly, the Authority Certificate does not take into account the impacts of water drawdown by the project and it does not apply in relation to the broader water drawdown areas.</p> <p>The Authority Certificate provided to FAFM does not identify all Aboriginal sacred sites and Aboriginal cultural heritage that will be impacted by the project.</p> <p>Accordingly, on the basis of information provided in the report, Aboriginal sacred sites and Aboriginal cultural heritage are currently at risk of damage and interference by the project.</p>
Main report Section 3.8	Aboriginal and Cultural Heritage Hazardous substances	The Hazardous Material Management Plan in Appendix H is deficient, in that it does not include site specific plans for the avoidance and protection of Aboriginal sacred sites and Aboriginal cultural heritage.
Main report Section 5.8	Aboriginal and Cultural Heritage Aquifer recharge	<p>The referral report states that “<i>large regional aquifers are recharged by periodic rainfall runoff from the Davenport Ranges to the north-east...</i>” (at p71)</p> <p>However, this contrasts with other information provided in the report and requires clarification. This includes:</p> <ul style="list-style-type: none"> - At Appendix Y Figure 1 - Regional groundwater flow is from the south west and the model is of limited extent north east of the site - The Western Davenport Water Allocation Plan water balance shows a significant component of recharge is from the Southern Ranges to the south of Singleton.
Main report Section 5.10.2	Aboriginal and Cultural Heritage Culturally significant vegetation and modelled groundwater	<p>The referral report refers to data gathered by Donaldson (2021) in relation to sacred sites and culturally significant vegetation. However, it appears that this information may be deficient as the modelled groundwater drawdown area presented in Donaldson (2021) is related to one period in time, in one extraction scenario (Scenario 28 Year 40). In addition, though not certain, the modelled drawdown may only reflect the GDE impact area as defined by DEPWS, rather than modelled total drawdown.</p> <p>Accordingly, any study of culturally significant vegetation, Aboriginal cultural values, and Aboriginal sacred sites that is to be relied upon by FAFM should be based on the full modelled total drawdown area, and should take into account model uncertainty, and updates to the model over time.</p>

Section of Referral	Theme or issue	Comment
	drawdown area	
Main report Section 5.16.1	Aboriginal and Cultural Heritage Authority Certificate	<p>FAFM applied for an Authority Certificate over a discrete area of land, which does not include areas of land identified by FAFM as being impacted by the project. It is noted that the proponent has not applied for an Authority Certificate over the broader impact areas of the project.</p> <p>The current modelling of the project indicates that the project will adversely impact Aboriginal sacred sites. Within the full drawdown area the AAPA has records of 93 sacred sites, 35 of which have water features, and 30 are trees that may be groundwater dependent.</p> <p>AAPA welcomes discussions with the proponent on obtaining a new Authority Certificate to cover areas within the broader groundwater drawdown areas and measures to protect Aboriginal sacred sites.</p>
Main report Section 5.16.2	Aboriginal and Cultural Heritage Modelled groundwater drawdown area	<p>The report states that the Donaldson (2021) Aboriginal Cultural Values Assessment “<i>included the entirety of the Proposed groundwater drawdown area</i>”. However, it is not clear that this is the case, as the area considered in the Donaldson assessment appears to be the area related to one period in time, in one extraction scenario (Scenario 20 Year 40). In addition, the area assessed may only reflect the GDE impact area as defined by DEPWS, rather than modelled total drawdown area.</p> <p>Accordingly, the cultural values assessment may not represent a complete assessment of all cultural values impacted by the project.</p>
Main report Section 5.16.4	Aboriginal and Cultural Heritage	<p>The report states that “<i>the Proposal is unlikely to have direct impacts to sacred sites</i>”. This statement is incorrect and is inconsistent with information provided in the report regarding water drawdown.</p> <p>The removal of water from an Aboriginal sacred site, or other interference with a sacred site, is a direct impact on that sacred site.</p> <p>These actions may amount to a criminal offence under the <i>Northern Territory Aboriginal Sacred Sites Act 1989</i>.</p>
Main report Section 7.2.4	Aboriginal and Cultural Heritage	<p>The potential impact of pesticide infiltration to groundwater will not be localised to the irrigation area once groundwater extraction ceases and groundwater rebound commences.</p>

Section of Referral	Theme or issue	Comment
	Pesticides	<p>Pesticides need to be safe for the environments that groundwater will discharge to after the baseline groundwater flow regime is restored, such as tree species dependent on groundwater aquatic species at soak, swamp and waterholes that are Aboriginal sacred sites and areas of Aboriginal cultural heritage.</p> <p>As well as the pesticide compounds, compounds that are breakdown products of the pesticides, if any, also need to be considered for ecosystem health.</p>
Main report Table 7.4	Aboriginal and Cultural Heritage Weed management	<p>The Biosecurity Management Plan includes a weed surveillance monitoring and control program to identify and control weeds emerging within, and surrounding works areas. The Plan should also consider Aboriginal sacred sites and Aboriginal cultural heritage areas as key areas for prevention of weed migration.</p>
Appendix E	Aboriginal and Cultural Heritage Monitoring Plan	<p>The monitoring plan will need to include Aboriginal sacred sites and Aboriginal cultural heritage areas that may be groundwater dependent.</p> <p>AAPA reiterates the licence condition that the monitoring plan must be in place before water extraction commences.</p> <p>FAFM will require an Authority Certificate from AAPA on suitable locations for groundwater monitoring, which are informed by consultations with Aboriginal custodians.</p>
Appendix E	Aboriginal and Cultural Heritage Staging and conditions of the Licence	<p>Due to uncertainties in the conceptual understanding regarding the hydraulic connections between the target aquifer and GDEs and the numerical modelling, updates will be required to survey areas for Aboriginal sacred sites and Aboriginal cultural heritage, to ensure the requisite protection measures are adopted.</p> <p>If actual drawdown is greater than modelled areas then new Authority Certificates will be required for areas that may be affected by extraction (remodelled with updated model) and appropriate mitigation measures developed and informed through consultation with Aboriginal custodians.</p> <p>Under CP10 the Aboriginal cultural values impact assessment should include Aboriginal sacred sites provided by AAPA. The assessment will need to demonstrate that living species present at Aboriginal sacred sites and cultural heritage areas will not be affected by the groundwater drawdown and salinity risks identified in the referral submission. Further, that no water drawdown</p>

Section of Referral	Theme or issue	Comment
		will occur at Aboriginal sacred sites or Aboriginal cultural heritage areas with water features such as soaks, water holes and swamps. A monitoring program and any mitigation measures will require an Authority Certificate from AAPA.
Appendix G Section 6.2	Aboriginal and Cultural Heritage Monitoring network	There are groundwater dependent Aboriginal sacred sites and Aboriginal cultural heritage areas beyond the site boundary that may be impacted by groundwater extraction based on the predicted drawdown area. An Authority Certificate will be required to be obtained by FAFM in order to determine suitable locations for groundwater monitoring.
Appendix G Section 8.4	Aboriginal and Cultural Heritage NTG issuing of additional entitlement	<i>NTG may delay the issue of additional entitlement until compliance reporting confirms that the aquifer response to pumping is consistent with that predicted by the NGM, and impact to identified sensitive receptors is acceptable.</i> Note that compliance reporting should be provided to AAPA for review, to ensure that the drawdown area is as predicted or whether Authority Certificates for additional drawdown areas are required.
Appendix G Table 15	Aboriginal and Cultural Heritage Mitigating impact to sacred sites	The proposal to reduce pumping rates from the nearest bores and redirect water from bores further afield is preferable to installing additional production bores nearby and irrigating the site at risk of impact. The proposed extraction rates already do not represent a sustainable yield from the aquifer, additional extraction will further increase the drawdown area. However engineered solutions are likely to be culturally inappropriate to the sanctity of a sacred site. In particular, engineered solutions involving intrusive works near sacred sites are not likely to be acceptable to Aboriginal custodians. Pumping and discharge to the shallow aquifers, if acceptable at all may need to be distant and therefore based on a hydrogeological conceptual model demonstrating groundwater flow from a discharge site toward potentially affected sacred sites. The proposed engineered mitigation measures are not permitted by the terms of Authority Certificate C2019/083. FAFM will require an Authority Certificate from AAPA to support any engineered mitigation solutions. AAPA also notes that the report is deficient in addressing how mitigation will be maintained until groundwater rebound is achieved over an estimated 30 years after farming ceases.

Section of Referral	Theme or issue	Comment
Appendix M	<p>Aboriginal and Cultural Heritage</p> <p>Groundwater Dependent Vegetation</p>	<p>The survey area excludes Taylor Ck to the south due to the areas model-predicted water table in excess of 15m depth below ground. There are Aboriginal sacred sites and Aboriginal cultural heritage in this area. Satellite imagery of vegetation, and leaf area index (Western Davenport WCD Groundwater Model report) is similar to Wycliffe Ck.</p> <p>Accordingly, it needs to be demonstrated that this vegetation can be supported by groundwater in the superficial aquifers only and is hydraulically disconnected from the regional aquifers.</p> <p>Inherent model uncertainties mean the groundwater model calibration may not be accurate in this area and hence GDEs and Aboriginal sacred sites could be reliant on groundwater inflows from the target aquifer.</p>
Appendix R	<p>Aboriginal and Cultural Heritage</p> <p>Drawdown thresholds</p>	<p>Figure 4-7 presents drawdown exceeding DEPWS acceptable thresholds for GDEs: drawdown to more than 10m depth below ground, or more than 50% below the levels that would be expected under a natural baseline, or change to rate of drawdown exceeding 0.2 m/year.</p> <p>This may be more than can be tolerated depending on the species present and may lead to damage. Some Aboriginal sacred sites and Aboriginal cultural heritage areas are GDEs and no damage to these places is acceptable. Damage to these areas may amount to a criminal offence.</p> <p>Tolerance to a deeper water table will need to be determined for Aboriginal sacred sites and Aboriginal cultural heritage areas on a site by site basis, depending on species present and their size, age, and predicted rooting depth, baseline water table depth and predicted drawdown. In relation to Aboriginal sacred sites and Aboriginal cultural heritage areas that have water features, such as soaks and water holes, no drawdown of the water table at these sites would be acceptable. Appropriate mitigation measures to maintain the water table may be required.</p>
Appendix R	<p>Aboriginal and Cultural Heritage</p> <p>Drawdown thresholds</p>	<p>To ensure the protection of Aboriginal sacred sites and Aboriginal cultural heritage areas, a survey based on the total drawdown area at its largest extent caused by the proposed groundwater extraction is required. Rather than the areas exceeding DEPWS GDE thresholds shown in Figure 4-7.</p> <p>It is noted that FAFM only holds an Authority Certificate for a discrete area of land and not for the area impacted by full extent of water drawdown. Based on the model drawdown contours provided in the report, the drawdown area to the 1m contour is significantly larger than the subject area in the existing Authority Certificate and contains numerous Aboriginal sacred sites and Aboriginal cultural heritage areas that must be protected.</p>

Section of Referral	Theme or issue	Comment
Appendix R	<p>Aboriginal and Cultural Heritage</p> <p>Drawdown post groundwater extraction</p>	<p>Figure 4-9 presents drawdown contours that over time show water table recovery beneath the borefield with a depressed water table moving south. This model prediction appears inconsistent with the conceptual model where regional groundwater flow is to the north and north west (Figure 5.6 main document), and requires clarification.</p>
Appendix L	<p>Aboriginal and Cultural Heritage</p> <p>Salinity risk</p>	<p>Salinity is predicted to increase in shallow groundwater as a result of irrigation. After water table recovery the re-naturalised shallow groundwater flow will be more saline, potentially affecting the integrity of Aboriginal sacred sites and Aboriginal cultural heritage areas even after groundwater levels have recovered</p> <p>This is given a medium residual risk rating considering salinity will reduce over time with rainfall recharge and regional groundwater inflow. However, if GDE and soak and water hole Aboriginal sacred sites and Aboriginal cultural heritage areas are found to be hydraulically disconnected from the target aquifer for groundwater extraction, then salinity will not diminish as a result of dilution from regional groundwater flow, and will rely on rainfall recharge.</p> <p>A site by site assessment of the species tolerance for increased salinity at Aboriginal sacred sites and Aboriginal cultural heritage areas may be required. There is a risk that a saline plume of shallow groundwater will alter the ecology of the wider area, which may damage the context of Aboriginal sacred sites and Aboriginal cultural heritage areas and, by a change in dominant species, may affect fire risk to these places.</p> <p>The Irrigation Management Plan includes measures to limit the increase in salinity. Good irrigation management should limit aquifer recharge by applying appropriate volumes of irrigation tailored to the crop water requirements. As there is no charge for the volume of water extracted there appears to be little incentive to carefully match irrigation volumes to crop needs.</p> <p>Matching irrigation volumes to crop needs will also ensure that there is no unnecessary groundwater extraction and consequent water table drawdown. AAPA recommends periodic reviews of irrigation management by the appropriate regulatory agency.</p>