Meadowbank 9/8

s22 - out of scope - irrelevant material

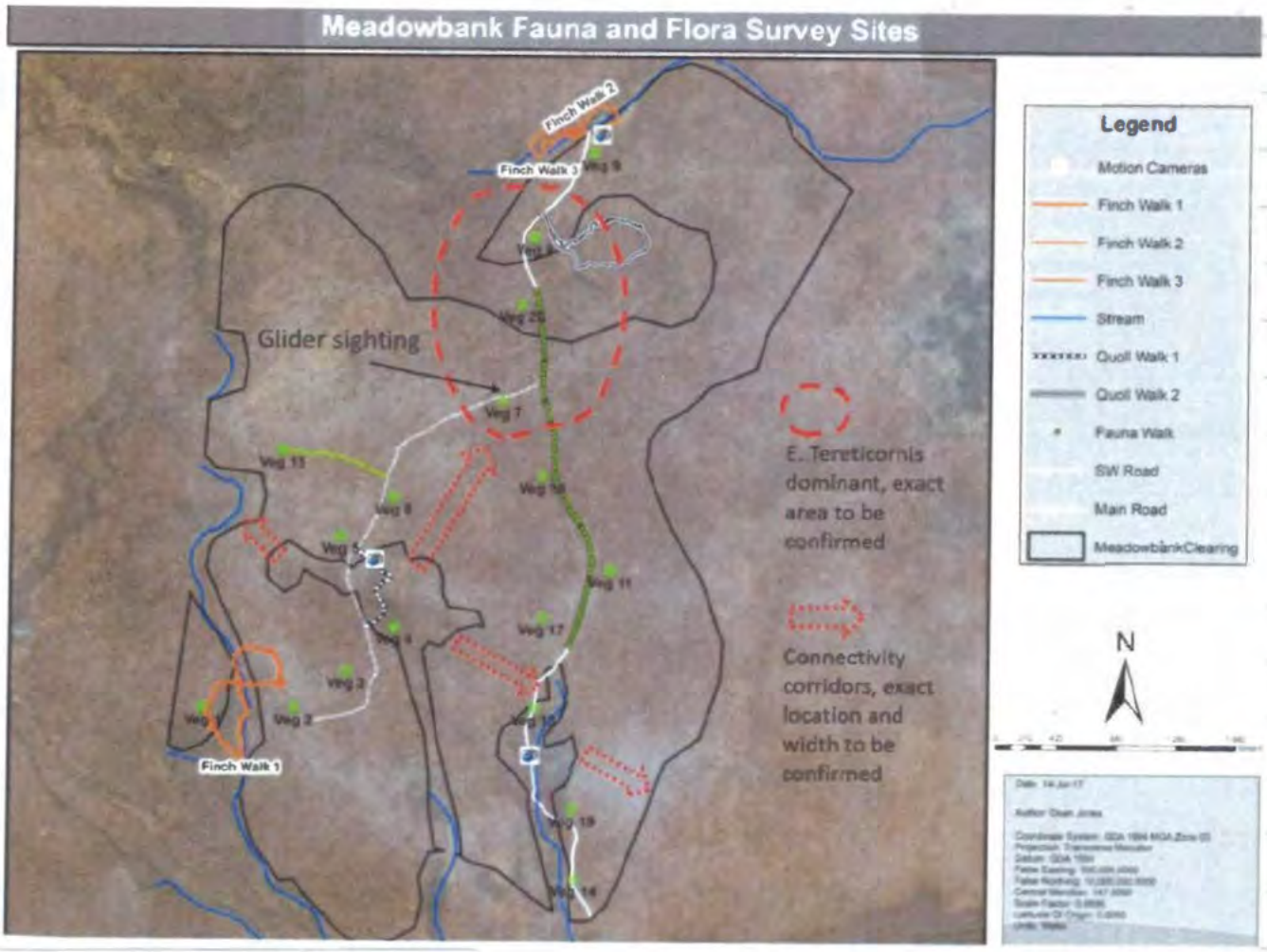
Spoke with Dean about mapping + avoiding the Cat habitat + including this in the PD He thought the Camerons would be agreeable to that. Also - raised survey effort suggested he do more Koala survey ± revised guidelines.

Waiting for revised PD. Told him not to submit a revised PD until he had spoken to Camerons + resolved a way forward.

14 Aug 2017

s22 - out of scope - irrelevant material

Rang Dean - asked for connectivity as per below sketch, exact corridors dependent on site.
- He thought that would be ok.



Proposed exclusion & connectivity

FOI 200710
Document 3

From: Alistair Melzer
To: s22
Subject: RE: Regional Ecosystems map request [SEC=UNCLASSIFIED]
Date: Monday, 21 August 2017 2:07:30 PM

Hi,

There has been some work done on the gliding distances – but I don't know if it was published. s47F was monitoring gliding across a main road construction project.

My experience with the gliders in only where the ironbarks were abutting drainage lines – so there was an associated with the river gums. I would expect that the gliders would use some of the ironbark woodland as a food resource – at least seasonally. So if the blue gum was buffered by ironbark the resource may be maintained. However, repeated spotlighting would be required to gain data on tree usage over space and time.

Alistair

From: s22 @environment.gov.au]
Sent: Monday, 21 August 2017 1:57 PM
To: Alistair Melzer <a.melzer@cqu.edu.au>
Subject: RE: Regional Ecosystems map request [SEC=UNCLASSIFIED]

Hi Alistair

Again thankyou.

Ok, I will use that information to develop a plan.

On the Glider- I have looked but cannot find any information- is there a minimum tree spacing that is necessary, ie will Gliders live where trees are too far apart for them to 'glide' to? With the area considered not habitat- I was wondering if this was because the trees are so spaced apart. Although there is also an absence of hollows in the smaller trees. Are the trees close enough that the gliders would traverse across the open woodland area?

s22

From: Alistair Melzer [mailto:a.melzer@cqu.edu.au]
Sent: Monday, 21 August 2017 1:48 PM
To: s22 @environment.gov.au>
Subject: RE: Regional Ecosystems map request [SEC=UNCLASSIFIED]

Hi s22 ,

That veg photos confirm my view that structurally and floristically the veg is good koala habitat. An absence of contemporary koalas would be a reflection of either (a) historical local population

reductions, or (b) environmental/climatic pressures (e.g. spring temperatures and heat waves); or a combination of both. I'm not sure what size patches should be retained. The inter-tree spacing is quite large, so even 50 x 50 m is unlikely to capture much. However, I would not go any smaller – and if the manager targeted patches with slightly greater stem densities that would be useful.

I was not convinced by the argument that *E. crebra* was unsuitable habitat for greater glider. There is a lot of risk in extrapolating observations on southern populations to FNQ. One example from my experience; greater gliders in Minerva Hills NP, near Springsure in CQld are relatively common (formally abundant) in both dark and light forms. They are regularly found in all tree species associated with ephemeral streams, associated wooded alluvial plain, and abutting rocky ridges. The species that they are commonly spotlighted in are *E. tereticornis*, *E. crebra*, *E. melanophloia* and *Corymbia tessellaris*. As with koalas, the species habitat usage and species selection varies regionally, and trees are used for food as well as denning.

Regards

Alistair

From: s22 @environment.gov.au]
Sent: Monday, 21 August 2017 9:26 AM
To: Alistair Melzer <a.melzer@cqu.edu.au>
Subject: RE: Regional Ecosystems map request [SEC=UNCLASSIFIED]

Hi Alistair

Wow, thank you. This is so useful and exactly what I needed.

I have attached the draft EIA which has the survey information and images of the vegetation and ground truthing the RE's. For the initial referral submission there was also a soil survey as is required to be carried out for their approval for high value ag- yes it is basaltic.

I have attached a map of the area and marked in red the approximate patch of high-density Tereticornis that will be retained where the gliders were spotted. You can see there is are two large patch in the middle of the site that will not be cleared. These are rocky areas. I have marked in small red circles potential areas to be retained- would something along these lines suffice? There is an existing track through the middle of the property, along the veg survey line. This may be being kept and the vegetation alongside. The riparian areas are not being cleared and there is a buffer 50-100metres either side of watercourses. All the watercourses are ephemeral. A question- what size patches would need to be kept in the cleared area at the 200m spacings ie 20x20, 50x50m?

Regards
s22

From: Alistair Melzer [mailto:a.melzer@cqu.edu.au]
Sent: Wednesday, 16 August 2017 11:40 AM
To: s22 @environment.gov.au>
Subject: FW: Regional Ecosystems map request

Hi s22 ,

I've done a quick desk-top review to reinforce my recollection of the region. I'm sure you have already done all this as well.

I have had a look at the landscape on Goggle earth, and downloaded maps of the remnant Regional Ecosystems from the Qld Regional Ecosystem database (centred on the coordinates you provided).

I have attached the RE maps for reference. I have made notes on the tree species that are expected to be present based on the descriptions provided in the state database, including comment on their suitability as koala food species. Those are also attached. Note that because these RE descriptions apply to the mapped REs on a whole of bioregion, local floristic associations on the ground may vary. However, given that caveat, the **structure** of the woodlands appears to be excellent potential koala habitat. The **association of species** appears to include widespread high value, and moderate value, koala food species. The **soils and underlying geology** appear to be basaltic. Cracked rock aquifers and associated springs in basalt are known to provide reliable water resources during droughts and seasonal dry months in places. Basaltic soils are known for high fertility, favouring arboreal mammal assemblages. I am of the opinion that the basalt country of the Einasleigh Uplands (especially in the headwaters of major drainage systems) form significant drought, and climate change refugia for the koala in the northern portion of its range. This property appears to be situated well within the Einasleigh Uplands Bioregion. **Koala populations are known to occur** in this bioregion. However they are generally low density, and widely dispersed. This is most probably a reflection of the temperature regime, as koalas are limited by high temperatures and water availability in most extreme seasons, despite suitable habitat structure and composition. A search of the Qld Wildlife Online data base identified 25 records since 1980 within 100 km of the central coordinates, but none within 25 km. There is a single record of the northern greater glider within 25 km, however.

So, with regard to this clearing proposal; it is possible that koalas range across the landscape periodically, and there may be (most likely is) a very low density population in the general region. The lack of records is likely to reflect the background low population density, and a lack of systematic surveys in that local region. As discussed, the riparian and wetland fringing *E. tereticornis/camaldulensis* open forest will be the core of any resident koala activity. However, it is clear that koalas range beyond these fringing eucalypts during the wet and post-wet seasons. It is essential to retain these for any likelihood of retaining any local animals. Despite that, such animals will also need access to the ironbark woodlands off-stream. Such habitat elements need to be retained in the region. However, given the extensive area of habitat regionally, it seems unlikely that this clearing will have a significant impact on the regional or state population. From the perspective of any individual koalas that may be using this landscape occasionally, such

broad-acre clearing will expose these animals to (1) threats from dingo and eagle predation, and (2) heat stress by day (no shade or foliage for water). So, as we discussed, I would suggest trying to retain some relic woodland within the clearing envelope so that the overland distance through cleared country to refuge was no more than 200m. There also appears to be some mapped dry rainforest, melaleuca and riparian and/or spring-fed wetlands. If possible I would recommend retaining these along with a buffer of uncleared woodland (50m?).

Please call me if you need anything further.

Sincerely

Alistair Melzer

Dr Alistair Melzer
Adjunct Research Fellow | Koala Research CQ, School of Health, Medical and Applied Sciences
CQUniversity Australia, Building 361, Ibis Avenue, North Rockhampton QLD 4701 P 0749232297 | X 52297 | E a.melzer@cqu.edu.au
I respectfully acknowledge the Traditional Owners of the land on which we work and learn, and pay respect to the First Nations Peoples and their elders, past, present and future.

From: Queensland.Herbarium@science.dsitia.qld.gov.au [mailto:Queensland.Herbarium@science.dsitia.qld.gov.au]
Sent: Wednesday, 16 August 2017 9:07 AM
To: Alistair Melzer <a.melzer@cqu.edu.au>
Subject: Regional Ecosystems map request

Regional Ecosystems map request

Thank you for your request

Your file is attached.

FOI 200710
Document 4

s22 - out of scope - irrelevant material

Attachments: meadowbank clearing habitat retention.png
2016-7838 draft Meadowbank_Impact assessment.pdf

s22 - out of scope - irrelevant material

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Alistair Melzer

Dr Alistair Melzer
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CQUniversity Australia, Building 361, Ibis Avenue, North Rockhampton QLD 4701 P 0749232297 | X 52297 | E a.melzer@cqu.edu.au
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[mailto:Queensland.Herbarium@science.dsitia.qld.gov.au]
Sent: Wednesday, 16 August 2017 9:07 AM
To: Alistair Melzer <a.melzer@cqu.edu.au>
Subject: Regional Ecosystems map request

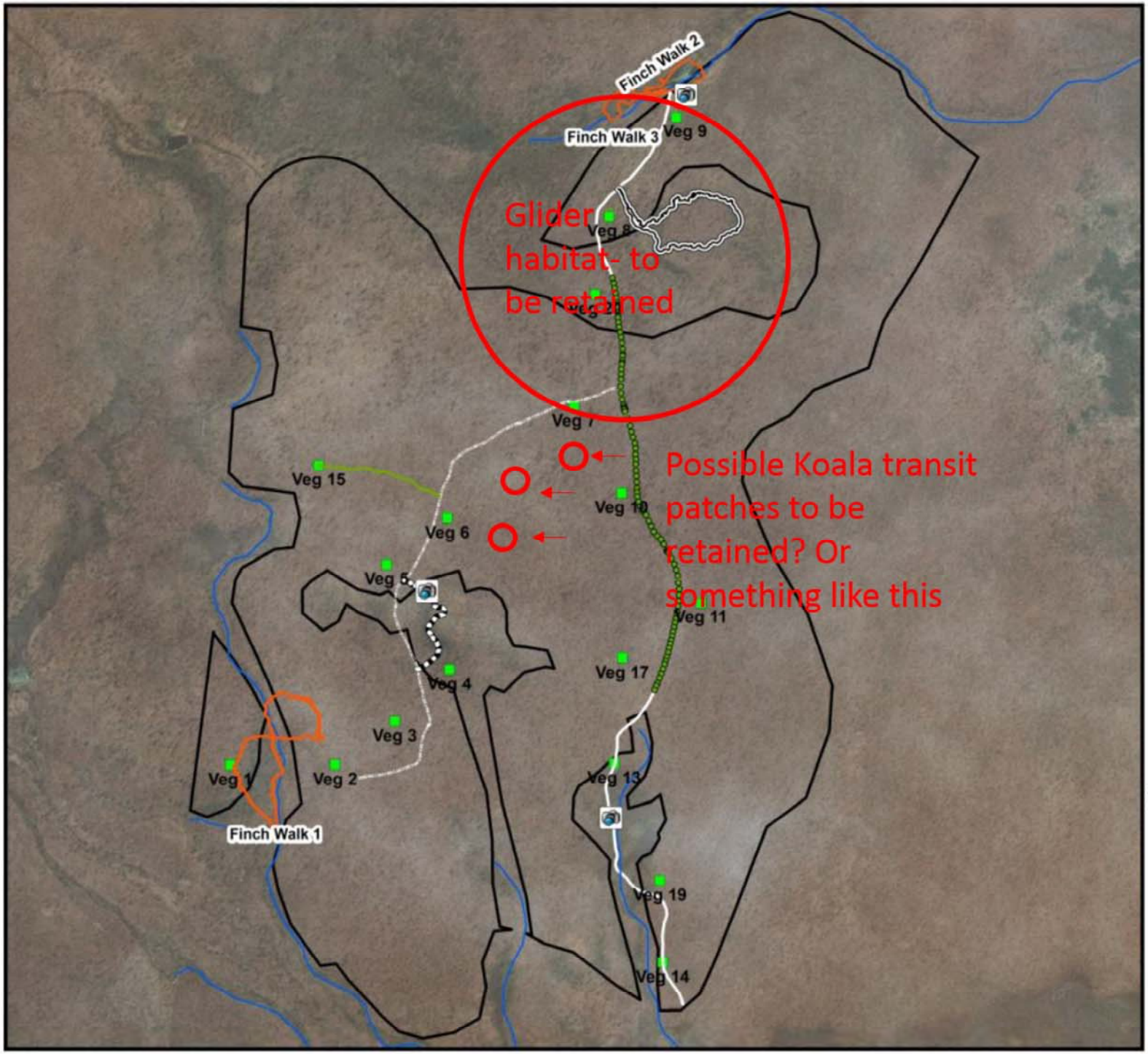
Regional Ecosystems map request

Thank you for your request

Your file is attached.
********** Disclaimer **********

Meadowbank Fauna and Flora Survey Sites

FOI 200710
Document 4a



Legend

- Motion Cameras
- Finch Walk 1
- Finch Walk 2
- Finch Walk 3
- Stream
- Quoll Walk 1
- Quoll Walk 2
- Fauna Walk
- SW Road
- Main Road
- MeadowbankClearing

N

0 210 420 840 1,260 1,680 Meters

Date: 14-Jul-17

Author: Dean Jones

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
False Easting: 500,000.0000
False Northing: 10,000,000.0000
Central Meridian: 147.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter

Vegetation Clearing for High value Cropping

Meadowbank Station, South of Mt. Garnet,

Qld (EPBC 2016/7838)

Fauna, Flora and Habitat Assessment

Contents

Summary

In March 2017 a field assessment of threatened species, vegetation and habitat was made of the proposed area of 1475ha to be cleared for cropping on Meadowbank Station, far north Queensland. Of the list of threatened species considered for the area, only the greater glider *(Petauroides volans)* was found, and just 1 (or possibly two individuals) at the same location. The habitat was generally unsuitable for the greater glider as the vegetation was dominated by relatively small stature narrow-leaved ironbark (*Eucalyptus crebra*) rather than the preferred species Queensland bluegum (*E. tereticornis*). There was no direct or indirect evidence for the northern quoll, koala, ghost bat or the black-throated finch.

The Regional Ecosystem dominating the clearing area was confirmed as RE9.8.4 and is described as follows: Open woodland to woodland of Eucalyptus crebra (sens. lat.) (narrow-leaved ironbark) and/or E. tereticornis (bluegum). The mid-layer is generally absent. Occurs on basalt plains and rocky basalt plains and hills. Under the Vegetation Management Act it is classified as *Least Concern* and its Biodiversity Status is *No Concern at Present.* In a regional context there is 147,000ha mapped with the same RE within a 30km radius of the proposed clearing area. Good connectivity of like habitat will remain once the proposed activity is completed.

1. Introduction

On 10 February 2017 James Barker, Assistant Secretary to the *Assessments and Sea Dumping Branch*, Commonwealth Department of Environment and Energy recommended that a fauna, habitat and vegetation investigation be conducted on the proposed vegetation clearing application for high value cropping on Meadowbank Station, south of Mt. Garnet. Further information for the proposed activity was required to provide '*additional information for assessment by Preliminary Documentation*'. The additional information content is detailed in 'Attachment A' within Appendix One of this report. It covers:

1. Threatened Species Impact Assessment: On-ground surveys for the following species;
    a. Greater Glider *(Petauroides volans)* - vulnerable,
    b. Koala *(Phascolarctos cinereus*) - vulnerable,
    c. Black-throated Finch *(Poephila cincta cincta)* - endangered,
    d. Northern quoll *(Dasyurus hallucatus)* - endangered, and the
    e. Ghost bat *(Macroderma gigas)* - vulnerable

The impact assessment also evaluates the vegetation to be cleared in a regional context.

2. Environmental Offsets.
3. Avoidance, safeguards and mitigation measures.
4. Environmental record of person/s proposing to take action; and
5. Economic and social matters.

Threatened Species Impact Assessment

Meadowbank Station Overview

Following the original clearing application to the Queensland government the Cameron family made a decision to reduce the clearing area from over 6000ha to the current 1475ha, which was approved by the Queensland government. This was a conscious decision, not only with the consideration of preserving the current native grass and woodlands but also with that of preserving a wetland and its surrounding woodlands in the south east part of the property. The wetland supports many birds and animals and is surrounded by a woodland containing *Eucalyptus tereticornis*, Queensland Bluegum.

Queensland bluegum is a preferred species for the greater glider. These trees are larger in size with more suitable denning hollows which provide higher launching sites for movement through the forest. Queensland bluegum is also an important source of nutrition for the folivorous greater glider. Most other parts of this property are dominated by the smaller and more sparsely distributed narrow-leaf ironbark that offer less suitable glider habitat.

The Camerons firmly believe that there needs to be a balance between agriculture and the natural environment and the wildlife it supports. The decision to reduce the initial amount of vegetation clearing by over four and a half thousand hectares is a testament in maintaining that balance between sustainable agriculture and healthy ecosystems.

In addition, there has been a conscious effort to identify and select land which is most suitable for cropping and to exclude any unsuitable land. For example, rocky land will not be cleared. The complex polygon for proposed clearing illustrates the effort in avoiding such rocky areas (Figure 2). The Camerons will maintain this management strategy throughout the clearing activity. That is, any parts of the proposed clearing with considerable acquisition of rock will not be cleared to ensure that native grass and woodlands will maintain their current grazing and environmental values. They believe that unnecessary clearing, that cannot be properly cropped, will increase the likelihood of invasive weeds and destroy the balance of the more valuable native pastures.

The Camerons currently maintain a management strategy that ensures native pastures are conservatively grazed and that good ground cover is maintained. From our 17 vegetation plots and from casual observations made during walk and drive transects we noted an abundance of high-value native grasses with excellent ground cover. This ensures that there is minimal erosion and sedimentation, that the quality of the high value perennial grazing grasses are maintained and that noxious weeds and least preferred non-endemic grasses are kept to a minimum. The farm does however experience extended and unpredicted dry

seasons that can put unexpected grazing pressure on the farming system. In order to prevent overgrazing and the risk of losing the current balance of native pastoral grasses the Camerons would like incorporate high value crops such as sorghum into their farming program. The grain and silage can be stored onsite and used to supplement their feeding program, especially when native grasses are limited. Overgrazing can cause erosion and weed invasion. The introduction of a cropping system will bring ongoing long-term benefits by reducing grazing pressure.

2. Fauna, Flora and Habitat assessment

From the 7 to 9 March 2017 Landline Consulting conducted a fauna survey and habitat assessment for the following threatened species:

a. Greater Glider *(Petauroides volans)*-vulnerable,
b. Koala *(Phascolarctos cinereus*)-vulnerable,
c. Black-throated Finch *(Poephila cincta cincta)*-endangered,
d. Northern quoll *(Dasyurus hallucatus)*-endangered, and the
e. Ghost bat *(Macroderma gigas).*-vulnerable

An evaluation of vegetation types was also conducted to confirm that broad vegetation types correlate with corresponding government regional ecosystem mapping.

Fauna

Fauna surveys were undertaken for each of the five listed species. Walk, drive and fixed point observations were made. Key habitat searches for each of the species were also performed to maximise the chance of encounters. Direct and indirect observations were recorded. Indirect observations were those of scats, tracks or any other markings, such as bark scratching, that would indicate the presence of the target species. Direct observations were visual or audible records of the species. A full list of the observed mammals and bird species is given in Appendix 2 and Tables 1 and 2.

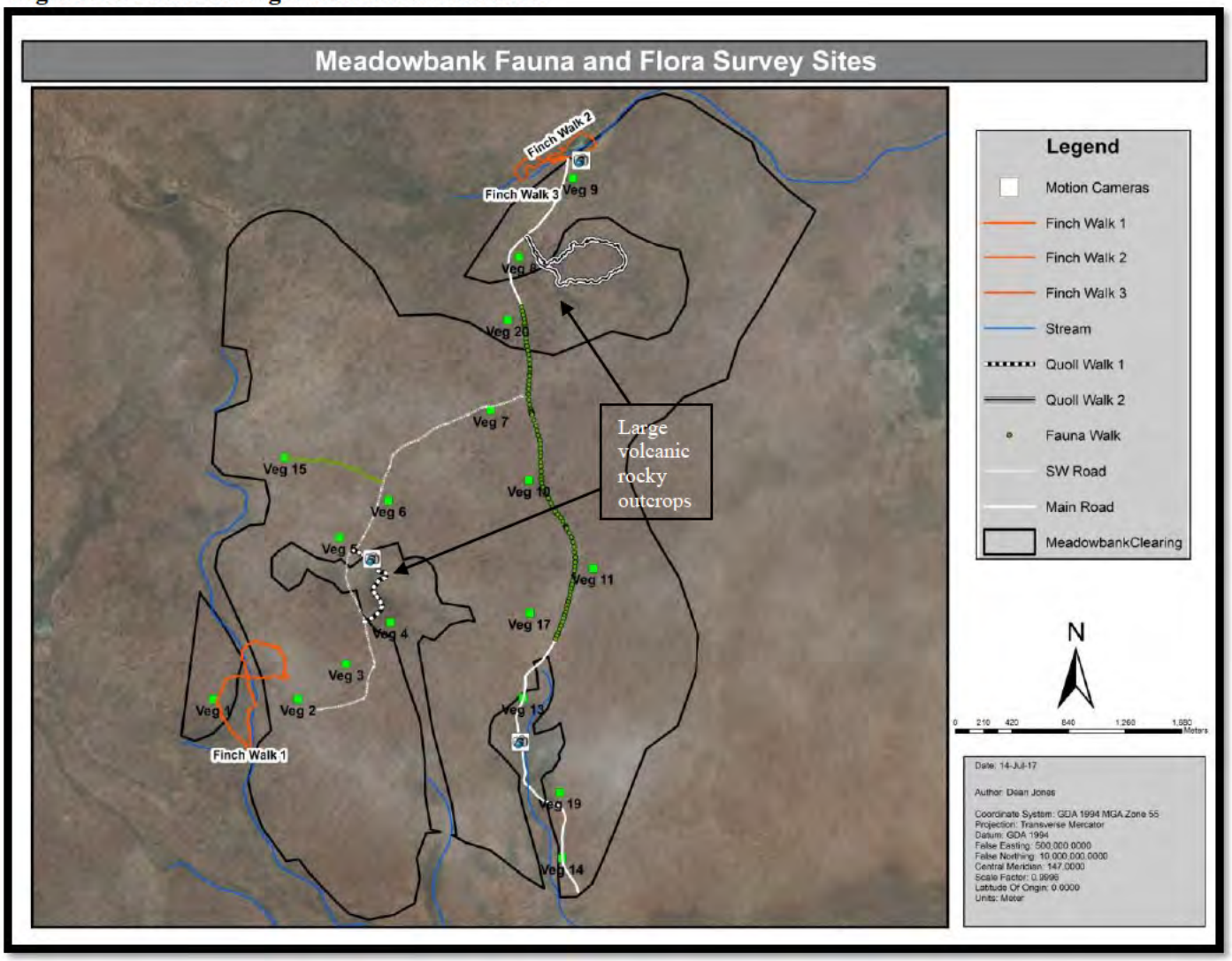
Black-throated finch, *Poephila cincta cincta*

Method

Over 4 hours of fixed point sampling for black-throated finches were performed. The fixed sites specifically targeted the catchment dam and along ephemeral streams that are the best habitat in the area to observe finch activity (Figure 1). In addition to the morning and afternoon fixed point observations were 5.5km of walk transects targeting best finch habitat (Figure 2). Supplementing the above activities were drive-transects of over 72km, other walk transects of 6.5km, and over 7 hours of observations during habitat and vegetation plot assessments.

Figure 1. Fixed monitoring point for black-throated finch (dam site located outside of the proposed clearing area)

Figure 2. Fauna and vegetation assessment sites.



Observations - Black-throated finch

The extensive searches found no black-throated finches. In fact there were no observations of any finches or mannikins of any kind. There was an abundance of native grasses and grass seeds such as Themeda triandra kangaroo grass, black spear, giant spear and cane grass, Figure 3. However there were none of the preferred black-throated finch grasses such as sabi grass, tropical crab grass, red natal or Rhodes grass. There was a notable absence of an understory to provide cover and potential nesting sites and refuge for finches (Figures 4a, b and c).

Figure 3. Showing dominant tree (E. crebra narrow-leaved ironbark) and grass species (kangaroo grass, black speargrass)

Figure 4 a. The absence of understory is typical of this open woodland type.

Figure 4b Predominantly open ironbark woodland with no understory.

Figure 4c. More ironbark woodland lacking suitable understory habitat for finches.

Greater Glider, Petauroides volans

Method

Nocturnal observation is the most effective way to detect the greater glider using spotlights. Greater gliders have a very clean eye shine that can be clearly seen up to 150m away. Five hours of spotlighting were conducted concentrating on the only two roads passing through the study area. The main road bisected the property from north to south and was a distance of 6.1 km and the second road ran south west through the proposed activity for 4.0 km, Figure 5. Spotlighting was conducted on two nights. The nights were partly cloudy with a light breeze. There were two observers covering each side of the road. LED spotlights were used to observe some 125m into the open forest, see Figure 5. The total distance of spotlighting, including the return route, was 20.2km covering an area well over 250ha for each night.

Observations

There were 2 greater glider observations for the two nights of spotlighting. The observations were recorded on consecutive nights within close proximity near the intersection of the two roads (Figure 5). There is a strong likelihood that it was the same individual.

The sightings took place in an area that has a higher density of *E. tereticornis blue gum* (Queensland bluegum) as was noted in the vegetation surveys for sites 7, 8 and 20. As suggested by Wormington *et al*. 2002, the most important factor in the presence of greater gliders and yellow-bellied gliders within the dry sclerophyll forests of South East Queensland are the higher proportions of spotted gum (*Corymbia citriodora*) and forest red gum (*Eucalyptus tereticornis* also known as Queensland bluegum). The polygon outlined black in figure 5, denotes the area with greater numbers of *E. tereticornis blue gum*. However the majority of habitat within the proposed activity is dominated by *E. crebra*

narrow-leaved ironbark (narrow-leaved ironbark) (see Appendix Three, Table 1 and Figures 3, 4a, 4b and 4c). The forest dominated by *E. crebra narrow-leaved ironbark* is typical of the Meadowbank proposed clearing area (Figure 6). *Eucalyptus crebra* are not favoured by the greater glider as they are smaller in stature and have limited denning opportunities compared with the larger *E. tereticornis blue gum*.

Figure 5. Greater glider observations indicated by the pink dots. Spotlighting coverage in yellow.

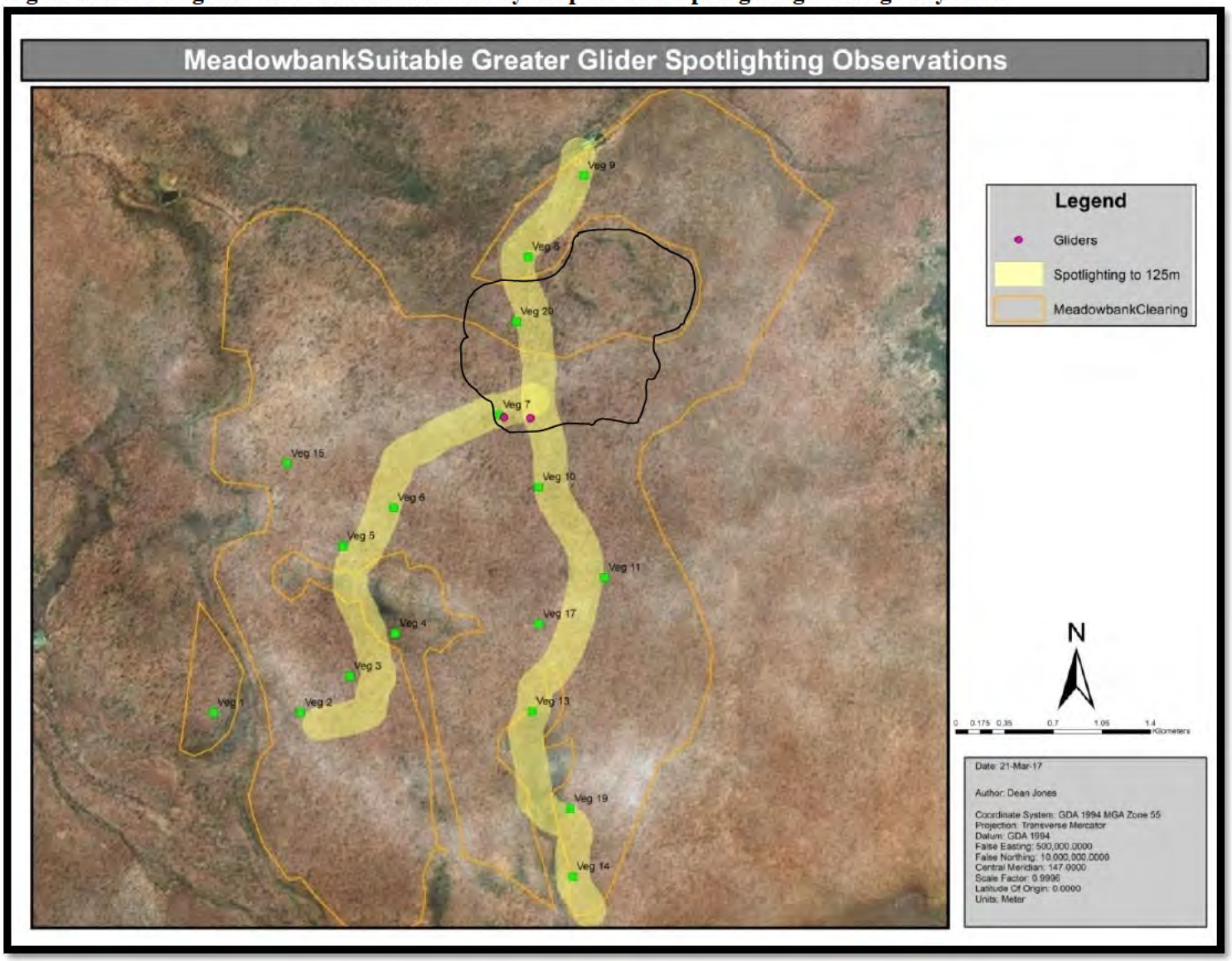


Figure 6. Typical landscape of the proposed activity. Site dominated by *E. crebra narrow-leaved ironbark* with occasional *E. tereticornis blue gum* (in the background).

Summary – greater glider

Here we comment on advice provided by the Commonwealth government. The Threatened Species Scientific Committee have provided 'Conservation Advice for *Petauroides volans* (greater glider)', as follows:

'It (greater glider) is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows (Andrews et al., 1994; Smith et al., 1994, 1995; Kavanagh 2000; Eyre 2004; van der Ree et al., 2004; Vanderduys et al., 2012). The distribution may be patchy even in suitable habitat (Kavanagh 2000). The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species (Kavanagh 1984).'

Response: The proposed activity on Meadowbank is non-montane with little eucalypt diversity. The proposed clearing is dominated by narrow-leaved ironbark. Therefore this site is not the preferred habitat of the greater glider.

'During the day it shelters in tree hollows, with a particular selection for large hollows in large, old trees (Henry 1984; Kehl & Borsboom 1984; Lindenmayer et al., 1991; Smith et al., 2007; Goldingay 2012).'

Response: This site is dominated by smaller *narrow-leaved ironbark* with few adequately-sized den hollows.

'Woinarski et al. (2014) estimate the population size to be greater than 100,000 mature individuals.'

The field assessment found just one or two individuals that would be impacted by clearing. To mitigate impacts the operators could delay the felling of the habitat trees for a 24 hour period to allow resident animals time to vacate the hollows.

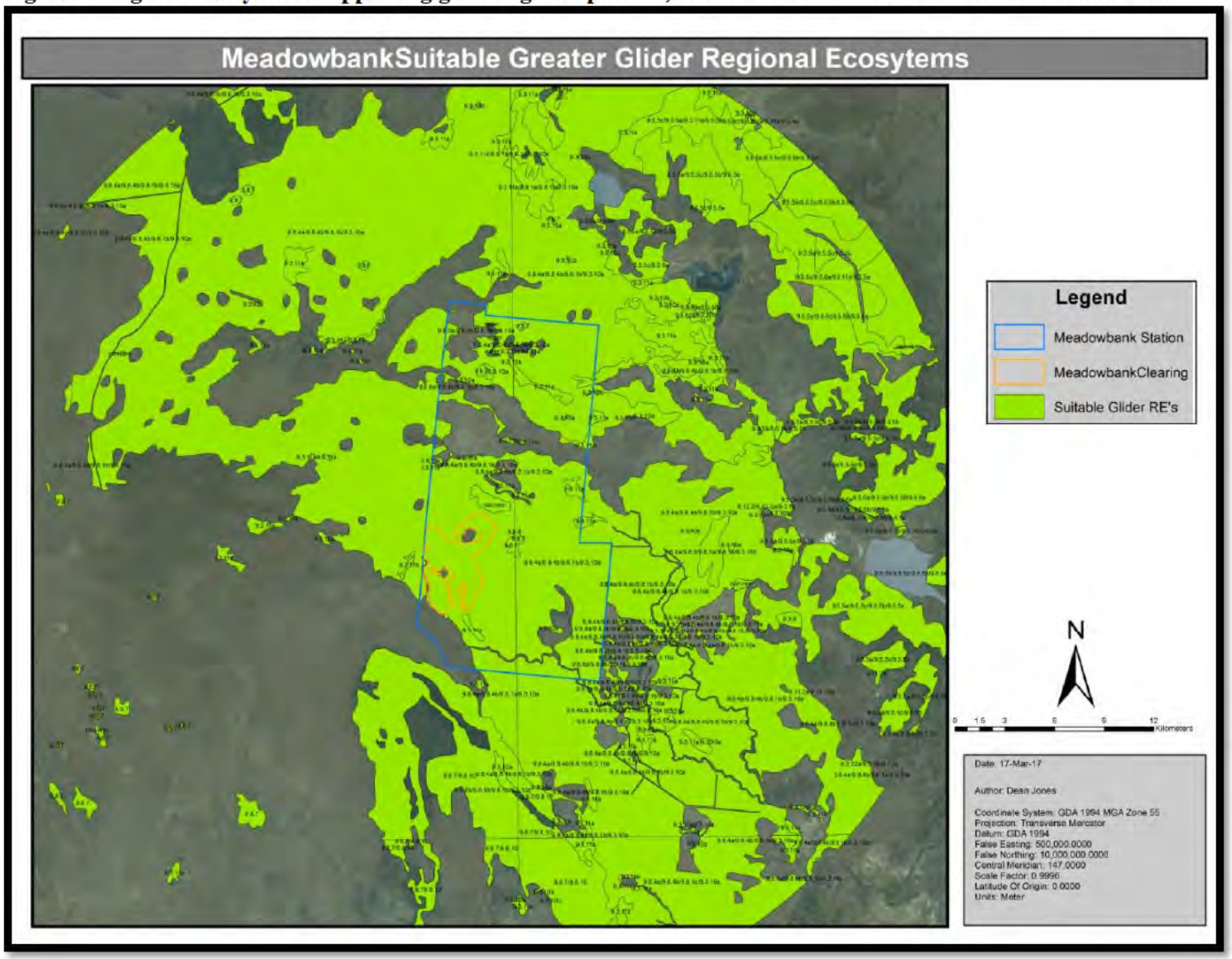
In summary, the combination of low densities of gliders at the site and unsuitable habitat means there will be negligible impact on the greater glider population.

Regional ecosystems and glider distribution at Meadowbank Station

The total area with the same regional ecosystems within 30 km of Meadowbank is 147,000ha (Figure 6) with the proposed clearing of 1,475ha. It is large and the REs are well connected areas. The same RE's extend well beyond what is mapped. These figures do not include the preferred moist montane eucalypt forests to the east and other REs that are suitable for glider habitation. On a national scale the estimated glider population of over 100,000 mature individual individuals ranges from Cooktown, a further 300km to the north, over 100km to the east and west and well over 2000km south to the southern parts of Victoria.

Although present on the proposed clearing area we believe there will be no significant impact on this species. There is a limited suitable habitat within the site and there is a robust connection with similar regional ecosystems in the surrounding area. The distribution of this species ranges from Cooktown to southern Victoria. Therefore the proposed clearing area represents an insignificant proportion of the area suitable for the species.

Figure 6. Regional ecosystems supporting greater glider possum, similar to those found on Meadowbank Station.



Koala, Phascolarctos cinereus

Methods

Observations were made for koalas during 72km of drive transects, 12km of walk transects and over 7 hours of observations during the vegetation/habitat assessments (Figure 2). Investigators were looking for koala sightings as well as evidence of koala scratching and scats on and below trees respectively.

Observations

There was no direct or indirect observations of koalas during any of the monitoring activities.

Summary

The Cameron family has been working on this property for over 25 years. During this time there has been no koala sightings on this property. Our assessment confirms that that koalas are not present at the site and that the proposed activity will not impact the koala population.

Ghost bat, Macroderma gigas

Methods

The ghost bat is the largest microbat in Australia. Its distinct size, call and flight allows for easy detection during nocturnal survey. Spotlighting was used to search for the animal and its roosting sites (large caves). Additionally casual observations were made for this animal around our camp at night.

Observations

No ghost bat or roosting site were sighted or heard. The more prominent rocky outcrops outside of the clearing zone had no caves of any description.

Summary

Due to the lack of any suitable roosting sites, on or near the proposed clearing areas, there will be no significant impact on the ghost bat.

Northern quoll, Dasyurus hallucatus

Methods

Three camera traps were set for three-day and two-night observations. Cameras were set adjacent to what was deemed the most suitable quoll habitat, such as rocky outcrops and log piles adjacent to and within the proposed activity. Particular focus was made to the two large rocky volcanic landforms in the area (Figure 2). Camera traps were baited with fresh chicken wings to maximize the likelihood of a quoll encounter. Additionally, specific walk transects were performed on nearby rocky outcrops to look for possible quoll activity in the form of active dens, scats, smells or tracks. The specific quoll walks were over 3.7km (Figure 2). Evidence of these animals was also noted during drive transects, spotlighting, vegetation/habitat assessments, casual observations around camp and during other walk transects.

Observations

There were no signs or sightings of quolls for any of the observation techniques. There were hollow logs and trees along with small holes within the rocky outcrops that would be considered suitable for quoll dens. However there was no sightings or evidence of habitation. Camera images revealed activity by grey kangaroo, butcherbird and cattle.

Summary

The proposed activity will have no significant impact on the northern quoll.

3. Vegetation assessment

Methods

Seventeen sites were selected to evaluate the flora in the proposed clearing against current regional ecosystem mapping (Figure 2). Each site was evaluated for its dominant tree, understory and grass species. Observations were made within a 100m radius of the observer. Weed species were also noted. Because of the homogenous nature of the landscape noting the five most dominant species captured at least 95% of plants for each of the tree, understory and grass species. Species were ranked 1 to 5 with one being the most dominant. A summary of flora observations from the seventeen sites is given in Appendix 3 - Table 1.

Regional ecosystem mapping identifies that the predominant vegetation groups are as follows:

Regional Ecosystem Mapping

Regional Ecosystem Mapping indicate the dominant ecosystems within the proposed activity are 9.8.4a (45% or 660ha), 9.8.4b (35% or 515ha) or, 9.8.1b (15% or 220ha) and 9.3.10a (5% or 74ha). The broad vegetation groups are mixed within the clearing polygon depending on the soil type and topographic features that these groups depend upon. The dominant vegetation groups likely to be found within this clearing activity are described below and an estimation of the area they would likely cover within this activity.

Description

Open woodland to woodland of Eucalyptus crebra (sens. lat.) (narrow-leaved ironbark) and/or *E. tereticornis* (blue gum). The mid-layer is generally absent. Occurs on basalt plains and rocky basalt plains and hills.

Vegetation communities in this regional ecosystem include:

9.8.4a: Woodland to open woodland of Eucalyptus crebra (narrow-leaved ironbark) or E. granitica (granite ironbark) +/- Corymbia intermedia (pink bloodwood) +/- C. dallachiana (Dallachy's gum) +/- Corymbia tessellaris Moreton Bay ash (Moreton Bay ash). Scattered canopy species and Lophostemon suaveolens (swamp mahogany) can sometimes occur in the sub-canopy. The shrub layer is absent to sparse. The ground layer is dense and grassy

and is dominated by Themeda triandra (kangaroo grass) and Heteropogon contortus (Black speargrass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. (BVG1M: 11b)

9.8.4b: Open woodland to woodland of Eucalyptus tereticornis (blue gum) +/- E. crebra (narrow-leaved ironbark) +/- Corymbia dallachiana (Dallachy's gum) +/- C. clarksoniana (Clarkson's bloodwood) +/- E. leptophleba (Molloy red box) +/- Corymbia tessellaris (Moreton Bay ash). The mid-layer is absent to occasionally scattered plants. The ground layer is densely grassy and includes Heteropogon contortus (Black speargrass) and/or Dichanthium spp. Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. (BVG1M: 11b)

9.8.1b: Open woodland to woodland of Eucalyptus leptophleba (Molloy red box) +/- C. erythrophloia (red bloodwood) +/- Corymbia dallachiana (Dallachy's gum). An open sub-canopy layer containing canopy species can occur. The shrub layer is usually absent but scattered species including Planchonia careya (cocky apple), Denhamia cunninghamii (yellowberry bush) and Carissa lanceolata (currantbush) can occur. The ground layer is dense and grassy and dominated by Heteropogon contortus (Black speargrass) and Themeda triandra (kangaroo grass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil.

9.3.10a: Palustrine wetland (e.g. vegetated swamp). Low woodland to low open forest of Melaleuca bracteata (black teatree) +/- Casuarina cunninghamiana (river sheoak) +/- Eucalyptus leptophleba (Molloy red box) +/- Eucalyptus spp. +/- Corymbia spp. emergents or vine scrub species. The shrub layer varies from absent, to a continuum with M. bracteata and dry rainforest species where these are present. The ground layer is dominated by tussock grasses such as Heteropogon contortus (Black speargrass), Eragrostis spp. and Eulalia aurea (silky browntop) or Cyperaceae spp. (sedges). This community is very variable in structure and can also occur as small clumps of trees in association with the grassland regional ecosystem 9.3.27 or as a dense sub-canopy layer of M. bracteata under a dominant canopy of Casuarina cunninghamiana. Occurs on or fringing swamps and springs on basalt.

Flora Observations for Proposed Clearing Areas

Tree Species

All seventeen sites contained *E. crebra narrow-leaved ironbark* while *E. tereticornis blue gum* and *E. dallachiana* were present at 13 sites, *C. clarksoniana Clarkson's bloodwood* (12 sites), *Corymbia tessellaris Moreton Bay ash* (3 sites) and *C. erythrophylla, Lophostemon sauveolens swamp mahogany* and *E. granitica* present at 1 site each. The most dominant species at 14 sites was E. crebra followed by *E. tereticornis* which was most dominant at 3 sites (Appendix 3, Table 1).

Understory Species

The understory was universally light to absent. The predominant species were Juvenile eucalypts as light tree thickening followed by scattered Grevillea sp (9 sites), Acacia and juvenile Lophostemon sauveolens swamp mahogany (2 sites) and coffee bush, Melia azedarach white cedar and bat's wing coral tree found on 1 site each (Appendix 3, Table 3).

Ground layer Species

The most dominant species making the ground layer were Themeda triandra kangaroo grass, Heteropogon triticeus giant speargrass, Heteropogon contortus black speargrass, native legumes and Dichanthium sericeum Queensland bluegrass. All seventeen sites contained Themeda triandra, Heteropogon triticeus (15 sites), Heteropogon contortus (11 sites), native legumes (6 sites), Dichanthium sericeum Queensland bluegrass (5 sites), Indigofera pratensis forest indigo sp (4 sites), cane grass (3 sites), Bothriochloa bladhii forest bluegrass (2 sites) and Sarga plumosum plume sorghum, and Imperata cylindrica blady grass, Cymbopogon refractus barbwire grass, Sporobolis species and *Mnesithea rottboellioides* were all found on one site only (Appendix 3, Table 3).

Summary of vegetation

The type of tree, understory and groundlayer species observed at the Meadowbank vegetation sites were similar to those described in the regional ecosystem (RE) mapping. The dominant RE found within the proposed activity is 9.8.4 and is described as follows: Open woodland to woodland of Eucalyptus crebra (sens. lat.) (narrow-leaved ironbark) and/or E. tereticornis (bluegum). The mid-layer is generally absent. Occurs on basalt plains and rocky basalt plains and hills. Under the Vegetation Management Act it is classified as *Least Concern* and its Biodiversity Status is *No Concern at Present.*

REs 9.8.1b and 9.3.10a were not found in the proposed clearing area.

4. Environmental Offsets

No environmental offsets are necessary as there are no significant impacts on any of the listed threatened species.

The only National Environmental Significant species found during this assessment was the greater glider. Two animals (one each night) were observed amongst a small patch of *E. tereticornis blue gum* in the north central part of the proposed activity. This patch of trees is a small part of a larger patch of *E. tereticornis* found extending further to the north and west. However the larger part of this continuous *E. tereticornis* forest has been excluded from the proposed clearing activity. Therefore protecting this important habitat. As noted in previous sections the dominant tree species throughout this proposed activity is the less favourable *E. crebra narrow-leaved ironbark* with only a scattering of small and isolated patches of *E. tereticornis.*

5. Avoidance, safeguards and mitigation measures

a.) Avoidance, safeguards and mitigation measures have been discussed in the main referral document. Please refer to the conditions imposed by the Queensland government in its approval of the proposal, as set out below.

Our reference: SDA-0315-018836
Your reference: Meadowbank Station

Attachment 1—Assessment manager conditions

No.	Conditions of development approval	Condition timing
Development permit for operational work for native vegetation clearing for high value agriculture		
Schedule 6, Table 3, Item 2: vegetation clearing —Pursuant to section 255D of the *Sustainable Planning Act 2009*, the chief executive administering the Act nominates the Director-General of **Department of Natural Resources and Mines** to be the assessing authority for the development to which this development approval relates for the administration and enforcement of any matter relating to the following condition(s):		
1.	a) The clearing of vegetation is limited to the extent identified as Area A (parts A1 and A2) as shown on Development Permit Plan (DPP) SDA-0315-018836, Sheet 1 of 1, dated 12 October 2016 and stamped approved (Map reference 7861,7961 and Derived Reference Points for GPS – 2 pages) b) Notwithstanding (a) above, in accordance with the Watercourse (Stream Order labels) depicted on Development Permit Plan (DPP) SDA-0315-018836, dated 12 October 2016 and stamped approved, the following shall apply: I. No clearing shall occur within 25 metres of the defining bank of the on-ground location of any watercourse with a stream order of 1; and II. No clearing shall occur within 50 metres of the defining bank on the on-ground location of any watercourse with stream order of 3.	a) At the time of clearing b) At all times
2.	a) The permitted clearing must only occur to establish, cultivate and harvest the following crop: • Forage sorghum (hay, green-chop or silage) b) The crop must be sown within six months from the commencement of the clearing, and established prior to commencement of the subsequent wet season.	a) At all times b) Within six months from the commencement of the clearing

No.	Conditions of development approval	Condition timing
3.	a) A Management Plan addressing Soil Erosion and Sediment Control and Salinity Management must be prepared by a suitably qualified professional. The Management Plan must achieve: - no worsening of the existing levels of erosive soil loss from the land within or downslope of the subject land; - no degradation of soils or land within or downslope of the subject land; - no worsening of the salinity levels of the soil and surface or ground water as a result of changes in the hydrology of the subject land; and - no increase in the incidence of waterlogging. In particular: i. The soil erosion and sediment control component of the Management Plan must be prepared by a Certified Professional in Erosion and Sediment Control (CPESC) and developed in accordance with the International Erosion Control Association's 'Best Practice Erosion and Sediment Control (BPESC)' document; and ii. The salinity management component must meet the highest ratings in the Canegrowers (2013) *Smartcane BMP: Irrigation Module* and in particular, the following key areas: - calculating the amount of water to apply - calculating how often to apply water - seasonal allocation management - run-off and deep drainage - recycle pits (tailwater capture and recycling) - irrigation water quality testing - system management - overhead low pressure - surface drainage system design - erosion management. b) Submit, for information purposes only, a copy of the Management Plan mentioned at part (a) of this condition to: Vegetation Management Department of Natural Resources and Mines Address: PO Box 5318 Townsville QLD 4810 Email: northvegetation@dnrm.qld.gov.au c) Carry out and maintain all required erosion and sediment control measures and salinity management measures identified within the Management Plan.	a) Prior to clearing commencing. b) Prior to clearing commencing. c) While clearing is occurring and until the cropping is abandoned.
4.	a) A Rehabilitation Plan which has been certified by a suitably qualified person must be developed prior to carrying out the clearing activities.	a) Prior to clearing commencing.

No.	Conditions of development approval	Condition timing
	b) The Rehabilitation Plan must be developed to achieve a level of revegetation with a density and range of native tree and shrub species similar to the pre-disturbance regional ecosystem, to avoid land degradation. c) Submit, for information purposes only, a copy of the Rehabilitation Plan to: Vegetation Management Department of Natural Resources and Mines Address: PO Box 5318 Townsville QLD 4810 Email: northvegetation@dnrm.qld.gov.au d) The holder of the approval must implement the Rehabilitation Plan, carry out and maintain all required vegetation reinstatement measures within the Rehabilitation Plan.	b) Prior to clearing commencing. c) Prior to clearing commencing. d) Upon abandonment of the use. **Note:** For the purposes of administering this approval, the use is considered to be abandoned if no cropping has been undertaken for a continuous five year period.
5.	The permit holder is responsible for ensuring that: - a full copy of the approval is held by employees or contractors carrying out activities associated with this permit; and - that the extent of clearing authorized by this permit is properly understood by any person(s) engaged or employed to carry out the clearing of the vegetation under this permit.	Prior to clearing commencing.
6.	Vegetation clearing debris must not be pushed into gullies, watercourses, other drainage lines or waterlogged areas or pushed, raked, or disposed of in any areas outside Area A (A1 and A2) as identified on Development Permit Plan (DPP), SDA-0315-018836, dated 12 October 2016 and stamped approved.	At all times.

b.) Draft EMP:

The fauna, flora and habitat assessment has concluded that there are no significant impacts to any threatened species hence the Environmental Management Plan is unnecessary. All operational safeguards and mitigation measures concerning threatened species, habitat and environment have been considered in point a.) above.

c.) Name of agency responsible for endorsing or approving each mitigation measure or monitoring program:

N/A

d.) How these measures align with conservation agreements.

There is no conservation agreement applicable to this land

6. Environmental record of person/s proposing to take the action.

The Cameron family will be conducting the clearing and cropping activities, and they have no adverse environmental record.

7. Economic and social matters.

a) details of any public consultation activities undertaken.

During the application to the Queensland Government the appropriate traditional groups were informed with no objections, see below extract from SDA-0315-018836:

Native title considerations
A check of the tenure for the subject property revealed that Lot 537 on SP132224 is a Rolling Term Lease and the original deed of grant (Title Reference 40057874) was issued on 29 January 2009 for a pastoral purpose.
The clearing of native vegetation for high value agriculture is considered to be associated or incidental to an agricultural activity and procedural rights must be afforded to native title parties under section 24GB of the Native Title Act 1993 (Cwlth).
On 11 May 2015, the following native title parties were notified:

- *Goondaloo Aboriginal Corporation Agent Body Corporate*
- *North Queensland Land Council Native Title Representative Body Aboriginal Corporation; and*
- *Gugu Badhun Aboriginal Corporation Agency Prescribed Body Corporate.*

Comments (if any) were required to be provided no later than 11 May 2015. One submission was received. The submission made comments about the proposed future act in relation to duty of care under the Aboriginal Cultural Heritage Act 2003 and preparing a cultural heritage assessment. The standard advice has been included as item 3 in the further advice section of this decision package

b) Financial assessment:

The Cameron family will progressively clear the land for cropping based on financial resources at the time. They own the large bulldozers that will be used for tree pulling, windowing and stick-raking.

c) The operational phase will be managed by the Cameron family. However they may call upon contractors to assist with clearing, sowing, spraying and harvest activities.

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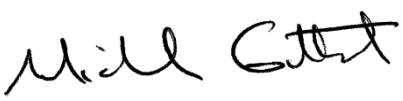

Dr Michael Gilbert

19 July 2017

Dean Jones

Appendix 1. Request for Additional Information

Attachment A

Meadowbank Station Vegetation Clearing for High Value Cropping, South of Mt Garnet, Qld (EPBC 2016/7838)

Additional information required for assessment by Preliminary Documentation

As noted in the letter, the proposed action is likely to have a significant impact on listed threatened species and communities (sections 18 & 18A) and will be assessed by preliminary documentation.

General Content, Format and Style

The preliminary documentation, which includes the referral information and the additional information, should be contained as one document with attachments, and include sufficient information to avoid the need to search for supplementary reports.

The documentation must enable interested stakeholders and the Minister to understand the environmental consequences of the proposed development on matters of national environmental significance (MNES). The information provided should be objective, clear and succinct and where appropriate, supported by maps, plans, diagrams or other descriptive detail.

Detailed technical information, studies or investigations necessary to support the main text should be included. It is recommended that any supporting documentation and studies, reports or literature, from which information has been extracted and which are not normally available to the public, be attached as appendices to the main document and made available at appropriate locations during the period of public display of the preliminary documentation. The proponent should also make the documentation and supporting information available on the internet.

If it is necessary to make use of material that is considered to be of a confidential nature, the proponent should consult with the Department of the Environment and Energy (the Department) on the preferred presentation of that material, before submitting the documents to the Minister for approval for publication.

The level of analysis and detail in the documentation should reflect the level of expected impacts on the environment. Any variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment should be discussed.

The documentation should be written so that any conclusions reached can be independently assessed. To this end, all sources must be appropriately referenced using the Harvard standard. The reference list should include the address of any internet “web” pages used as data sources.

The additional information should include a list of persons and agencies consulted and the names of, and work done by, the persons involved in preparing the documentation.

Maps, diagrams and other illustrative material should be included where appropriate. The additional information should be produced on A4 size paper capable of being photocopied with maps and diagrams on A4 or A3 size and in colour where possible. The proponent should consider the format and style of the document appropriate for publication on the internet. The capacity of the website to store data and display the material may have some bearing on how the document is constructed.

The additional information must include a copy of these guidelines and a table indicating where the information fulfilling the guidelines is included in the preliminary documentation.

Specific Content of the Additional Information

1. Impact assessment

Listed threatened species and communities

The project is considered likely to have direct and indirect impacts on:

- Greater Glider (*Petauroides volans*) – vulnerable
- Koala (*Phascolarctos cinereus*) Combined populations of Qld, NSW and the ACT– vulnerable
- Black-throated Finch (*Poephila cincta cincta*) - endangered
- Northern Quoll (*Dasyurus hallucatus*) – endangered
- Ghost Bat (*Macroderma gigas*) – vulnerable

Undertake surveys for the above species on-site by a suitably qualified ecologist in accordance with Departmental guidelines and provide reports to the Department. Please undertake a habitat assessment for the 1475 ha to be cleared.

The preliminary should also provide analysis on the vegetation to be cleared in a regional context.

2. Environmental Offsets

The preliminary documentation must include an assessment of the likelihood of residual significant impacts occurring as a result of land clearing. Please provide:

(a) details of an offset package proposed to be implemented to compensate for the residual significant impacts of the project; and

(b) an analysis of how the offset meets the requirements of the Department's *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy October 2012* (EPBC Act Offset Policy) (http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy).

Offset/s required by the State can be applied if the proposed offset/s meet the Department's EPBC Act Environmental Offset Policy.

3. Avoidance, safeguards and mitigation measures

The referral provides information on proposed mitigation measures to address the relevant impacts of the action. The preliminary documentation must include:

(a) a consolidated list of mitigation measures proposed to be undertaken by the proponent to avoid, minimise and manage relevant impacts of the action, including:

- a description of mitigation measures proposed to be taken by State governments, local governments; and
- any statutory or policy basis for the mitigation measures.

(b) A draft Environmental Management Plan (EMP) that sets out the framework for management, mitigation and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing.

The EMP needs to address the project phases (construction, operation, decommissioning) separately. It must state the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing for each environmental issue.

The EMP must be prepared in accordance with the Department's Environmental Management Plan Guidelines (2014). http://www.environment.gov.au/epbc/publications/environmental-management-plan-guidelines

(c) The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

(d) How these measures align with relevant conservation agreements, threat abatement plans and recovery plans.

4. Environmental record of person(s) proposing to take the action:

Please include details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

(a) the person proposing to take the action; and

(b) for an action for which a person has applied for a permit, the person making the application.

5. Economic and social matters:

The economic and social impacts of the action, both positive and negative, must be analysed. Matters of interest may include:

(a) details of any public consultation activities undertaken, and their outcomes;

(b) projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies;

(c) employment opportunities expected to be generated by the project (including construction and operational phases).

Economic and social impacts should be considered at the local, regional and national levels.

Appendix 2. Other Bird and Mammals Observed

Table 1. Bird species observed during the impact assessment.

Transect Name	Date	Bird Species
Finch T1	07-03-17	magpie
Finch T1	07-03-17	noisy miner
Finch T1	07-03-17	squatter pigeon
Quoll 1	07-03-17	striated pardalote
Quoll 1	07-03-17	grey butcherbird
Quoll 1	07-03-17	rainbow bee-eater
Quoll 1	07-03-17	dollarbird
Spotlight Main Road	07-03-17	tawny frogmouth
Finch T2	08-03-17	reed warbler
Finch T2	08-03-17	willy wagtail
Finch T2	08-03-17	pale-headed rosella
Finch T2	08-03-17	red-winged parrot
Finch T2	08-03-17	sulphur-crested cockatoo
Finch T2	08-03-17	whistling duck with young
Finch T2	08-03-17	wood duck
Finch T2	08-03-17	dollarbird
Finch T2	08-03-17	magpie
Finch T2	08-03-17	magpie lark
Finch T2	08-03-17	grey butcherbird
Finch T2	08-03-17	pied butcherbird
Finch T2	08-03-17	noisy miner
Finch T2	08-03-17	Australian raven
Finch T2	08-03-17	white-faced heron
Main Road Walk	08-03-17	No birds
Quoll 2	08-03-17	golden-backed honeyeater
Quoll 2	08-03-17	rainbow bee-eater
Quoll 2	08-03-17	pale-headed rosella
Quoll 2	08-03-17	striated pardalote
Quoll 2	08-03-17	wedge-tailed eagle
Quoll 2	08-03-17	great bowerbird
Quoll 2	08-03-17	black-faced cuckoo shrike
Quoll 2	08-03-17	dollarbird
Quoll 2	08-03-17	white-bellied cuckoo shrike
Quoll 2	08-03-17	figbird
Spotlight S/W Road	08-03-17	Owl-not identifiable
Spotlight S/W Road	08-03-17	tawny frogmouth
Finch 3	09-03-17	willy wagtail
Finch 3	09-03-17	pale-headed rosella
Finch 3	09-03-17	sulphur-crested cockatoo
Finch 3	09-03-17	grey butcherbird
Finch 3	09-03-17	Australian miner
Finch 3	09-03-17	rainbow bee-eater
Finch 3	09-03-17	pale-headed rosella

Table 2. Mammal observations

Transect Name	Date	Mammals
Finch T1	07-03-17	No mammals
Quoll 1	07-03-17	grey kangaroo
Spotlight Main Road	07-03-17	brushtail possum
Spotlight Main Road	07-03-17	Greater Glider
Finch T2	08-03-17	grey kangaroo
Main Road Walk	08-03-17	No mammals
Quoll 2	08-03-17	feral pig
Quoll 2	08-03-17	grey kangaroo
Spotlight S/W Road	08-03-17	Greater Glider
Spotlight S/W Road	08-03-17	brushtail possum
Finch 3	09-03-17	No mammals
Cam 1	7-9/3/17	grey kangaroo
Cam 2	7-9/3/17	cattle
Cam 3	7-9/3/17	No mammals

Appendix 3. Flora Species Observed

Table 1. Dominant vegetation species observed at each of the seventeen sites. Where 1 is the most dominant species and 5 the least dominant.

Site	Type	Species	Dominance
1	Tree	E. crebra narrow-leaved ironbark	1
1	Tree	*E. tereticornis blue gum*	2
1	Tree	E. dallachiana	3
1	Tree	C. clarksoniana Clarkson's bloodwood	4
1	Tree	Corymbia tessellaris Moreton Bay ash	5
1	Understory	Grevillea sp.	1
1	Understory	Acacia sp.	2
1	Grass/Legumes	Themeda triandra kangaroo grass	1
1	Grass/Legumes	Heteropogon triticeus giant speargrass	2
1	Grass/Legumes	Heteropogon contortus Black speargrass	3
1	Grass/Legumes	Sarga plumosum plume sorghum	4
1	Grass/Legumes	Mnesithea rottboellioides	5
2	Tree	E. crebra narrow-leaved ironbark	1
2	Tree	E. dallachiana	2
2	Tree	C. clarksoniana Clarkson's bloodwood	3
2	Understory	Grevillea sp.	1
2	Understory	Erythrina vespertilio Bat's wing coral tree(1)	2
2	Understory	Melia azedarach white cedar	3
2	Grass/Legumes	Themeda triandra kangaroo grass	1
2	Grass/Legumes	Heteropogon triticeus giant speargrass	2
2	Grass/Legumes	Indigofera pratensis forest indigo	4
2	Weed	Ageratum sp. bluetop	3
3	Tree	E. crebra narrow-leaved ironbark	1
3	Tree	C. clarksoniana Clarkson's bloodwood	2
3	Tree	E. dallachiana	3
3	Understory	Grevillea sp.	1
3	Grass/Legumes	Themeda triandra kangaroo grass	1
3	Grass/Legumes	Heteropogon triticeus giant speargrass	2
3	Grass/Legumes	Native legumes	3
4	Tree	E. crebra narrow-leaved ironbark	1
4	Tree	*E. tereticornis blue gum*	2
4	Tree	Lophostemon sauveolens swamp mahogany	3
4	Grass/Legumes	Themeda triandra kangaroo grass	1
4	Grass/Legumes	Heteropogon contortus Black speargrass	2
4	Grass/Legumes	Native legumes	3
4	Grass/Legumes	Heteropogon triticeus giant speargrass	4
5	Tree	E. crebra narrow-leaved ironbark	1

Site	Type	Species	Dominance
5	Tree	*E. tereticornis blue gum*	2
5	Tree	E. dallachiana	3
5	Tree	C. clarksoniana Clarkson's bloodwood	4
5	Understory	Juvenile eucalypts	1
5	Grass/Legumes	Themeda triandra kangaroo grass	1
5	Grass/Legumes	Heteropogon triticeus giant speargrass	2
5	Grass/Legumes	Cymbopogon refractus barbwire grass	3
5	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	4
5	Grass/Legumes	Indigofera pratensis forest indigo	5
6	Tree	E. crebra narrow-leaved ironbark	1
6	Tree	E. dallachiana	2
6	Tree	C. clarksoniana Clarkson's bloodwood	3
6	Understory	Juvenile eucalypts	1
6	Grass/Legumes	Themeda triandra kangaroo grass	1
6	Grass/Legumes	Bothriochloa bladhii forest bluegrass	2
6	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	3
6	Grass/Legumes	Heteropogon contortus Black speargrass	4
7	Tree	*E. tereticornis blue gum*	1
7	Tree	E. crebra narrow-leaved ironbark	2
7	Tree	E. dallachiana	3
7	Tree	C. clarksoniana Clarkson's bloodwood	4
7	Understory	Juvenile eucalypts	1
7	Grass/Legumes	Themeda triandra kangaroo grass	1
7	Grass/Legumes	Heteropogon triticeus giant speargrass	2
7	Grass/Legumes	Native legumes	3
7	Grass/Legumes	Indigofera pratensis forest indigo	4
8	Tree	*E. tereticornis blue gum*	1
8	Tree	E. crebra narrow-leaved ironbark	2
8	Tree	C. clarksoniana Clarkson's bloodwood	3
8	Tree	E. granitica	4
8	Understory	Juvenile eucalypts	1
8	Grass/Legumes	Themeda triandra kangaroo grass	1
8	Grass/Legumes	Imperata cylindrica blady grass	2
8	Grass/Legumes	Heteropogon triticeus giant speargrass	3
8	Grass/Legumes	Heteropogon contortus Black speargrass	4
8	Grass/Legumes	Native legumes	5
9	Tree	E. crebra narrow-leaved ironbark	1
9	Tree	C. clarksoniana Clarkson's bloodwood	2
9	Tree	*E. tereticornis blue gum*	3
9	Understory	Lophostemon sauveolens swamp mahogany	1
9	Understory	Juvenile eucalypts	2
9	Understory	Breynia oblongifolia (Coffee bush)	3

Site	Type	Species	Dominance
9	Grass/Legumes	Heteropogon contortus Black speargrass	1
9	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	2
9	Grass/Legumes	Sporobolis laxus tussocky sporobolus	3
9	Grass/Legumes	Heteropogon triticeus giant speargrass	4
9	Grass/Legumes	Themeda triandra kangaroo grass	5
10	Tree	E. crebra narrow-leaved ironbark	1
10	Tree	*E. tereticornis blue gum*	2
10	Tree	E. dallachiana	3
10	Tree	C. clarksoniana Clarkson's bloodwood	4
10	Understory	Juvenile eucalypts	1
10	Grass/Legumes	Themeda triandra kangaroo grass	1
10	Grass/Legumes	Heteropogon triticeus giant speargrass	2
10	Grass/Legumes	Heteropogon contortus Black speargrass	3
10	Grass/Legumes	Native legumes	4
11	Tree	E. crebra narrow-leaved ironbark	1
11	Tree	*E. tereticornis blue gum*	2
11	Tree	C. clarksoniana Clarkson's bloodwood	3
11	Tree	E. dallachiana	4
11	Understory	Grevillea sp.	1
11	Understory	Juvenile eucalypts	2
11	Grass/Legumes	Themeda triandra kangaroo grass	1
11	Grass/Legumes	Heteropogon triticeus giant speargrass	2
11	Grass/Legumes	Ophiuros exaltatus Canegrass	3
11	Grass/Legumes	Native legumes	4
13	Tree	E. crebra narrow-leaved ironbark	1
13	Tree	*E. tereticornis blue gum*	2
13	Tree	C. clarksoniana Clarkson's bloodwood	3
13	Tree	E. dallachiana	4
13	Understory	Lophostemon sauveolens swamp mahogany	1
13	Understory	Juvenile eucalypts	2
13	Understory	Grevillea sp.	3
13	Grass/Legumes	Heteropogon contortus Black speargrass	1
13	Grass/Legumes	Themeda triandra kangaroo grass	2
13	Grass/Legumes	Bothriochloa bladhii forest bluegrass	3
13	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	4
13	Weed	Ageratum sp. bluetop	5
14	Tree	E. crebra narrow-leaved ironbark	1
14	Tree	E. dallachiana	2
14	Tree	C. erythrophylla	3
14	Tree	Corymbia tessellaris Moreton Bay ash	4
14	Tree	*E. tereticornis blue gum*	5
14	Understory	Juvenile eucalypts	1

Site	Type	Species	Dominance
14	Understory	Grevillea sp.	2
14	Grass/Legumes	Themeda triandra kangaroo grass	1
14	Grass/Legumes	Heteropogon triticeus giant speargrass	2
14	Grass/Legumes	Heteropogon contortus Black speargrass	3
14	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	4
15	Tree	E. crebra narrow-leaved ironbark	1
15	Tree	*E. tereticornis blue gum*	2
15	Tree	E. dallachiana	3
15	Understory	Juvenile eucalypts	1
15	Understory	Grevillea sp.	2
15	Grass/Legumes	Themeda triandra kangaroo grass	1
15	Grass/Legumes	Heteropogon triticeus giant speargrass	2
17	Tree	E. crebra narrow-leaved ironbark	1
17	Tree	*E. tereticornis blue gum*	2
17	Tree	Corymbia tessellaris Moreton Bay ash	3
17	Tree	E. dallachiana	4
17	Understory	Grevillea sp.	1
17	Understory	Juvenile eucalypts	2
17	Grass/Legumes	Themeda triandra kangaroo grass	1
17	Grass/Legumes	Heteropogon triticeus giant speargrass	2
17	Grass/Legumes	Heteropogon contortus Black speargrass	3
17	Grass/Legumes	Indigofera pratensis forest indigo	4
19	Tree	E. crebra narrow-leaved ironbark	1
19	Tree	E. dallachiana	2
19	Understory	Juvenile eucalypts	1
19	Understory	Grevillea sp.	2
19	Understory	Acacia spp.	3
19	Grass/Legumes	Themeda triandra kangaroo grass	1
19	Grass/Legumes	Sarga plumosum plume sorghum	2
19	Grass/Legumes	Heteropogon triticeus giant speargrass	3
19	Grass/Legumes	Ophiuros exaltatus canegrass	4
19	Grass/Legumes	Heteropogon contortus Black speargrass	5
20	Tree	*E. tereticornis blue gum*	1
20	Tree	E. crebra *narrow-leaved ironbark*	2
20	Tree	C. clarksoniana Clarkson's bloodwood	3
20	Understory	Juvenile eucalypts	1
20	Grass/Legumes	Themeda triandra kangaroo grass	1
20	Grass/Legumes	Heteropogon triticeus giant speargrass	2
20	Grass/Legumes	Heteropogon contortus black speargrass	3
20	Grass/Legumes	Ophiuros exaltatus canegrass	4

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FOI 200710
Document 5

s22 - out of scope - irrelevant material

From: Dean Jones s47F
Sent: Monday, 11 September 2017 10:14 AM
To: s22 @environment.gov.au>
Subject: Re: Meadowbank [SEC=UNCLASSIFIED]

Hi s22 ,

I have finished doing the assessment of available trees within safe gliding distance however I was wondering where you got the multiplication value of 1.8xheight of tree. I can find detailed information for the flying squirrel that reflects this estimate but not for the greater glider. Provide reference please.

Cheers

Dean

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On 21 August 2017 at 16:23, s22 @environment.gov.au> wrote:

> Hi Dean
>
> I have spoken with both the Koala expert and Greater Glider expert.
>
> After talking with the expert I consider that there is no requirement for further Koala surveys as we were recently discussing.
>
> As discussed, the main issue is to keep connectivity in the north part of the cleared area between the glider habitat and the central culdesac. I will leave it up to the Camerons as to how this is achieved. As you and I discussed, this would be best determined at the landscape level by yourselves, not by me drawing lines on the map. Below are the notes from the expert on size and distance.

What would be useful is some estimates of height and distances between trees in the area to be cleared. Great gliders can only glide 1.8 times the height of the tree they are flying from. That is if the tree is 20 metres tall, they can glide a total of 36 metres. From the pictures included in the report, the ironbark dominated vegetation appears to be in some areas too sparse for gliders to go from one tree to the next without having to travel on the ground. Comparison of the average height/spacing of the trees in the E.tereticornis dominated habitat where the gliders were sighted, compared to the E. crebra, would be useful. This information should also help delineate the E. tereticornis habitat to avoid.

Moving the project forward, at this stage for a revised PD
Extra information

- add in the height/ distance information
- outline the E. Tereticornis habitat to be avoided and why, ie avoid impacts on populations
- provide a plan as to how Koala connectivity between riparian and retained habitat will be achieved. E.g. a minimum of NN sites, no less than 200 metres apart, in the northern region, to achieve connectivity between the mid rocky part and the north…. Or something along those lines but with more detail (ie the exact sites do not need to be mapped at this time, but their identification would be a condition of approval and a map would need to be submitted prior to commencing the clearing, this may work better as I understand the clearing may be done in stages by the Camerons).

Technical edits

- note how survey efforts meet guidelines for departmental survey for each species
- include details and qualifications of people undertaking the surveys
- clarify the difference between state approval and EPBC 1470 v 1475 ha
- For each statement of 'no significant impacts' – add in why there is no impact by contrasting the findings to the departments guidelines for a significant impact. A lot of proponents set up a table for this and that is a clear way of showing that each criteria has been considered for each species.

That is it for the moment, there may be a few other minor details to adjust, but this will get the approval processes moving again.

Regards
s22

Expert notes

From the perspective of any individual koalas that may be using this landscape occasionally, such broad-acre clearing will expose these animals to (1) threats from dingo and eagle predation, and (2) heat stress by day (no shade or foliage for water). So, as we discussed, I would suggest trying to retain some relic woodland within the clearing envelope so that the overland distance through cleared country to refuge was no more than 200m. That veg photos confirm my view that structurally and floristically the veg is good koala habitat. An absence of contemporary koalas would be a reflection of either (a) historical local population reductions, or (b) environmental/climatic pressures (e.g. spring

temperatures and heat waves); or a combination of both. I'm not sure what size patches should be retained. The inter-tree spacing is quite large, so even 50 x 50 m is unlikely to capture much. However, I would not go any smaller – and if the manager targeted patches with slightly greater stem densities that would be useful.

s22
Assessment Officer
Queensland North Assessments | Environment Standards Division
Department of the Environment and Energy
51 Allara Street Canberra ACT 2600 | GPO Box 787, CANBERRA ACT 2601
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s22 - out of scope - irrelevant material

FOI 200710
Document 6

Attachments: Meadowbank_Map_Package.mpk
Impact assessment_FaunaVegSurvey Draft2.docx

This may be relevant too

From: Dean Jones s47F
Sent: Wednesday, 13 September 2017 5:04 PM
To: s22 @environment.gov.au>
Subject: Impact Assessment, Meadowbank Station EPBC 2016/7838

Hi s22 ,

I hope you are feeling better. I had the flu several weeks ago so I think I know what you might be going through.

Attached is another draft document for the Meadowbank Station Flora and Fauna Impact Assessment.

I have also include an Arcmap package that includes the clearing shape file as prepared by the DNRM Vegetation Office. The 1475ha value I was referring to was prior to the slight modifications that the Veg Office made to match more smoothly to the drainage line contours. Also included in the package is the *E. tereticornis* woodland to be avoided.

I think I have covered everything. Please let me know if there are improvements I can make. One other thing was the flight distance multiplication factor for gliders based on tree height. You said it was 1.8. However I cannot find reference to this except for the flying squirrel in North America. I don't think this would be the same for the greater glider as it is a much larger animal and with a smaller membrane relative to body size. Please provide reference or expert opinion.

Regards

Dean

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Vegetation Clearing for High value Cropping

Meadowbank Station, South of Mt. Garnet,

Qld (EPBC 2016/7838)

Fauna, Flora and Habitat Assessment

Contents

Summary

In March 2017 a field assessment of threatened species, vegetation and habitat was made of the proposed area of 1475ha to be cleared for cropping on Meadowbank Station, far north Queensland. Of the list of threatened species considered for the area, only the greater glider *(Petauroides volans)* was found, and just 1 (or possibly two individuals) at the same location. The habitat was generally unsuitable for the greater glider as the vegetation was dominated by relatively small stature narrow-leaved ironbark (*Eucalyptus crebra*) rather than the preferred species Queensland bluegum (*E. tereticornis*). There was no direct or indirect evidence for the northern quoll, koala, ghost bat or the black-throated finch.

The Regional Ecosystem dominating the clearing area was confirmed as RE9.8.4 and is described as follows: Open woodland to woodland of Eucalyptus crebra (sens. lat.) (narrow-leaved ironbark) and/or E. tereticornis (bluegum). The mid-layer is generally absent. Occurs on basalt plains and rocky basalt plains and hills. Under the Vegetation Management Act it is classified as *Least Concern* and its Biodiversity Status is *No Concern at Present.* In a regional context there is 147,000ha mapped with the same RE within a 30km radius of the proposed clearing area. Good connectivity of like habitat will remain once the proposed activity is completed.

1. Introduction

On 10 February 2017 James Barker, Assistant Secretary to the *Assessments and Sea Dumping Branch*, Commonwealth Department of Environment and Energy recommended that a fauna, habitat and vegetation investigation be conducted on the proposed vegetation clearing application for high value cropping on Meadowbank Station, south of Mt. Garnet. Further information for the proposed activity was required to provide '*additional information for assessment by Preliminary Documentation*'. The additional information content is detailed in 'Attachment A' within Appendix One of this report. It covers:

1. Threatened Species Impact Assessment: On-ground surveys for the following species;
    a. Greater glider *(Petauroides volans)* - vulnerable,
    b. Koala *(Phascolarctos cinereus*) - vulnerable,
    c. Black-throated finch (southern), *(Poephila cincta cincta)* - endangered,
    d. Northern quoll *(Dasyurus hallucatus)* - endangered, and the
    e. Ghost bat *(Macroderma gigas)* - vulnerable

The impact assessment also evaluates the vegetation to be cleared in a regional context.

2. Environmental Offsets.
3. Avoidance, safeguards and mitigation measures.
4. Environmental record of person/s proposing to take action; and
5. Economic and social matters.

Threatened Species Impact Assessment

Meadowbank Station Overview

Following the original clearing application to the Queensland government the Cameron family made a decision to reduce the clearing area from over 6000ha to the current 1475ha, which was approved by the Queensland government. This was a conscious decision, not only with the consideration of preserving the current native grass and woodlands but also with that of preserving a wetland and its surrounding woodlands in the south east part of the property. The wetland supports many birds and animals and is surrounded by a woodland containing *Eucalyptus tereticornis*, Queensland Bluegum.

Queensland bluegum is a preferred species for the greater glider. These trees are larger in size with more suitable denning hollows which provide higher launching sites for movement through the forest. Queensland bluegum is also an important source of nutrition for the folivorous greater glider. Most other parts of this property are dominated by the smaller and more sparsely distributed narrow-leaf ironbark that offer less suitable glider habitat.

The Camerons firmly believe that there needs to be a balance between agriculture and the natural environment and the wildlife it supports. The decision to reduce the initial amount of vegetation clearing by over four and a half thousand hectares is a testament in maintaining that balance between sustainable agriculture and healthy ecosystems.

In addition, there has been a conscious effort to identify and select land which is most suitable for cropping and to exclude any unsuitable land. For example, rocky land will not be cleared. The complex polygon for proposed clearing illustrates the effort in avoiding such rocky areas (Figure 2). The Camerons will maintain this management strategy throughout the clearing activity. That is, any parts of the proposed clearing with considerable acquisition of rock will not be cleared to ensure that native grass and woodlands will maintain their current grazing and environmental values. They believe that unnecessary clearing, that cannot be properly cropped, will increase the likelihood of invasive weeds and destroy the balance of the more valuable native pastures.

The Camerons currently maintain a management strategy that ensures native pastures are conservatively grazed and that good ground cover is maintained. From our 17 vegetation plots and from casual observations made during walk and drive transects we noted an abundance of high-value native grasses with excellent ground cover. This ensures that there is minimal erosion and sedimentation, that the quality of the high value perennial grazing grasses are maintained and that noxious weeds and least preferred non-endemic grasses are kept to a minimum. The farm does however experience extended and unpredicted dry

seasons that can put unexpected grazing pressure on the farming system. In order to prevent overgrazing and the risk of losing the current balance of native pastoral grasses the Camerons would like incorporate high value crops such as sorghum into their farming program. The grain and silage can be stored onsite and used to supplement their feeding program, especially when native grasses are limited. Overgrazing can cause erosion and weed invasion. The introduction of a cropping system will bring ongoing long-term benefits by reducing grazing pressure.

2. Fauna, Flora and Habitat assessment

From the 7 to 9 March 2017 Landline Consulting conducted a fauna survey and habitat assessment for the following threatened species:

a. Greater Glider *(Petauroides volans)*-vulnerable,
b. Koala *(Phascolarctos cinereus*)-vulnerable,
c. Black-throated Finch *(Poephila cincta cincta)*-endangered,
d. Northern quoll *(Dasyurus hallucatus)*-endangered, and the
e. Ghost bat *(Macroderma gigas).*-vulnerable

An evaluation of vegetation types was also conducted to confirm that broad vegetation types correlate with corresponding government regional ecosystem mapping.

2.1 Assessment Team

The assessment was conducted by botanist, Neil Bryde and vertebrate ecologist, Dean Jones.

Qualifications

Dean Jones was a research officer for CSIRO, Wildlife and Ecology for over 21years. Dean has extensive knowledge in mammal, bird and fish; trapping, handling and survey techniques.

Neil Bryde has over 22 years experience with the Queensland Department of Primary Industries. During this time Neil spent considerable time mapping regional ecosystems for agricultural land suitability across northern Queensland.

Fauna

Fauna surveys were undertaken for each of the five listed species. Walk, drive and fixed point observations were made. Key habitat searches for each of the species were also performed to maximise the chance of encounters. Direct and indirect observations were recorded. Indirect observations were those of scats, tracks or any other markings, such as bark scratching, that would indicate the presence of the target species. Direct observations were visual or audible records of the species. A full list of the observed mammals and bird species is given in Appendix 2 and Tables 1 and 2.

2.2 Black-throated finch (southern), *Poephila cincta cincta*

Method

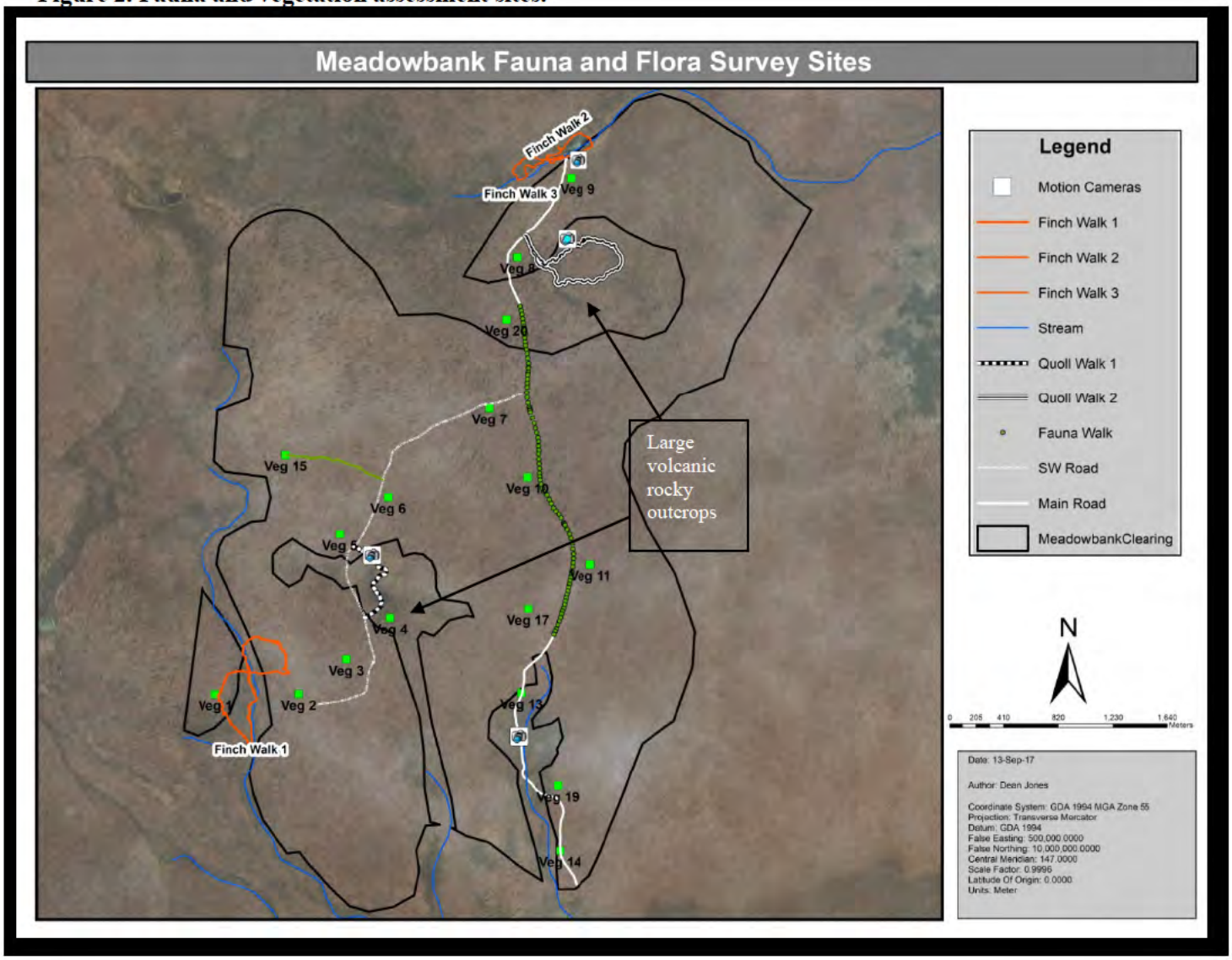
Over 4 hours of fixed point sampling for black-throated finches were performed. The fixed sites specifically targeted the catchment dam and along ephemeral streams that are the best habitat in the area to observe finch activity (Figure 1). In addition to the morning and afternoon fixed point observations were 5.5km (3hrs) of walk transects targeting best finch habitat (Figure 2). Supplementing the above activities were drive-transects of over 72km, other walk transects of 6.5km, and over 7 hours of observations during habitat and vegetation plot assessments. Table A, below compares recommended and actual survey effort for this species. There is also a recommendation to survey around nesting sites of the black-faced woodswallow, however no woodswallows were detected.

Table A. Recommended and actual survey effort guidelines for the black-throated finch (southern)

Method	EPBC, Guideline hours(days)	Actual
Land-based area searches	10(5)	>20
Targeted Searches (waterholes and woodswallow nests)	6(2)	7(3)

Figure 1. Fixed monitoring point for black-throated finch (dam site located outside of the proposed clearing area)

Figure 2. Fauna and vegetation assessment sites.



Observations - Black-throated finch

The extensive searches recorded no black-throated finches. In fact there were no observations of any finches or mannikins of any kind. There was an abundance of native grasses and grass seeds such as Themeda triandra kangaroo grass, black spear, giant spear and cane grass, Figure 3. However there were none of the preferred black-throated finch grasses such as sabi grass, tropical crab grass, red natal or Rhodes grass. There was a notable absence of an understory to provide cover and potential nesting sites and refuge for finches (Figures 4a, b and c).

Figure 3. Showing dominant tree (E. crebra narrow-leaved ironbark) and grass species (kangaroo grass, black speargrass)

Figure 4 a. The absence of understory is typical of this open woodland type.

Figure 4b Predominantly open ironbark woodland with no understory.

Figure 4c. More ironbark woodland lacking suitable understory habitat for finches.

Summary

There were no BTF detected during this assessment. There is a lack of suitable understory for nesting and refuge, there are no preferred forage grasses plus there is a lack of permanent water sources and ephemeral stream flows are short lived during significant rain events. There were no other finches or woodswallows evident that can be associated with the BTF. Therefore it is unlikely that this landscape offers suitable habitat for the BTF.

Please refer to the Significant Impact Assessment summary table, Appendix 4, for further review of this species.

2.3 Greater Glider, Petauroides volans

Method

Spotlighting is the most effective way to detect the greater gliders and is a recommended method under the government guidelines for detecting nocturnal arboreal mammals. Under spotlight greater gliders have a very clean eye shine that can be clearly seen up to 150m away in open woodland. Prior to spotlighting, suitable habitat was noted during daytime searches such as suitable hollows and resource trees as per guideline recommendations. Close attention was made to these sites during spotlight searches. Five hours of spotlighting with two investigators were conducted, concentrating on the only two roads passing through the study area. The main road bisected the property from north to south and was a distance of 6.1 km and the second road ran south west through the proposed activity for 4.0 km, Figure 5. Spotlighting was conducted on two nights from a vehicle creeping along with no extra throttle in first gear at walking speed. The nights were partly cloudy with a light breeze. There were two observers covering each side of the road. LED spotlights were used to observe 125m into the open forest, see Figure 5. The total distance of spotlighting, including the return route, was 20.2km covering a combined area well over 500ha.

Observations

There were 2 greater glider observations for the two nights of spotlighting. The observations were recorded on consecutive nights within close proximity of each other, near the intersection of the two roads (Figure 5). There is a strong likelihood that it was the same individual.

The sightings took place in an area that has a higher density of *E. tereticornis blue gum* (Queensland bluegum) as was noted in the vegetation surveys for sites 7, 8 and 20. As suggested by Wormington *et al*. 2002, the most important factor in the presence of greater gliders and yellow-bellied gliders within the dry sclerophyll forests of South East Queensland are the higher proportions of spotted gum (*Corymbia citriodora*) and forest red gum (*Eucalyptus tereticornis* also known as Queensland bluegum). Appendix 4, Figure 1 identifies the location of woodland dominated by *E. tereticornis*. However the majority of the proposed activity is dominated by *E. crebra* narrow-leaved ironbark (narrow-leaved ironbark) (see Appendix Three, Table 1 and Figures 3, 4a, 4b and 4c). *Eucalyptus crebra* on this property are small in stature with average heights of 10-15m with limited denning opportunities compared with the larger *E. tereticornis* (blue gum) woodlands. The sites dominated by *E. crebra* have a more broken canopy structure with a very limited capacity for gliders to move from one tree to the next. An assessment of the number of trees for each site that allow for movement of gliders from one tree to nearest neighbour was performed. This was based on a 1.8 multiplication factor of average tree height for each of the 17 vegetation assessment sites Within those sites dominated by *E. crebra* only 35% of surrounding trees meet the criteria for being close enough to glide to. Whereas for those locations dominated by *E. tereticornis*, 70% of surrounding trees were within gliding range. Therefore there are twice as many opportunities to move from one tree to the next within the *E. tereticornis* woodland.

Figure 5. Greater glider observations indicated by the pink dots. Spotlighting coverage in yellow.

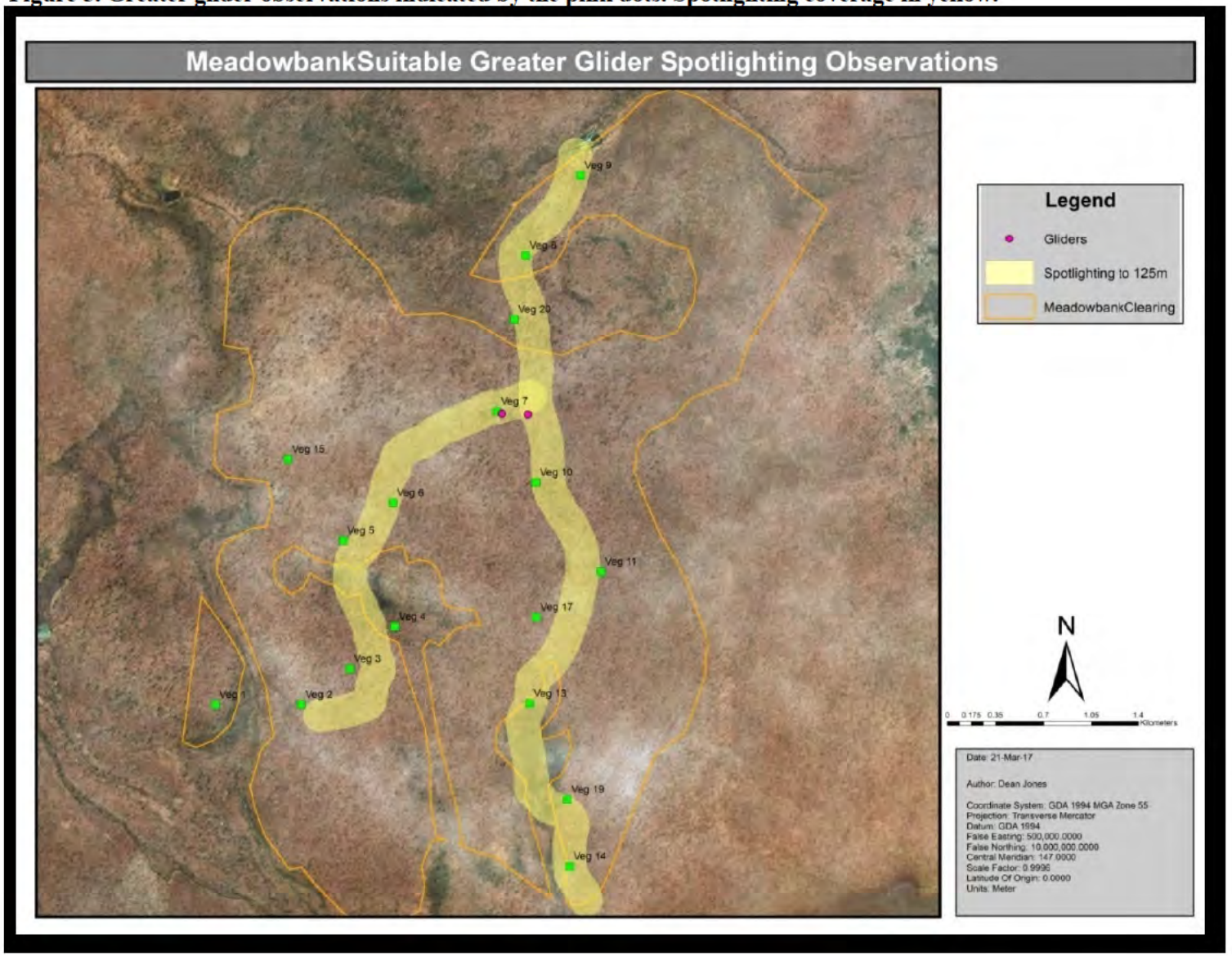


Figure 6. Typical landscape of the proposed activity. Site dominated by *E. crebra narrow-leaved ironbark* with occasional *E. tereticornis blue gum* (in the background).

Summary – greater glider

The following is advice provided by the Commonwealth government, Threatened Species Scientific Committee; 'Conservation Advice for *Petauroides volans* (greater glider)':

'It (greater glider) is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows (Andrews et al., 1994; Smith et al., 1994, 1995; Kavanagh 2000; Eyre 2004; van der Ree et al., 2004; Vanderduys et al., 2012). The distribution may be patchy even in suitable habitat (Kavanagh 2000). The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species (Kavanagh 1984).'

Response: The proposed activity on Meadowbank is non-montane with little eucalypt diversity. The proposed clearing is dominated by narrow-leaved ironbark. Therefore this site is dominated by non preferred habitat of the greater glider.

'During the day it shelters in tree hollows, with a particular selection for large hollows in large, old trees (Henry 1984; Kehl & Borsboom 1984; Lindenmayer et al., 1991; Smith et al., 2007; Goldingay 2012).'

Response: This site is dominated by smaller *narrow-leaved ironbark* with few adequately-sized den hollows. Larger tree species are found within the *E. tereticornis* woodland.

'Woinarski et al. (2014) estimate the population size to be greater than 100,000 mature individuals.'

One, possibly two separate animals were observed during the fauna assessment. These were located within the woodland dominated by *E. tereticornis*. If this woodland was removed then the animals within this area would be impacted, though it would be an infinitesimal impact on the overall population of 100 000 mature individuals. Even so the proponent has accepted that this woodland is important to greater gliders and other wildlife and has agreed that this woodland will be avoided to ensure there is minimal impact on this and other animals. Please refer to Appendix 4, Figure 1 that identifies the 97.1ha of *E. tereticornis* woodland that will be avoided by this proposed action.

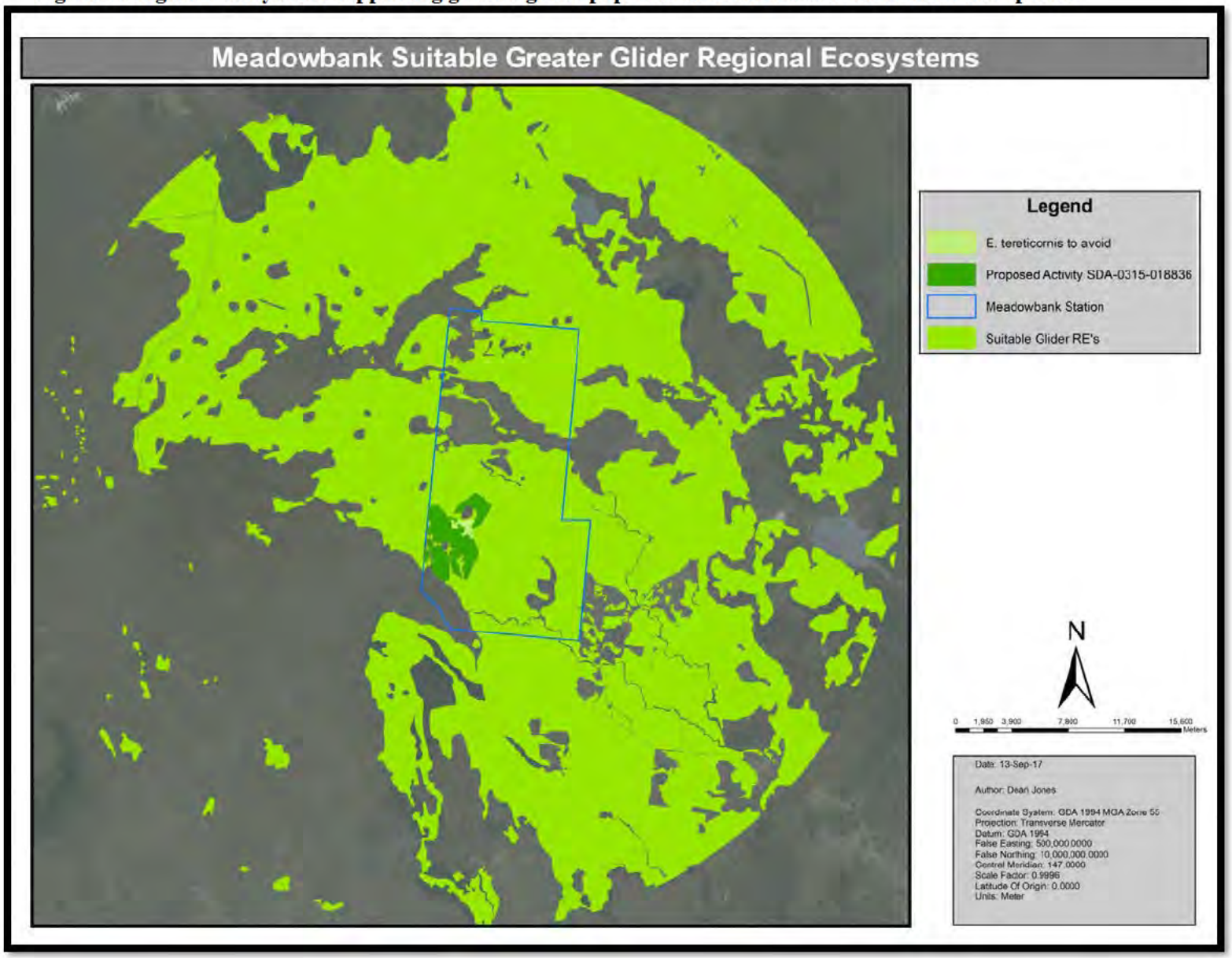
Suitable Regional Ecosystems in context with Meadowbank Station

The total area within 30 km of Meadowbank, with the same regional ecosystems or those with suitable habitat tree species for greater glider, is 147,000ha (Figure 6). The proposed clearing is 1,470ha (reduced to 1372.9ha when taking into account the bluegum woodland to be avoided) which is less than 1% of this. Suitable RE's extend well beyond what is mapped. These figures do not include the preferred moist montane eucalypt forests to the east and other REs that are suitable for glider habitation. On a national scale the estimated glider population of over 100,000 mature individual individuals ranges from Cooktown, a further 300km to the north, over 100km to the east and west and well over 2000km south to the southern parts of Victoria. After the proposed activity habitat will remain contiguous and well connected.

Although present within the proposed clearing we believe there will be no significant impact on this species. There is a limited suitable habitat within the site that is dominated by *E. crebra* and those more suitable locations within the *E. tereticornis* woodland where animals were detected will be avoided. Additionally adequate connectivity will be maintained after the activity is completed. Furthermore the distribution of this species ranges from Cooktown to southern Victoria. Therefore the proposed clearing area represents an insignificant proportion of the total area suitable for the species.

Please refer to the Significant Impact Assessment summary table, Appendix 4, for further review of this species.

Figure 6. Regional ecosystems supporting greater glider populations based on suitable habitat tree species.



2.4 Koala, Phascolarctos cinereus

Methods

Observations were made for koalas during 72km of drive transects, 12km of walk transects and over 7 hours of observations during the vegetation/habitat assessments (Figure 2). Investigators were looking for koala sightings as well as indirect evidence such as koala scratching and scats, on and below trees respectively.

Observations

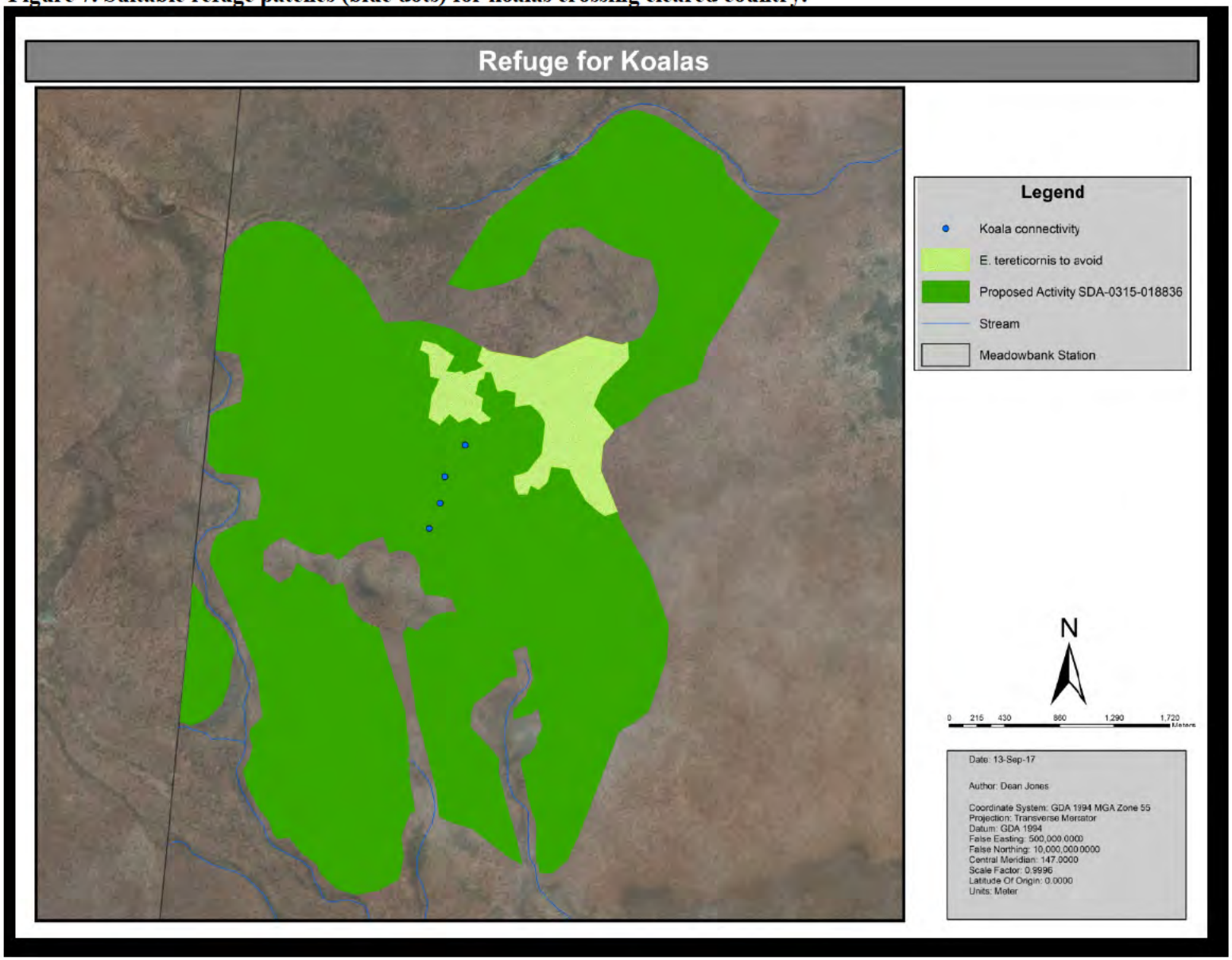
There was no direct or indirect observations of koalas during any of the monitoring activities.

Summary

The Cameron family has been working on this property for over 25 years. During this time there has been no koala sightings on this property. Our assessment confirms that that koalas were not present at the site and unlikely to be permanent residence. The site is dominated by a broken canopy of E. crebra, it lacks permanent water with ephemeral streams running for short periods during the wet season and mean temperatures ranging from 26.5 to 34.2C during those extended dry periods from May to October where mean monthly rainfall ranges from 4.6 to 17.8mm. There is however, an area dominated by *E. tereticornis* recognised as a koala primary feed tree. Although this, as noted in the previous section for the greater glider, will be avoided. Additionally if at any time there were koalas wishing to cross the proposed activity there will be measures to help facilitate these animals. As per koala expert recommendations there will be a minimum of four refuge patches that will contain suitable trees to provide shade, an opportunity to rehydrate and relief from any potential predators. These will be spaced at no more than 200m and will be located between the central rocky outcrop going north through to the *E. tereticornis* woodland, Figure 7. Within the referral document it has been noted that the proponent has no intention of clearing any areas with excessive rock and rubble which are unsuitable for cropping. This will also add to those locations suitable as koala refuge. The location and number of refuge patches will be submitted to the referral office before clearing commences.

Please refer to the Significant Impact Assessment summary table, Appendix 4, for further review of this species.

Figure 7. Suitable refuge patches (blue dots) for koalas crossing cleared country.



2.5 Ghost bat, Macroderma gigas

Methods

The ghost bat is the largest microbat in Australia. Its distinct size, call and flight allows for easy detection during nocturnal survey. Spotlighting along with active daytime searches were used to search for the animal and its roosting sites (large caves). A recording of its distinct audible chirp was listened to by observers to become familiar with. Additionally casual observations were made for this animal around our camp at night.

As per the ghost bat surveys a total of five hours of spotlighting with two investigators were conducted, concentrating on the only two roads passing through the study area, Figure 5. Spotlighting was conducted on two nights from a vehicle creeping along with no extra throttle in first gear at walking speed. Visibility was excellent and the breeze was light. There were two observers covering each side of the road, Figure 5. The total distance of spotlighting, including the return route, was 20.2km covering a combined area well over 500ha. A thorough search of the rocky outcrops taking over five hours was performed as per the ground searching methods employed for the northern quoll.

Note: There are no survey guidelines provided by the Australian Government however the Queensland Governments Department of Science, Information Technology and Innovation provide some guidelines:

- Surveys should be completed between September and April. This survey; February
- Acoustic detection: 8 hours over 4 nights for every 100ha. This survey falls considerably sort of this but given there were no nearby roosting sites we believe our efforts were adequate.
- Roost searches at 2 hours per day. This survey performed a thorough search of any for any roost sites at all possible locations available. Namely the two rocky outcrops adjacent and surrounded by the proposed activity.

Observations

No ghost bat were seen or heard nor were there any, actual or potential, roosting sites found. Searches within the more prominent rocky outcrops, adjacent and surrounded by the proposed activity, had no caves or suitable roosting sites. The landscape of the proposed activity is a flat open woodland dominated by *E. crebra* that provides no suitable daytime roosting sites for the ghost bat.

Summary

Due to the lack of any suitable roosting sites, on or near the proposed clearing areas, there will be no significant impact on the ghost bat. Ghost bats have a relatively small home range home range of 1.9km from daytime roost (Tidemann et al., 1985). Given there were no suitable roost caves within the most likely locations, that is the rocky outcrops in the north eastern and south central areas, there is very little chance that the ghost bat will be impacted in any way by the proposed activity.

Please refer to the Significant Impact Assessment summary table, Appendix 4, for further review of this species.

2.6 Northern quoll, Dasyurus hallucatus

Methods

A desktop survey was first conducted to determine those within and/or near the proposed activity that would provide the most likely habitat to find the northern quoll. Two sites, not committed to but are however surrounded by the proposed activity were identified as the best sites to accommodate quolls. These sites are the rocky outcrops identified in Figure 2, that are curvilinear with a combined length of approximately 1100m. Once on the ground, reconnaissance surveys were conducted as per the EPBC Act referral guidelines, and these sites were assessed as suitable quoll habitat. EPBC guidelines recommend that there is one trap night per 100 linear metres.

Note: Even though these sites are to be avoided by the proposed activity our focus, was invested mostly within these two sites to maximise the likelihood of quoll detection to determine if there was a population near or within the proposed activity.

Three camera traps were set for three-day and two-night observations equaling 6 trap nights. Cameras were set adjacent to what was deemed the most suitable quoll habitat, such as rocky outcrops and log piles adjacent to and within the proposed activity. Camera traps were baited with fresh chicken wings to maximise the likelihood of a quoll encounter. Additionally, specific walk transects were performed on the identified rocky outcrops to look for possible quoll activity in the form of active dens, scats, smells or tracks. The specific quoll walks were over 5 hours taking in 3.7km (Figure 2). Evidence of these animals was also noted during drive transects, spotlighting, vegetation/habitat assessments, bird surveys, casual observations around camp and during other walk transects.

Observations

There were no signs or sightings of quolls for any of the observation techniques. There were hollow logs, hollows within trees along with small holes within the rocky outcrops that would be considered suitable for quoll dens. However there was no sightings or evidence of habitation. Camera images revealed activity by grey kangaroo, butcherbird and cattle.

Summary

Even though the number of trap nights (camera trap nights) conducted fell short of the recommended trap nights, I believe after many years of trapping wildlife, that the camera traps far outweigh the effectiveness of cage traps and the effort conducted during this survey was sufficient to detect the presence of quolls. Given there was no evidence of the northern quoll at either of those rocky outcrops the proposed activity will have no significant impact on the northern quoll.

If for whatever reason the northern quoll does choose to inhabit these rocky outcrops in the future then these sites are not within the current scope of the proposed activity and will remain intact and with good connectivity along the riparian zones to other well connected areas.

Please refer to the Significant Impact Assessment summary table, Appendix 4, for further review of this species.

3. Vegetation assessment

Methods

Seventeen sites were selected to evaluate the flora in the proposed clearing against current regional ecosystem mapping (Figure 2). Each site was evaluated for its dominant tree, understory and grass species. Observations were made within a 100m radius of the observer. Weed species were also noted. Because of the homogenous nature of the landscape noting the five most dominant species captured at least 95% of plants for each of the tree, understory and grass species. Species were ranked 1 to 5 with one being the most dominant. A summary of flora observations from the seventeen sites is given in Appendix 3 - Table 1.

Regional ecosystem mapping identifies that the predominant vegetation groups are as follows:

Regional Ecosystem Mapping

Regional Ecosystem Mapping indicate the dominant ecosystems within the proposed activity are 9.8.4a (45% or 660ha), 9.8.4b (35% or 515ha) or, 9.8.1b (15% or 220ha) and 9.3.10a (5% or 74ha). The broad vegetation groups are mixed within the clearing polygon depending on the soil type and topographic features that these groups depend upon. The dominant vegetation groups likely to be found within this clearing activity are described below and an estimation of the area they would likely cover within this activity.

Description

Open woodland to woodland of Eucalyptus crebra (sens. lat.) (narrow-leaved ironbark) and/or *E. tereticornis* (blue gum). The mid-layer is generally absent. Occurs on basalt plains and rocky basalt plains and hills.

Vegetation communities in this regional ecosystem include:

9.8.4a: Woodland to open woodland of Eucalyptus crebra (narrow-leaved ironbark) or E. granitica (granite ironbark) +/- Corymbia intermedia (pink bloodwood) +/- C. dallachiana (Dallachy's gum) +/- Corymbia tessellaris Moreton Bay ash (Moreton Bay ash). Scattered canopy species and Lophostemon suaveolens (swamp mahogany) can sometimes occur in the sub-canopy. The shrub layer is absent to sparse. The ground layer is dense and grassy and is dominated by Themeda triandra (kangaroo grass) and Heteropogon contortus (Black speargrass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. (BVG1M: 11b)

9.8.4b: Open woodland to woodland of Eucalyptus tereticornis (blue gum) +/- E. crebra (narrow-leaved ironbark) +/- Corymbia dallachiana (Dallachy's gum) +/- C. clarksoniana (Clarkson's bloodwood) +/- E. leptophleba (Molloy red box) +/- Corymbia tessellaris (Moreton Bay ash). The mid-layer is absent to occasionally scattered plants. The ground

layer is densely grassy and includes Heteropogon contortus (Black speargrass) and/or Dichanthium spp. Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil. (BVG1M: 11b)

9.8.1b: Open woodland to woodland of Eucalyptus leptophleba (Molloy red box) +/- C. erythrophloia (red bloodwood) +/- Corymbia dallachiana (Dallachy's gum). An open sub-canopy layer containing canopy species can occur. The shrub layer is usually absent but scattered species including Planchonia careya (cocky apple), Denhamia cunninghamii (yellowberry bush) and Carissa lanceolata (currantbush) can occur. The ground layer is dense and grassy and dominated by Heteropogon contortus (Black speargrass) and Themeda triandra (kangaroo grass). Occurs on basalt plains and rocky basalt plains and hills with varying depths of soil.

9.3.10a: Palustrine wetland (e.g. vegetated swamp). Low woodland to low open forest of Melaleuca bracteata (black teatree) +/- Casuarina cunninghamiana (river sheoak) +/- Eucalyptus leptophleba (Molloy red box) +/- Eucalyptus spp. +/- Corymbia spp. emergents or vine scrub species. The shrub layer varies from absent, to a continuum with M. bracteata and dry rainforest species where these are present. The ground layer is dominated by tussock grasses such as Heteropogon contortus (Black speargrass), Eragrostis spp. and Eulalia aurea (silky browntop) or Cyperaceae spp. (sedges). This community is very variable in structure and can also occur as small clumps of trees in association with the grassland regional ecosystem 9.3.27 or as a dense sub-canopy layer of M. bracteata under a dominant canopy of Casuarina cunninghamiana. Occurs on or fringing swamps and springs on basalt.

Flora Observations for Proposed Clearing Areas

Tree Species

All seventeen sites contained *E. crebra narrow-leaved ironbark* while *E. tereticornis blue gum* and *E. dallachiana* were present at 13 sites, *C. clarksoniana Clarkson's bloodwood* (12 sites), *Corymbia tessellaris Moreton Bay ash* (3 sites) and *C. erythrophylla, Lophostemon sauveolens swamp mahogany* and *E. granitica* present at 1 site each. The most dominant species at 14 sites was E. crebra followed by *E. tereticornis* which was most dominant at 3 sites (Appendix 3, Table 1).

Understory Species

The understory was universally light to absent. The predominant species were Juvenile eucalypts as light tree thickening followed by scattered Grevillea sp (9 sites), Acacia and juvenile Lophostemon sauveolens swamp mahogany (2 sites) and coffee bush, Melia azedarach white cedar and bat's wing coral tree found on 1 site each (Appendix 3, Table 3).

Ground layer Species

The most dominant species making the ground layer were Themeda triandra kangaroo grass, Heteropogon triticeus giant speargrass, Heteropogon contortus black speargrass, native

legumes and Dichanthium sericeum Queensland bluegrass. All seventeen sites contained Themeda triandra, Heteropogon triticeus (15 sites), Heteropogon contortus (11 sites), native legumes (6 sites), Dichanthium sericeum Queensland bluegrass (5 sites), Indigofera pratensis forest indigo sp (4 sites), cane grass (3 sites), Bothriochloa bladhii forest bluegrass (2 sites) and Sarga plumosum plume sorghum, and Imperata cylindrica blady grass, Cymbopogon refractus barbwire grass, Sporobolis species and *Mnesithea rottboellioides* were all found on one site only (Appendix 3, Table 3).

Summary of vegetation

The type of tree, understory and groundlayer species observed at the Meadowbank vegetation sites were similar to those described in the regional ecosystem (RE) mapping. The dominant RE found within the proposed activity is 9.8.4 and is described as follows: Open woodland to woodland of Eucalyptus crebra (sens. lat.) (narrow-leaved ironbark) and/or E. tereticornis (bluegum). The mid-layer is generally absent. Occurs on basalt plains and rocky basalt plains and hills. Under the Vegetation Management Act it is classified as *Least Concern* and its Biodiversity Status is *No Concern at Present.*

REs 9.8.1b and 9.3.10a were not found in the proposed clearing area.

4. Environmental Offsets

No environmental offsets are necessary as there are no significant impacts on any of the listed threatened species.

The only National Environmental Significant species found during this assessment was the greater glider. Two animals (one each night) were observed amongst a small patch of *E. tereticornis blue gum* in the north central part of the proposed activity. This patch of trees is a small part of a larger patch of *E. tereticornis* found extending further to the north and west. However the larger part of this continuous *E. tereticornis* forest has been excluded from the proposed clearing activity. Therefore protecting this important habitat. As noted in previous sections the dominant tree species throughout this proposed activity is the less favourable *E. crebra narrow-leaved ironbark* with only a scattering of small and isolated patches of *E. tereticornis.*

5. Avoidance, safeguards and mitigation measures

a.) Avoidance, safeguards and mitigation measures have been discussed in the main referral document. Please refer to the conditions imposed by the Queensland government in its approval of the proposal, as set out below.

In addition to these State Government conditions the Cameron family have agreed, as discussed within this document and referenced in Appendix 4(Figure 1), that the *E. tereticornis* dominant woodland would be avoided and not to be included within the scope of the proposed activity. This totals 97.1ha that will not be cleared for the benefit of the greater glider population within this woodland. It may also favour koalas if they are moving through this landscape. Additionally as per the advice of the Australian Government koala expert, there will be some refuge patches kept within the broad acre clearings. See details in Section 2.4.

Our reference: SDA-0315-018836
Your reference: Meadowbank Station

Attachment 1—Assessment manager conditions

No.	Conditions of development approval	Condition timing
Development permit for operational work for native vegetation clearing for high value agriculture		
Schedule 6, Table 3, Item 2: vegetation clearing —Pursuant to section 255D of the *Sustainable Planning Act 2009*, the chief executive administering the Act nominates the Director-General of **Department of Natural Resources and Mines** to be the assessing authority for the development to which this development approval relates for the administration and enforcement of any matter relating to the following condition(s):		
1.	a) The clearing of vegetation is limited to the extent identified as Area A (parts A1 and A2) as shown on Development Permit Plan (DPP) SDA-0315-018836, Sheet 1 of 1, dated 12 October 2016 and stamped approved (Map reference 7861,7961 and Derived Reference Points for GPS – 2 pages) b) Notwithstanding (a) above, in accordance with the Watercourse (Stream Order labels) depicted on Development Permit Plan (DPP) SDA-0315-018836, dated 12 October 2016 and stamped approved, the following shall apply: I. No clearing shall occur within 25 metres of the defining bank of the on-ground location of any watercourse with a stream order of 1; and II. No clearing shall occur within 50 metres of the defining bank on the on-ground location of any watercourse with stream order of 3.	a) At the time of clearing b) At all times
2.	a) The permitted clearing must only occur to establish, cultivate and harvest the following crop: • Forage sorghum (hay, green-chop or silage) b) The crop must be sown within six months from the commencement of the clearing, and established prior to commencement of the subsequent wet season.	a) At all times b) Within six months from the commencement of the clearing

No.	Conditions of development approval	Condition timing
3.	a) A Management Plan addressing Soil Erosion and Sediment Control and Salinity Management must be prepared by a suitably qualified professional. The Management Plan must achieve: - no worsening of the existing levels of erosive soil loss from the land within or downslope of the subject land; - no degradation of soils or land within or downslope of the subject land; - no worsening of the salinity levels of the soil and surface or ground water as a result of changes in the hydrology of the subject land; and - no increase in the incidence of waterlogging. In particular: i. The soil erosion and sediment control component of the Management Plan must be prepared by a Certified Professional in Erosion and Sediment Control (CPESC) and developed in accordance with the International Erosion Control Association's 'Best Practice Erosion and Sediment Control (BPESC)' document; and ii. The salinity management component must meet the highest ratings in the Canegrowers (2013) *Smartcane BMP: Irrigation Module* and in particular, the following key areas: - calculating the amount of water to apply - calculating how often to apply water - seasonal allocation management - run-off and deep drainage - recycle pits (tailwater capture and recycling) - irrigation water quality testing - system management - overhead low pressure - surface drainage system design - erosion management.	a) Prior to clearing commencing.
	b) Submit, for information purposes only, a copy of the Management Plan mentioned at part (a) of this condition to: Vegetation Management Department of Natural Resources and Mines Address: PO Box 5318 Townsville QLD 4810 Email: northvegetation@dnrm.qld.gov.au	b) Prior to clearing commencing.
	c) Carry out and maintain all required erosion and sediment control measures and salinity management measures identified within the Management Plan.	c) While clearing is occurring and until the cropping is abandoned.
4.	a) A Rehabilitation Plan which has been certified by a suitably qualified person must be developed prior to carrying out the clearing activities.	a) Prior to clearing commencing.

No.	Conditions of development approval	Condition timing
	b) The Rehabilitation Plan must be developed to achieve a level of revegetation with a density and range of native tree and shrub species similar to the pre-disturbance regional ecosystem, to avoid land degradation. c) Submit, for information purposes only, a copy of the Rehabilitation Plan to: Vegetation Management Department of Natural Resources and Mines Address: PO Box 5318 Townsville QLD 4810 Email: northvegetation@dnrm.qld.gov.au d) The holder of the approval must implement the Rehabilitation Plan, carry out and maintain all required vegetation reinstatement measures within the Rehabilitation Plan.	b) Prior to clearing commencing. c) Prior to clearing commencing. d) Upon abandonment of the use. **Note:** For the purposes of administering this approval, the use is considered to be abandoned if no cropping has been undertaken for a continuous five year period.
5.	The permit holder is responsible for ensuring that: - a full copy of the approval is held by employees or contractors carrying out activities associated with this permit; and - that the extent of clearing authorized by this permit is properly understood by any person(s) engaged or employed to carry out the clearing of the vegetation under this permit.	Prior to clearing commencing.
6.	Vegetation clearing debris must not be pushed into gullies, watercourses, other drainage lines or waterlogged areas or pushed, raked, or disposed of in any areas outside Area A (A1 and A2) as identified on Development Permit Plan (DPP), SDA-0315-018836, dated 12 October 2016 and stamped approved.	At all times.

b.) Draft EMP:

The fauna, flora and habitat assessment has concluded that there are no significant impacts to any threatened species hence the Environmental Management Plan is unnecessary. All operational safeguards and mitigation measures concerning threatened species, habitat and environment have been considered in point a.) above.

c.) Name of agency responsible for endorsing or approving each mitigation measure or monitoring program:

N/A

d.) How these measures align with conservation agreements.

There is no conservation agreement applicable to this land

6. Environmental record of person/s proposing to take the action.

The Cameron family will be conducting the clearing and cropping activities, and they have no adverse environmental record.

7. Economic and social matters.

a) details of any public consultation activities undertaken.

During the application to the Queensland Government the appropriate traditional groups were informed with no objections, see below extract from SDA-0315-018836:

Native title considerations
A check of the tenure for the subject property revealed that Lot 537 on SP132224 is a Rolling Term Lease and the original deed of grant (Title Reference 40057874) was issued on 29 January 2009 for a pastoral purpose.
The clearing of native vegetation for high value agriculture is considered to be associated or incidental to an agricultural activity and procedural rights must be afforded to native title parties under section 24GB of the Native Title Act 1993 (Cwlth).
On 11 May 2015, the following native title parties were notified:

- *Goondaloo Aboriginal Corporation Agent Body Corporate*
- *North Queensland Land Council Native Title Representative Body Aboriginal Corporation; and*
- *Gugu Badhun Aboriginal Corporation Agency Prescribed Body Corporate.*

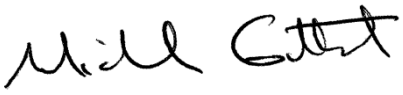
Comments (if any) were required to be provided no later than 11 May 2015. One submission was received. The submission made comments about the proposed future act in relation to duty of care under the Aboriginal Cultural Heritage Act 2003 and preparing a cultural heritage assessment. The standard advice has been included as item 3 in the further advice section of this decision package

b) Financial assessment:

The Cameron family will progressively clear the land for cropping based on financial resources at the time. They own the large bulldozers that will be used for tree pulling, windowing and stick-raking.

c) The operational phase will be managed by the Cameron family. However they may call upon contractors to assist with clearing, sowing, spraying and harvest activities.

LANDLINE CONSULTING



Dr Michael Gilbert

19 July 2017

Dean Jones

APPENDIX 1. Request for Additional Information

Attachment A

Meadowbank Station Vegetation Clearing for High Value Cropping, South of Mt Garnet, Qld (EPBC 2016/7838)

Additional information required for assessment by Preliminary Documentation

As noted in the letter, the proposed action is likely to have a significant impact on listed threatened species and communities (sections 18 & 18A) and will be assessed by preliminary documentation.

General Content, Format and Style

The preliminary documentation, which includes the referral information and the additional information, should be contained as one document with attachments, and include sufficient information to avoid the need to search for supplementary reports.

The documentation must enable interested stakeholders and the Minister to understand the environmental consequences of the proposed development on matters of national environmental significance (MNES). The information provided should be objective, clear and succinct and where appropriate, supported by maps, plans, diagrams or other descriptive detail.

Detailed technical information, studies or investigations necessary to support the main text should be included. It is recommended that any supporting documentation and studies, reports or literature, from which information has been extracted and which are not normally available to the public, be attached as appendices to the main document and made available at appropriate locations during the period of public display of the preliminary documentation. The proponent should also make the documentation and supporting information available on the internet.

If it is necessary to make use of material that is considered to be of a confidential nature, the proponent should consult with the Department of the Environment and Energy (the Department) on the preferred presentation of that material, before submitting the documents to the Minister for approval for publication.

The level of analysis and detail in the documentation should reflect the level of expected impacts on the environment. Any variables or assumptions made in the assessment must be clearly stated and discussed. The extent to which the limitations, if any, of available information may influence the conclusions of the environmental assessment should be discussed.

The documentation should be written so that any conclusions reached can be independently assessed. To this end, all sources must be appropriately referenced using the Harvard standard. The reference list should include the address of any internet "web" pages used as data sources.

The additional information should include a list of persons and agencies consulted and the names of, and work done by, the persons involved in preparing the documentation.

Maps, diagrams and other illustrative material should be included where appropriate. The additional information should be produced on A4 size paper capable of being photocopied with maps and diagrams on A4 or A3 size and in colour where possible. The proponent should consider the format and style of the document appropriate for publication on the internet. The capacity of the website to store data and display the material may have some bearing on how the document is constructed.

The additional information must include a copy of these guidelines and a table indicating where the information fulfilling the guidelines is included in the preliminary documentation.

Specific Content of the Additional Information

1. Impact assessment

Listed threatened species and communities

The project is considered likely to have direct and indirect impacts on:

- Greater Glider (*Petauroides volans*) – vulnerable
- Koala (*Phascolarctos cinereus*) Combined populations of Qld, NSW and the ACT– vulnerable
- Black-throated Finch (*Poephila cincta cincta*) - endangered
- Northern Quoll (*Dasyurus hallucatus*) – endangered
- Ghost Bat (*Macroderma gigas*) – vulnerable

Undertake surveys for the above species on-site by a suitably qualified ecologist in accordance with Departmental guidelines and provide reports to the Department. Please undertake a habitat assessment for the 1475 ha to be cleared.

The preliminary should also provide analysis on the vegetation to be cleared in a regional context.

2. Environmental Offsets

The preliminary documentation must include an assessment of the likelihood of residual significant impacts occurring as a result of land clearing. Please provide:

(a) details of an offset package proposed to be implemented to compensate for the residual significant impacts of the project; and

(b) an analysis of how the offset meets the requirements of the Department's *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy October 2012* (EPBC Act Offset Policy) (http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy).

Offset/s required by the State can be applied if the proposed offset/s meet the Department's EPBC Act Environmental Offset Policy.

3. Avoidance, safeguards and mitigation measures

The referral provides information on proposed mitigation measures to address the relevant impacts of the action. The preliminary documentation must include:

(a) a consolidated list of mitigation measures proposed to be undertaken by the proponent to avoid, minimise and manage relevant impacts of the action, including:

- a description of mitigation measures proposed to be taken by State governments, local governments; and
- any statutory or policy basis for the mitigation measures.

(b) A draft Environmental Management Plan (EMP) that sets out the framework for management, mitigation and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing.

The EMP needs to address the project phases (construction, operation, decommissioning) separately. It must state the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing for each environmental issue.

The EMP must be prepared in accordance with the Department's Environmental Management Plan Guidelines (2014). http://www.environment.gov.au/epbc/publications/environmental-management-plan-guidelines

(c) The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

(d) How these measures align with relevant conservation agreements, threat abatement plans and recovery plans.

4. Environmental record of person(s) proposing to take the action:

Please include details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:

(a) the person proposing to take the action; and

(b) for an action for which a person has applied for a permit, the person making the application.

5. Economic and social matters:

The economic and social impacts of the action, both positive and negative, must be analysed. Matters of interest may include:

(a) details of any public consultation activities undertaken, and their outcomes;

(b) projected economic costs and benefits of the project, including the basis for their estimation through cost/benefit analysis or similar studies;

(c) employment opportunities expected to be generated by the project (including construction and operational phases).

Economic and social impacts should be considered at the local, regional and national levels.

APPENDIX 2. Other Bird and Mammals Observed

Table 1. Bird species observed during the impact assessment.

Transect Name	Date	Bird Species
Finch T1	07-03-17	magpie
Finch T1	07-03-17	noisy miner
Finch T1	07-03-17	squatter pigeon
Quoll 1	07-03-17	striated pardalote
Quoll 1	07-03-17	grey butcherbird
Quoll 1	07-03-17	rainbow bee-eater
Quoll 1	07-03-17	dollarbird
Spotlight Main Road	07-03-17	tawny frogmouth
Finch T2	08-03-17	reed warbler
Finch T2	08-03-17	willy wagtail
Finch T2	08-03-17	pale-headed rosella
Finch T2	08-03-17	red-winged parrot
Finch T2	08-03-17	sulphur-crested cockatoo
Finch T2	08-03-17	whistling duck with young
Finch T2	08-03-17	wood duck
Finch T2	08-03-17	dollarbird
Finch T2	08-03-17	magpie
Finch T2	08-03-17	magpie lark
Finch T2	08-03-17	grey butcherbird
Finch T2	08-03-17	pied butcherbird
Finch T2	08-03-17	noisy miner
Finch T2	08-03-17	Australian raven
Finch T2	08-03-17	white-faced heron
Main Road Walk	08-03-17	No birds
Quoll 2	08-03-17	golden-backed honeyeater
Quoll 2	08-03-17	rainbow bee-eater
Quoll 2	08-03-17	pale-headed rosella
Quoll 2	08-03-17	striated pardalote
Quoll 2	08-03-17	wedge-tailed eagle
Quoll 2	08-03-17	great bowerbird
Quoll 2	08-03-17	black-faced cuckoo shrike
Quoll 2	08-03-17	dollarbird
Quoll 2	08-03-17	white-bellied cuckoo shrike
Quoll 2	08-03-17	figbird
Spotlight S/W Road	08-03-17	Owl-not identifiable
Spotlight S/W Road	08-03-17	tawny frogmouth
Finch 3	09-03-17	willy wagtail
Finch 3	09-03-17	pale-headed rosella
Finch 3	09-03-17	sulphur-crested cockatoo
Finch 3	09-03-17	grey butcherbird
Finch 3	09-03-17	Australian miner
Finch 3	09-03-17	rainbow bee-eater
Finch 3	09-03-17	pale-headed rosella

Table 2. Mammal observations

Transect Name	Date	Mammals
Finch T1	07-03-17	No mammals
Quoll 1	07-03-17	grey kangaroo
Spotlight Main Road	07-03-17	brushtail possum
Spotlight Main Road	07-03-17	Greater Glider
Finch T2	08-03-17	grey kangaroo
Main Road Walk	08-03-17	No mammals
Quoll 2	08-03-17	feral pig
Quoll 2	08-03-17	grey kangaroo
Spotlight S/W Road	08-03-17	Greater Glider
Spotlight S/W Road	08-03-17	brushtail possum
Finch 3	09-03-17	No mammals
Cam 1	7-9/3/17	grey kangaroo
Cam 2	7-9/3/17	cattle
Cam 3	7-9/3/17	No mammals

APPENDIX 3. Flora Species Observed

Table 1. Dominant vegetation species observed at each of the seventeen sites. Where 1 is the most dominant species and 5 the least dominant.

Site	Type	Species	Dominance
1	Tree	E. crebra narrow-leaved ironbark	1
1	Tree	*E. tereticornis blue gum*	2
1	Tree	E. dallachiana	3
1	Tree	C. clarksoniana Clarkson's bloodwood	4
1	Tree	Corymbia tessellaris Moreton Bay ash	5
1	Understory	Grevillea sp.	1
1	Understory	Acacia sp.	2
1	Grass/Legumes	Themeda triandra kangaroo grass	1
1	Grass/Legumes	Heteropogon triticeus giant speargrass	2
1	Grass/Legumes	Heteropogon contortus Black speargrass	3
1	Grass/Legumes	Sarga plumosum plume sorghum	4
1	Grass/Legumes	Mnesithea rottboellioides	5
2	Tree	E. crebra narrow-leaved ironbark	1
2	Tree	E. dallachiana	2
2	Tree	C. clarksoniana Clarkson's bloodwood	3
2	Understory	Grevillea sp.	1
2	Understory	Erythrina vespertilio Bat's wing coral tree(1)	2
2	Understory	Melia azedarach white cedar	3
2	Grass/Legumes	Themeda triandra kangaroo grass	1
2	Grass/Legumes	Heteropogon triticeus giant speargrass	2
2	Grass/Legumes	Indigofera pratensis forest indigo	4
2	Weed	Ageratum sp. bluetop	3
3	Tree	E. crebra narrow-leaved ironbark	1
3	Tree	C. clarksoniana Clarkson's bloodwood	2
3	Tree	E. dallachiana	3
3	Understory	Grevillea sp.	1
3	Grass/Legumes	Themeda triandra kangaroo grass	1
3	Grass/Legumes	Heteropogon triticeus giant speargrass	2
3	Grass/Legumes	Native legumes	3
4	Tree	E. crebra narrow-leaved ironbark	1
4	Tree	*E. tereticornis blue gum*	2
4	Tree	Lophostemon sauveolens swamp mahogany	3
4	Grass/Legumes	Themeda triandra kangaroo grass	1
4	Grass/Legumes	Heteropogon contortus Black speargrass	2
4	Grass/Legumes	Native legumes	3
4	Grass/Legumes	Heteropogon triticeus giant speargrass	4
5	Tree	E. crebra narrow-leaved ironbark	1

Site	Type	Species	Dominance
5	Tree	*E. tereticornis blue gum*	2
5	Tree	E. dallachiana	3
5	Tree	C. clarksoniana Clarkson's bloodwood	4
5	Understory	Juvenile eucalypts	1
5	Grass/Legumes	Themeda triandra kangaroo grass	1
5	Grass/Legumes	Heteropogon triticeus giant speargrass	2
5	Grass/Legumes	Cymbopogon refractus barbwire grass	3
5	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	4
5	Grass/Legumes	Indigofera pratensis forest indigo	5
6	Tree	E. crebra narrow-leaved ironbark	1
6	Tree	E. dallachiana	2
6	Tree	C. clarksoniana Clarkson's bloodwood	3
6	Understory	Juvenile eucalypts	1
6	Grass/Legumes	Themeda triandra kangaroo grass	1
6	Grass/Legumes	Bothriochloa bladhii forest bluegrass	2
6	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	3
6	Grass/Legumes	Heteropogon contortus Black speargrass	4
7	Tree	*E. tereticornis blue gum*	1
7	Tree	E. crebra narrow-leaved ironbark	2
7	Tree	E. dallachiana	3
7	Tree	C. clarksoniana Clarkson's bloodwood	4
7	Understory	Juvenile eucalypts	1
7	Grass/Legumes	Themeda triandra kangaroo grass	1
7	Grass/Legumes	Heteropogon triticeus giant speargrass	2
7	Grass/Legumes	Native legumes	3
7	Grass/Legumes	Indigofera pratensis forest indigo	4
8	Tree	*E. tereticornis blue gum*	1
8	Tree	E. crebra narrow-leaved ironbark	2
8	Tree	C. clarksoniana Clarkson's bloodwood	3
8	Tree	E. granitica	4
8	Understory	Juvenile eucalypts	1
8	Grass/Legumes	Themeda triandra kangaroo grass	1
8	Grass/Legumes	Imperata cylindrica blady grass	2
8	Grass/Legumes	Heteropogon triticeus giant speargrass	3
8	Grass/Legumes	Heteropogon contortus Black speargrass	4
8	Grass/Legumes	Native legumes	5
9	Tree	E. crebra narrow-leaved ironbark	1
9	Tree	C. clarksoniana Clarkson's bloodwood	2
9	Tree	*E. tereticornis blue gum*	3
9	Understory	Lophostemon sauveolens swamp mahogany	1
9	Understory	Juvenile eucalypts	2
9	Understory	Breynia oblongifolia (Coffee bush)	3

Site	Type	Species	Dominance
9	Grass/Legumes	Heteropogon contortus Black speargrass	1
9	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	2
9	Grass/Legumes	Sporobolis laxus tussocky sporobolus	3
9	Grass/Legumes	Heteropogon triticeus giant speargrass	4
9	Grass/Legumes	Themeda triandra kangaroo grass	5
10	Tree	E. crebra narrow-leaved ironbark	1
10	Tree	*E. tereticornis blue gum*	2
10	Tree	E. dallachiana	3
10	Tree	C. clarksoniana Clarkson's bloodwood	4
10	Understory	Juvenile eucalypts	1
10	Grass/Legumes	Themeda triandra kangaroo grass	1
10	Grass/Legumes	Heteropogon triticeus giant speargrass	2
10	Grass/Legumes	Heteropogon contortus Black speargrass	3
10	Grass/Legumes	Native legumes	4
11	Tree	E. crebra narrow-leaved ironbark	1
11	Tree	*E. tereticornis blue gum*	2
11	Tree	C. clarksoniana Clarkson's bloodwood	3
11	Tree	E. dallachiana	4
11	Understory	Grevillea sp.	1
11	Understory	Juvenile eucalypts	2
11	Grass/Legumes	Themeda triandra kangaroo grass	1
11	Grass/Legumes	Heteropogon triticeus giant speargrass	2
11	Grass/Legumes	Ophiuros exaltatus Canegrass	3
11	Grass/Legumes	Native legumes	4
13	Tree	E. crebra narrow-leaved ironbark	1
13	Tree	*E. tereticornis blue gum*	2
13	Tree	C. clarksoniana Clarkson's bloodwood	3
13	Tree	E. dallachiana	4
13	Understory	Lophostemon sauveolens swamp mahogany	1
13	Understory	Juvenile eucalypts	2
13	Understory	Grevillea sp.	3
13	Grass/Legumes	Heteropogon contortus Black speargrass	1
13	Grass/Legumes	Themeda triandra kangaroo grass	2
13	Grass/Legumes	Bothriochloa bladhii forest bluegrass	3
13	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	4
13	Weed	Ageratum sp. bluetop	5
14	Tree	E. crebra narrow-leaved ironbark	1
14	Tree	E. dallachiana	2
14	Tree	C. erythrophylla	3
14	Tree	Corymbia tessellaris Moreton Bay ash	4
14	Tree	*E. tereticornis blue gum*	5
14	Understory	Juvenile eucalypts	1

Site	Type	Species	Dominance
14	Understory	Grevillea sp.	2
14	Grass/Legumes	Themeda triandra kangaroo grass	1
14	Grass/Legumes	Heteropogon triticeus giant speargrass	2
14	Grass/Legumes	Heteropogon contortus Black speargrass	3
14	Grass/Legumes	Dichanthium sericeum Queensland bluegrass	4
15	Tree	E. crebra narrow-leaved ironbark	1
15	Tree	*E. tereticornis blue gum*	2
15	Tree	E. dallachiana	3
15	Understory	Juvenile eucalypts	1
15	Understory	Grevillea sp.	2
15	Grass/Legumes	Themeda triandra kangaroo grass	1
15	Grass/Legumes	Heteropogon triticeus giant speargrass	2
17	Tree	E. crebra narrow-leaved ironbark	1
17	Tree	*E. tereticornis blue gum*	2
17	Tree	Corymbia tessellaris Moreton Bay ash	3
17	Tree	E. dallachiana	4
17	Understory	Grevillea sp.	1
17	Understory	Juvenile eucalypts	2
17	Grass/Legumes	Themeda triandra kangaroo grass	1
17	Grass/Legumes	Heteropogon triticeus giant speargrass	2
17	Grass/Legumes	Heteropogon contortus Black speargrass	3
17	Grass/Legumes	Indigofera pratensis forest indigo	4
19	Tree	E. crebra narrow-leaved ironbark	1
19	Tree	E. dallachiana	2
19	Understory	Juvenile eucalypts	1
19	Understory	Grevillea sp.	2
19	Understory	Acacia spp.	3
19	Grass/Legumes	Themeda triandra kangaroo grass	1
19	Grass/Legumes	Sarga plumosum plume sorghum	2
19	Grass/Legumes	Heteropogon triticeus giant speargrass	3
19	Grass/Legumes	Ophiuros exaltatus canegrass	4
19	Grass/Legumes	Heteropogon contortus Black speargrass	5
20	Tree	*E. tereticornis blue gum*	1
20	Tree	E. crebra *narrow-leaved ironbark*	2
20	Tree	C. clarksoniana Clarkson's bloodwood	3
20	Understory	Juvenile eucalypts	1
20	Grass/Legumes	Themeda triandra kangaroo grass	1
20	Grass/Legumes	Heteropogon triticeus giant speargrass	2
20	Grass/Legumes	Heteropogon contortus black speargrass	3
20	Grass/Legumes	Ophiuros exaltatus canegrass	4

APPENDIX 4

Significant Impact Guidelines and Assessment

The following tables were prepared to determine if the proposed activity were likely to cause significant impacts on those species identified in the controlled action document, Request for Additional Information (Appendix 1). For each species the Significant Impact Criteria, as detailed in the Matters of National Environmental Significance, Significant Impact Guidelines, EPBC Act 1999, was considered to evaluate the likelihood of significant impact to any of the identified threatened species.

Greater glider (Petauroides volans), vulnerable

1 **Lead to long term decrease in the size of an important population.**	2 **Reduce the area of occupancy of an important population**	3 **Fragment an existing important population into two or more populations**	4 **Adversely affect habitat critical to the survival of a species**	5 **Disrupt the breeding cycle of an important population**	6 **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**	7 **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.**	8 **Introduce disease that may cause the species to decline, or**	9 **Interfere substantially with the recovery of the species.**
NO The proponent is making every effort to avoid those locations within the proposed activity that provide preferred habitat for this species. That is habitat that is dominated by E. tereticornis. Figure 1, identifies 97.1ha of E. tereticornis that will be avoided. Figure 3 is typical of *the E. tereticornis* woodland to be avoided as identified in Figure 1.	NO As per previous point.	NO Good connectivity remains surrounding the proposed activity. Additionally the avoidance area helps maintain connectivity within those E. tereticornis woodlands. There will be a minimum of 50m uncleared habitat adjacent to all waterways.	NO The loss of this habitat will not adversely affect the survival of this species. As per previous points.	NO It is unclear when the breeding season takes place in far north Queensland as this information has not been published. However, clearing large trees with suitable denning hollows will be done in a controlled manner. Large hollow baring trees will be left in situ during clearing operations for a minimum of 24 hrs to allow resident animals time to escape. Clearing operations will take place immediately after the wet season.	NO At a species level an infinitesimal part of the overall habitat available to the glider will be removed. The species will have no significant decline in numbers.	NO Pest species have not been identified as a key threat to the greater glider.	NO Very unlikely as this activity is not introducing animals that are likely to transmit disease.	NO

Koala (Phascolarctos cinereus), vulnerable

1 **Lead to long term decrease in the size of an important population.**	2 **Reduce the area of occupancy of an important population**	3 **Fragment an existing important population into two or more populations**	4 **Adversely affect habitat critical to the survival of a species**	5 **Disrupt the breeding cycle of an important population**	6 **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**	7 **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.**	8 **Introduce disease that may cause the species to decline, or**	9 **Interfere substantially with the recovery of the species.**
NO There have never been any sightings of koalas recorded on this property. Recent fauna surveys looking at thousands of trees along riparian zones and throughout the proposed clearing revealed no evidence of koalas. The proponent has agreed, as per expert advice through the Department, to maintain suitable patches of refuge woodland to maintain connectivity over broad acre clearing for the perspective of transient animals. Refuge patches will be spaced every 200m through cleared country to minimise predation and dehydration.	NO As per previous point, and; There is no evidence that this property was ever occupied by koalas. However if there are remote cases of animals needing to move across this landscape then the refuge patches mentioned in the previous point will provide relief.	NO As per previous point., and; The entire property and proposed activity is surrounded by well connected vegetation. Any open landscape created will be managed as per the first point.	NO Primary food trees such E. tereticornis have been identified along riparian zones and also found dominating in patches in other locations of this proposed activity. The proponent has made a commitment to avoid a substantial area dominated by E.tereticornis favoured also by the greater glider, see Figure 1 below. Riparian zones will maintain a buffer of at least 50m. Other parts of the proposed activity are sparsely occupied by E. crebra. Also within the woodland there typically exists a thick cover of native grasses such as black speargrass. These grasses would significantly impede the movement of koalas through this landscape. The relatively low tree height combined with the broken and thin canopies of this typical landscape would offer little protection from the elements and intense grass fires, see Figure 3 below.	NO As per the first point.	NO As per the first point.	NO As per the first point. In addition the proponent currently maintains pest management strategies to eliminate wild dogs.	NO The activity will not introduce any new animals or associated diseases likely to be transmissible to koalas. This is a clearing activity for high value cropping.	NO As per the first point.

Black-throated finch (Poephila cincta cincta)-endangered

1 **Lead to long term decrease in the size of an important population.**	**2** **Reduce the area of occupancy of an important population**	**3** **Fragment an existing important population into two or more populations**	**4** **Adversely affect habitat critical to the survival of a species**	**5** **Disrupt the breeding cycle of an important population**	**6** **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**	**7** **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.**	**8** **Introduce disease that may cause the species to decline, or**	**9** **Interfere substantially with the recovery of the species.**
NO This site does not contain an important population. The fauna and flora survey did not detect any evidence of this species or its preferred habitat or food source. Please refer to field observations in section XXX.	NO It is not an important population.	NO It is not an important population.	NO This site does not contain habitat critical for the survival of this species.	NO It is not an important population.	NO This site does not contain any habitat preferred by this species.	NO This property currently has pest control strategies to manage feral pigs and dogs. There are no feral cats and this activity is unlikely to introduce any.	NO	NO This site does not contain habitat critical for the survival of this species.

Northern quoll (Dasyurus hallucatus), endangered

1 **Lead to long term decrease in the size of an important population.**	2 **Reduce the area of occupancy of an important population**	3 **Fragment an existing important population into two or more populations**	4 **Adversely affect habitat critical to the survival of a species**	5 **Disrupt the breeding cycle of an important population**	6 **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**	7 **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.**	8 **Introduce disease that may cause the species to decline, or**	9 **Interfere substantially with the recovery of the species.**
NO It is not an important population since it is unlikely that there is a population of northern quolls within the proposed activity. Much of the survey effort focused around, and on, the large rocky outcrops where the likelihood of detection was maximised. There were no quolls or their signs evident. In any case, these rocky out crops are not included within the proposed activity, Figure XXX . and there remains good connectivity through the vegetation corridors or through those vegetation patches identified as koala refuges plus the 97ha of avoided *E. tereticornis* identified in Figure 1.	NO It is not an important population.	NO It is not an important population.	No Area to be cleared is flat open woodland, with little structural diversity and no termite mounds that quolls prefer, (Threatened Species Scientific Committee 2005aq) and surveys throughout Qld have suggested Northern quolls are more likely to be present in high relief areas that have shallower soils, greater cover of boulders, less fire impact and were closer to permanent water, Braithwaite and Begg 1995. The proposed activity has littlerelief , deep soils, no boulders and is frequently impacted by fires and there is no nearby permanent water.	NO It is not an important population.	NO As per point 4.	NO This property currently has pest control strategies to manage feral pigs and dogs. There are no feral cats and this activity is unlikely to introduce any.	NO	NO

Ghost bat (Macroderma gigas), vulnerable

1 **Lead to long term decrease in the size of an important population.**	2 **Reduce the area of occupancy of an important population**	3 **Fragment an existing important population into two or more populations**	4 **Adversely affect habitat critical to the survival of a species**	5 **Disrupt the breeding cycle of an important population**	6 **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**	7 **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**	8 **Introduce disease that may cause the species to decline, or**	9 **Interfere substantially with the recovery of the species.**
NO This is not an important population. The recent fauna surveys conducted revealed no evidence of the bat or its roosting habitat.	NO This is not an important population.	NO This is not an important population.	NO As per point 1.	NO As per point 1.	NO As per point 1.	NO This property currently has pest control strategies to manage feral pigs and dogs. There are no feral cats and this activity is unlikely to introduce any.	NO	NO

Figure 1. 97.1 hectares of E. tereticornis that will be avoided, identified by the light-blue hashed polygon.

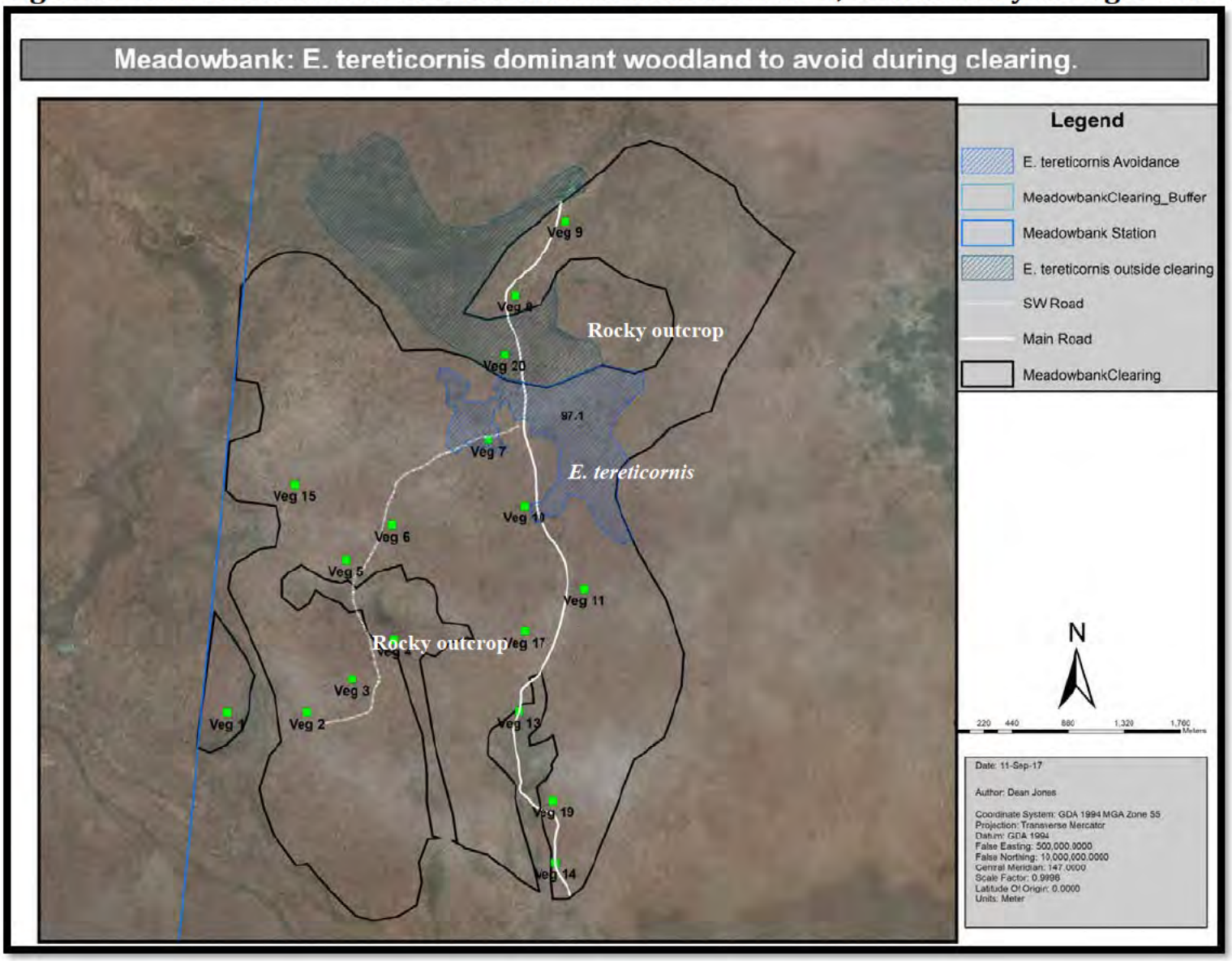


Figure 2. Climate data taken from nearest BOM station, Mount Surprise (030036), located from Meadowbank Station.

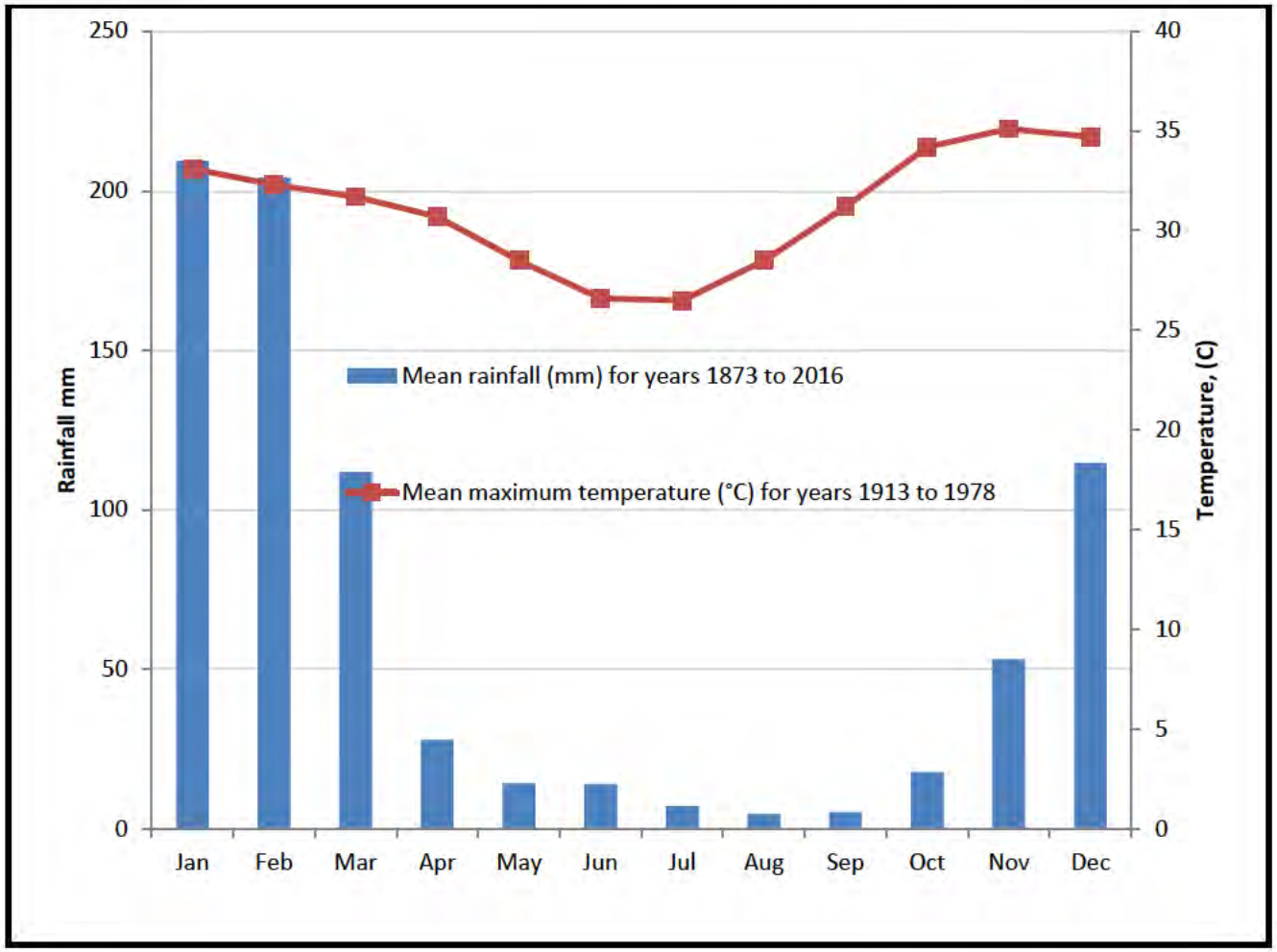


Figure 3. Typical *Eucalyptus crebra* dominated landscape with broken canopy and dense grass cover. Average tree height of 10-15m.

Figure 4. Image showing part of the *E. tereticornis* landscape that was identified in Figure 1 to be avoided.

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FOI 200710
Document 7

s22 - out of scope - irrelevant material

Attachments: MB_MAP_for_Delegate.pdf

From: Dean Jones s47F
Sent: Friday, 8 December 2017 11:59 PM
To: s22 @environment.gov.au>
Cc: Mike Gilbert <mgilbert@landlineconsulting.com>
Subject: Re: meadowbank map again [SEC=UNCLASSIFIED]

Hi s22 ,

I hope this covers it. See attached revised Meadowbank map for delegate.

I also authorise Mike Gilbert to act on my behalf for the any further requests for Meadowbank Station and also for the Wombinoo PD.

Regards

Dean

Dean Jones
Senior Environmental Consultant
Mobile: s47F
Work: s47F
Home: s47F
s47F

On 8 December 2017 at 10:53, s22 @environment.gov.au> wrote:

> s22
> *Assessment Officer*
> Queensland North Assessments | Environment Standards Division
> Department of the Environment and Energy
> 51 Allara Street Canberra ACT 2600 | GPO Box 787, CANBERRA ACT 2601
> Phone: (02) 6275s22 | Email: s22 @environment.gov.au | Web: www.environment.gov.au

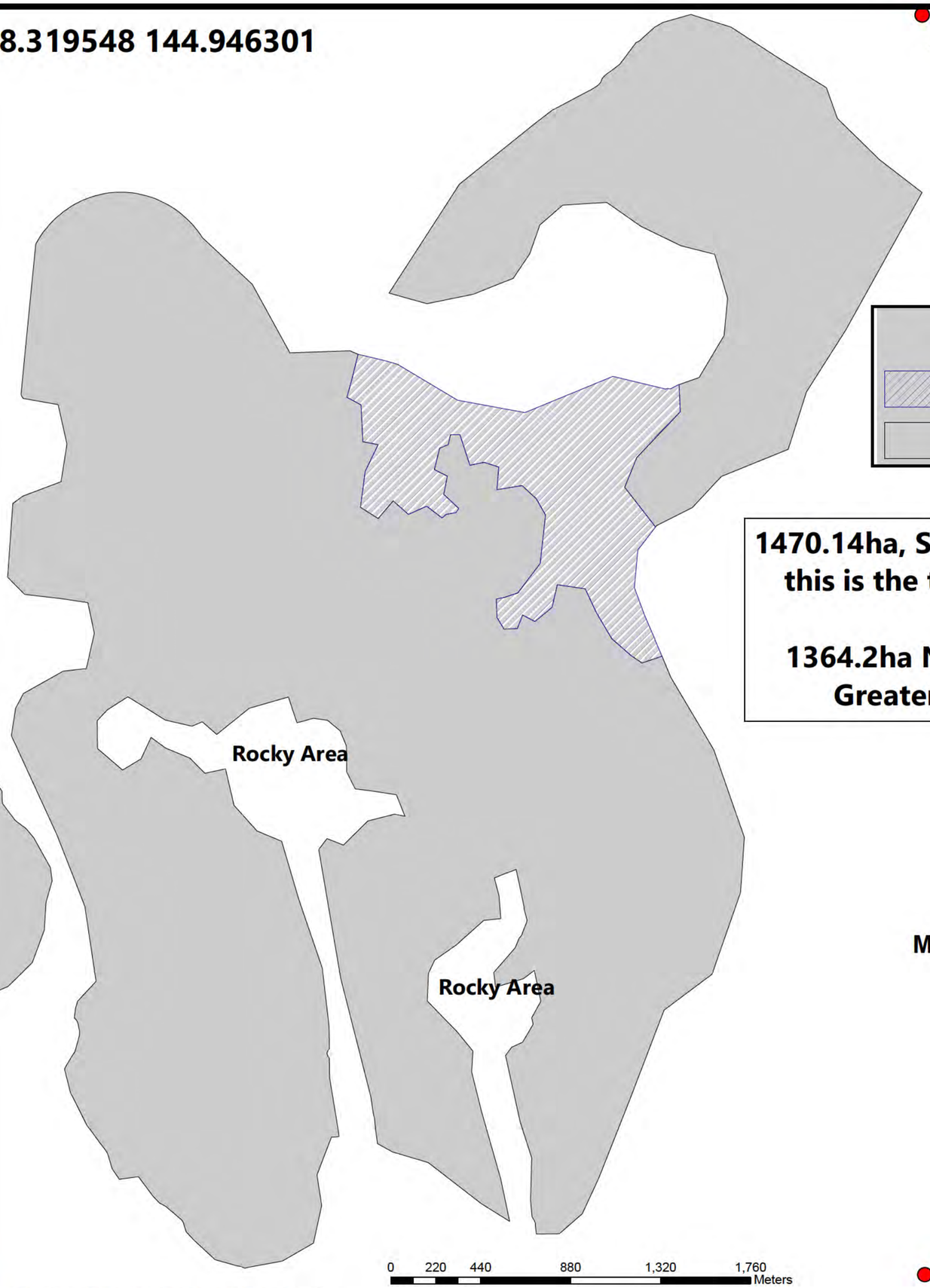
The Department acknowledges the traditional owners of country throughout Australia and their continuing connection to land, sea and community. We pay our respects to them and their cultures and to their elders both past and present

Meadowbank: Adjusted Clearing

FOI 200710
Document 7a

-18.319548 144.946301

-18.320133 144.990855

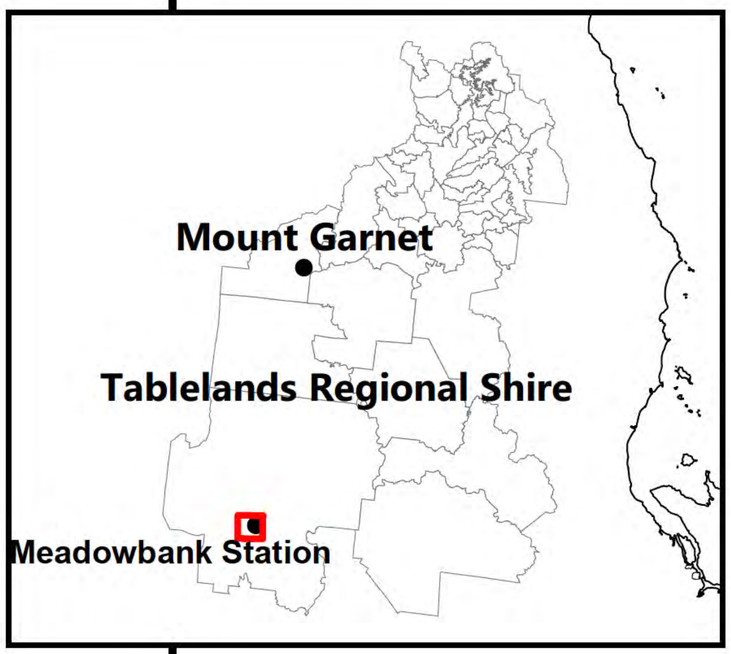


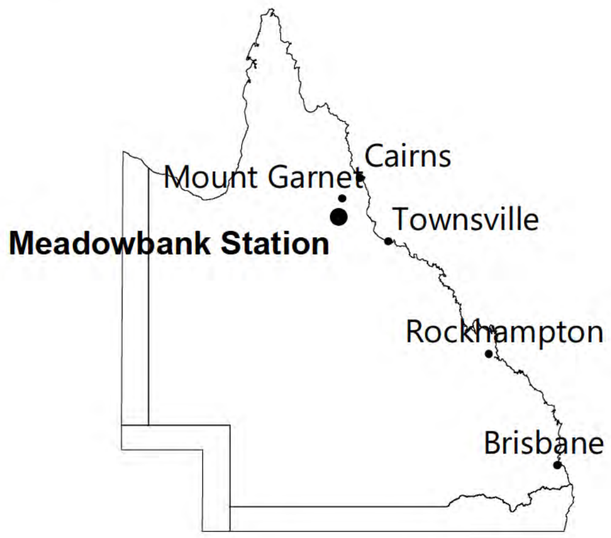
Legend

- E.tereticornis to avoid
- AdjustedClearing

1470.14ha, SDA permit clearing - this is the total area outlined.

1364.2ha Not to be cleared - Greater glider habitat.





N

-18.375441 144.945756

-18.375807 144.990326

Date: 8/12/2017

Author: Dean Jones

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator
Datum: GDA 1994
False Easting: 500,000.0000
False Northing: 10,000,000.0000
Central Meridian: 147.0000
Scale Factor: 0.9996
Latitude Of Origin: 0.0000
Units: Meter