



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

<b>Purpose Permit number:</b>	CPS 8003/1
<b>Permit Holder:</b>	Commonwealth Scientific and Industrial Research Organisation
<b>Duration of Permit:</b>	3 August 2018 – 3 August 2023

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

### PART I – CLEARING AUTHORISED

**1. Purpose for which clearing may be done**

Clearing for the purpose of constructing new drains and extending the existing airstrip at the Boolardy Aerodrome.

**2. Land on which clearing is to be done**

Lot 18 on Deposited Plan 220344.

**3. Area of Clearing**

The Permit Holder must not clear more than 11.318 hectares of native vegetation within the area hatched yellow on attached Plan 8003/1.

**4. Application**

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

### PART II – MANAGEMENT CONDITIONS

**5. Avoid, minimise and reduce the impacts and extent of clearing**

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- avoid the clearing of native vegetation;
- minimise the amount of native vegetation to be cleared; and
- reduce the impact of clearing on any environmental value.

**6. Weed control**

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

- clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- ensure that no *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

### PART III - RECORD KEEPING AND REPORTING

#### **7. Records must be kept**

The Permit Holder must maintain the following records for activities done pursuant to this Permit, in relation to the clearing of native vegetation authorised under this Permit:

- (a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (b) the date that the area was cleared;
- (c) the size of the area cleared (in hectares);
- (d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 5 of this Permit; and
- (e) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with condition 6 of this Permit.

#### **8. Reporting**

The Permit Holder must provide to the *CEO* the records required under condition 7 of this Permit, when requested by the *CEO*.

### **DEFINITIONS**

The following meanings are given to terms used in this Permit:

**CEO:** means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

**fill** means material used to increase the ground level, or fill a hollow;

**mulch** means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

**weed/s** means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*;  
or
- (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
- (c) not indigenous to the area concerned.

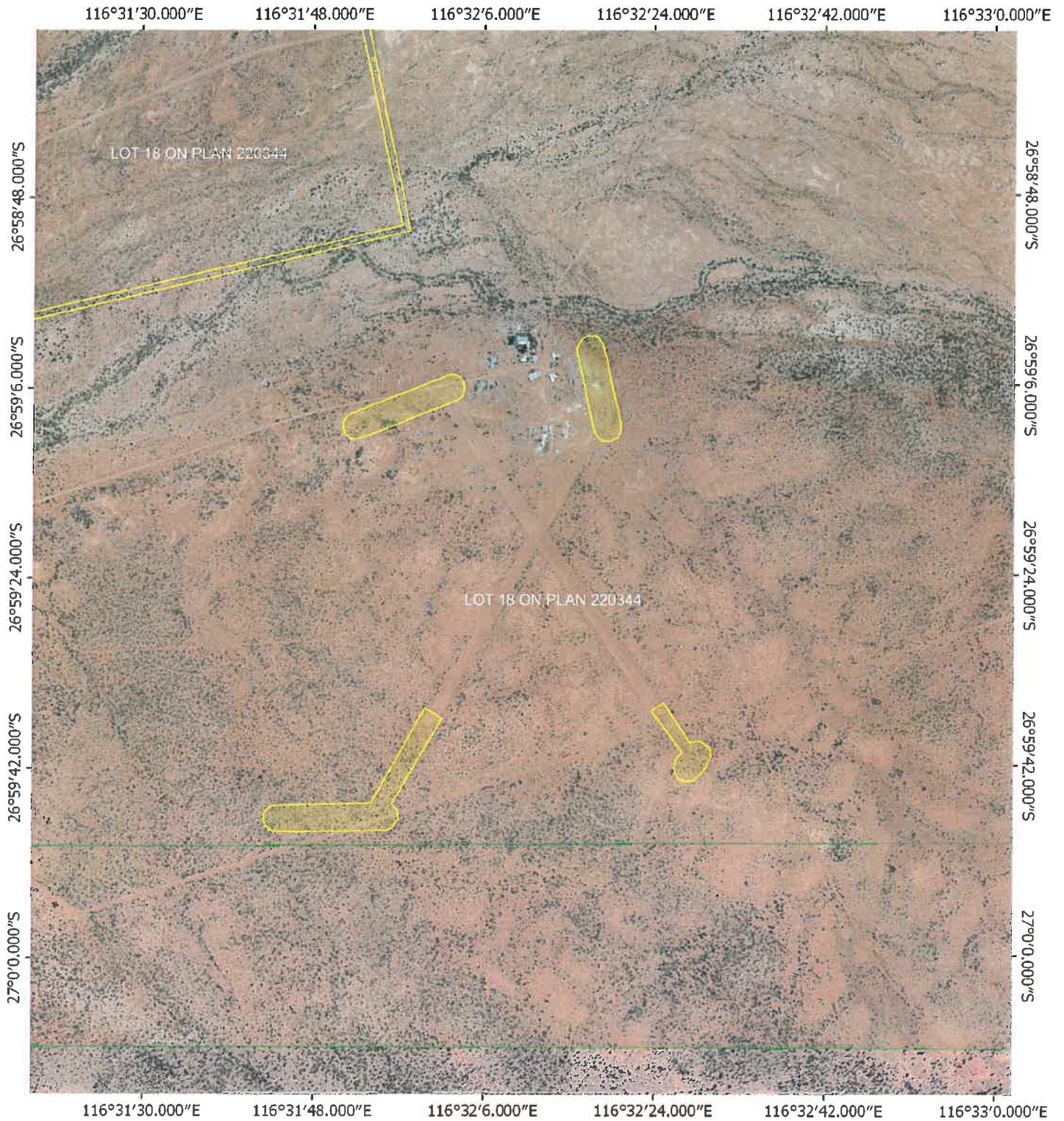


Mathew Gannaway  
MANAGER  
CLEARING REGULATION

*Officer delegated under Section 20  
of the Environmental Protection Act 1986*

4 July 2018

# Plan 8003/1



## Legend

 Areas approved to clear  
cadastre

 Cadastre  
WANow\_Imagery



MGA94  
Geocentric Datum of Australia 1994  
*Mathew Ormaezy* Date *4/7/2018*  
Officer with delegated authority under Section 2D  
of the Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA



## 1. Application details

### 1.1. Permit application details

Permit application No.: 8003/1  
Permit type: Purpose Permit

### 1.2. Applicant details

Applicant's name: Commonwealth Scientific & Industrial Research Organisation (CSIRO)  
Application received date: 20 February 2018

### 1.3. Property details

Property: Lot 18 On Deposited Plan 220344  
Local Government Authority: Shire Of Murchison  
Localities: South Murchison

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
11.318		Mechanical Removal	Building or structure

### 1.5. Decision on application

Decision on Permit Application: Grant

Decision Date: 4 July 2018

Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance to principle (f) and is not likely to be at variance to the remaining principles.

The Delegated Officer determined that the proposed clearing may result in the spread of weeds into adjacent areas of native vegetation. A weed management condition has been placed on the clearing permit to minimise this risk.

The Delegated Officer determined that the proposed clearing will likely result in the loss of vegetation growing in association with an ephemeral watercourse. The proposed clearing may cause sedimentation of surface water, however this impact is considered minimal and short term.

In determining to grant a clearing permit, subject to conditions, the Delegated Officer determined that the proposed clearing is unlikely to lead to an unacceptable risk to the environment.

## 2. Site Information

**Clearing Description** The proposed clearing activities will result in the removal of 11.318 hectares of remnant native vegetation to facilitate the construction of four new drains and to extend the existing airstrip at the Boolardy Aerodrome.

**Vegetation Description** The application area occurs within mapped Beard vegetation association 29: Sparse low woodland; mulga, discontinuous in scattered groups (Shepherd et al 2001).

A single season reconnaissance vegetation, flora and fauna survey of the application area was undertaken by GHD on 25 November 2017. The flora and vegetation component of this survey was undertaken in accordance with the *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016a). The survey methodology involved a combination of sampling four quadrats 20 metres in length and width and traversing the application area on foot (GHD 2018). Due to the limited size of the application area, one quadrat was located within each identified vegetation community (GHD 2018). Field data at each quadrat was recorded (GHD 2018). A flora inventory was compiled from taxa listed in described quadrats and from opportunistic floristic records collected throughout the application area (GHD 2018). Five vegetation communities were identified within the application area (GHD 2018):

- Scattered shrubs on a drainage line: *Acacia tetragonophylla*, *Scaevola spiniscens* over *Eremophila georgei*, *Senna artemisoides* subsp. x *Sturtii*, *Senna* sp. Meekatharra (E. Bailey 1-26), scattered shrubs over *Maireana triptera*, *Sclerolaena cuneata* chenopod with *Aristida contorta* grassland and *Ptilotus obovatus* on a drainage line;
- Mixed shrubland: *Acacia pteranera*, *Eremophila fraseri* over *Eremophila forrestii* subsp. *forrestii*, *Eremophila spathulata* mixed shrubland over *Rhagodia eremaea*. *Marieana triptera*, *Sclerolaena*

*triptera*, *Sclerolaena eurotioides*, *Salsola australis* chenopod with *Aristida contorta*, *Eragrostis eriopoda* grassland with *Ptilotus obovatus*;

- Scattered trees over open shrubland on sandy soils: *Acacia pteraneura*, scattered trees over *Acacia tetragonophylla*, *Acacia synchronicia* over *Eremophila spathulata*, *E. georgei* open shrubland over *Aristida contorta*, grassland with *Solanum lasiophyllum*, *Sclerolaena cuneata*, *Salsola australis*, *Maireana triptera*, *Atriplex codonocarpa* chenopods with *Ptilotus polystachyus*, *Ptilotus obovatus*;
- Low Open Woodland: *Acacia fuscaneura*, *A. incurvaneura*, low open woodland over *A. tetragonophylla*, *A. grasbyi*, *Eremophila forrestii* subsp. *forrestii* over *Eremophila spathulata*, *Senna* sp. Meekatharra (E. Bailey 1- 26), *S. artemisioides* subsp. *x sturtii* scattered shrubs over *Aristida contorta* grassland with *Solanum lasiophyllum* and *Sclerolaena cuneata*; and
- Cleared areas with isolated shrubs, grasses and herbs from adjacent vegetation. This area includes the existing airstrip, tracks and areas immediately adjacent to the airstrip.

**Vegetation Condition**

The vegetation within the application area was found to be in the following condition range (Trudgen 1988):

- Good: More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds;  
To
- Completely Degraded: Areas that are completely or almost completely without native species in the structure of their vegetation.

**Soil Type**

The application area occurs within the following mapped land subsystems (Department of Primary Industries and Regional Development 2017):

- Beringarra System: Riverine plains with floodplains and channels, supporting halophytic shrublands, mixed acacia shrublands and low woodlands with minor perennial grasses; and
- Yanganoo System: Almost flat hardpan wash plains, with or without small wanderrrie banks and weak groving; supporting mulga shrublands and wanderrrie grasses on banks.

**Comment**

The local area referred to in this assessment is defined as the area within a 40 kilometre radius of the application area.

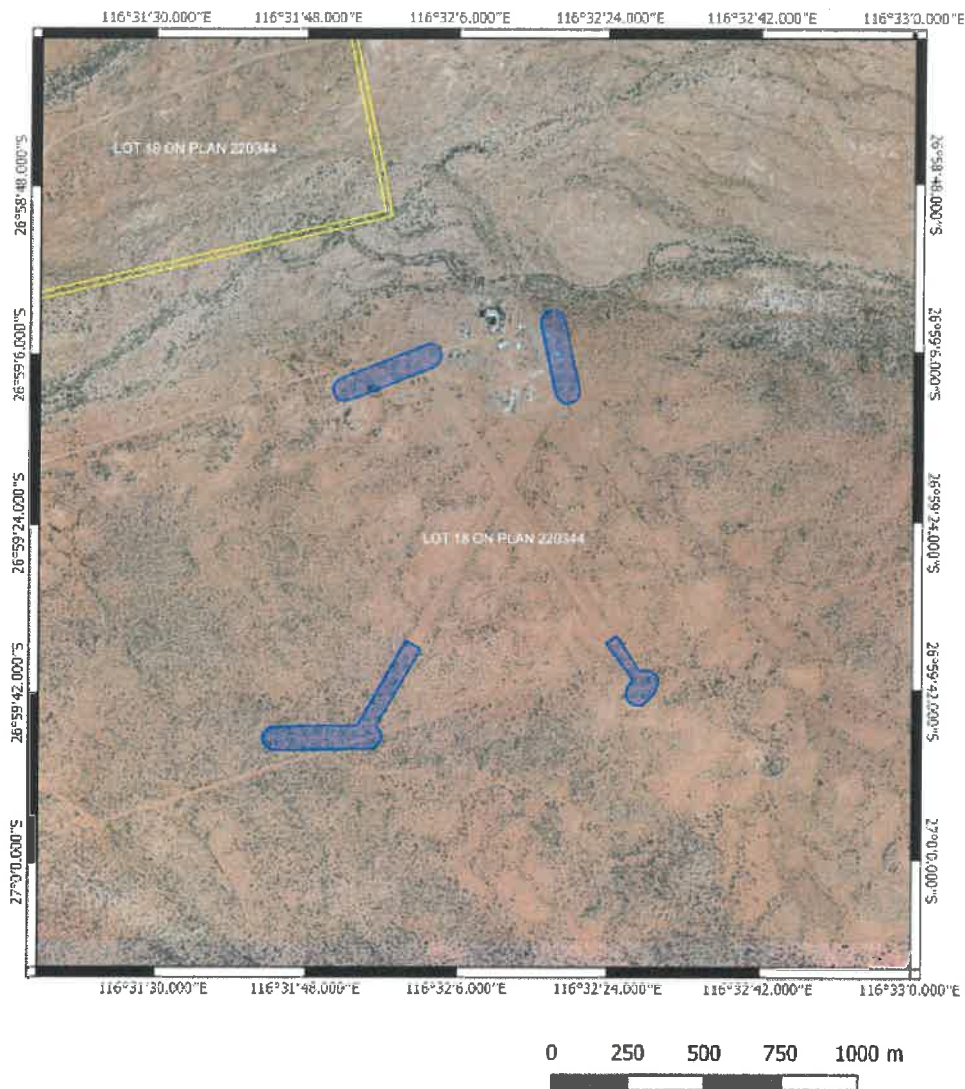


Figure 1: The application area (shown in blue) depicted alongside Lot boundaries (shown in yellow).

### 3. Assessment of application against clearing principles

#### (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

##### Proposed clearing is not likely to be at variance to this Principle

As discussed in Section 2, the application area is situated in vegetation which ranges in condition from Good (Trudgen 1988) to Completely Degraded (Trudgen 1988). The survey of the application area detailed in Section 2 identified 39 flora taxa, comprising 38 native taxa and one introduced species, representing 11 families. These families comprised Fabaceae (eleven species), Chenopodiaceae (ten species), Scrophulariaceae (four species), Amaranthaceae (three species), Poaceae (three species), Solanaceae (three species), Lamiaceae (one species), Montiaceae (one species), Portulacaceae (one species), Proteaceae (one species), and Zygophyllaceae (one species). The portion of flora collected and identified was considered high, however it is likely the survey under-recorded some grass species (Poaceae) and herbs due to the poor flowering and fruiting material observed during the field survey (GHD 2018).

The only introduced flora species identified within the application area during the survey was Buffel Grass (*Cenchrus ciliaris*) (GHD 2018). This species is listed as a Permitted species under the *Biosecurity and Agriculture Management Act 2007* (Department of Primary Industries and Regional Development 2018). The proposed clearing may impact on the environmental values of adjacent remnant native vegetation through increased edge effects, and the introduction and spread of weeds. Weed management practices will assist in managing these impacts.

A post-survey review identified the following conservation significant flora species as likely to occur within the application area (GHD 2018):

- *Eremophila simulans* subsp. *megacalyx* (priority 3) is known from 11 records from the Eastern Murchison and Western Murchison Interim Biogeographic Regionalisation of Australia (IBRA) subregions from varying soil types and landscape positions (Western Australian Herbarium 1998-). The closest recorded occurrence of this species has been recorded approximately 600 metres from the application area. Based on the habitats identified within the application area during the survey undertaken by GHD (2018), it is possible the application area comprises suitable habitat for this species.

A review of available databases determined that fourteen flora species of conservation significance have been recorded within the local area (Western Australian Herbarium 1998-). Based on the habitats found in the application area, only five species, including *Eremophila simulans* subsp. *megacalyx*, are considered to have the potential to occur in the application area:

- *Hemigenia tysonii* (Priority 3) is known from 19 records from the Carnegie, Eastern Murchison, Western Murchison and Wooramel IBRA subregions from varying soil types and landscape positions (Western Australian Herbarium 1998-). The closest recorded occurrence of this species has been recorded approximately 31.3 kilometres from the application area;
- *Ptilotus beardii* (Priority 3) is known from 35 records from the Eastern Murchison, Talling and Western Murchison IBRA subregions from varying soil types and landscape positions (Western Australian Herbarium 1998-). The closest recorded occurrence of this species has been recorded approximately 37 kilometres from the application area;
- *Calandrinia butcherensis* (Priority 1) is known from 10 records from the Augustus, Western Murchison and Wooramel IBRA subregions from varying soil types and landscape positions (Western Australian Herbarium 1998-). The closest recorded occurrence of this species has been recorded approximately 14.5 kilometres from the application area; and
- *Eremophila muelleriana* (Priority 3) is known from 10 records from the Augustus and Western Murchison IBRA subregions from varying soil types and landscape positions (Western Australian Herbarium 1998-). The closest recorded occurrence of this species has been recorded approximately 20.4 kilometres from the application area.

While it is possible that the above species could occur within the application area, it should be noted that the local area retains approximately 100 per cent of its pre-European clearing extent. In addition, a review of aerial photography of the local area and the survey report prepared by GHD (2018) determined that the habitats found in the application area are consistent with those found in the surrounding environment and the application area has a high level of connectivity to habitats in the surrounding environment. Given the above, the application area is unlikely to comprise significant habitat for these species. The potential impact of the proposed clearing on threatened flora species is discussed further under principle (c). No conservation significant flora species were identified during the survey of the application area (GHD 2018).

A review of available databases determined that the following priority ecological communities (PEC) have been recorded in the local area:

- The 'New forest (Including Twin Peaks and Barloweerie Range) vegetation complexes (banded ironstone formation)' Priority 1 PEC. The closest recorded occurrence of this PEC is situated approximately 27.3 kilometres southwest of the application area; and
- The 'Meka calcrete groundwater assemblage type on Murchison palaeodrainage on Meka Station' Priority 1 PEC. The closest recorded occurrence of this PEC is situated approximately 33 kilometres east of the application area.

No vegetation communities consistent with a recognised PEC were recorded within the application area (GHD 2018). Due to the separation distances which exist between the application area and the recorded occurrences of the above PEC's, no impacts to these PEC's or any ecological linkages promoting species diversity or recruitment within these PEC's are expected to result from the proposed clearing activities. As discussed within Principle (d), the application area is not likely to comprise of a threatened ecological community (TEC).

As discussed under Principle (b), a review of available databases found that one fauna species of conservation significance has the potential to occur in the local area. Given the condition of the vegetation within the application area, the extent of remnant native vegetation in the local area and the strong connectivity between the application area and habitats in the surrounding environment, the application area is unlikely to comprise significant habitat for indigenous fauna, including species of conservation significance.

Based on the above, the application area is unlikely to comprise a high level of biological diversity. The proposed clearing is not likely to be at variance to this principle.

**(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.**

**Proposed clearing is not likely to be at variance to this Principle**

Four fauna habitats were identified within the application area during the survey undertaken by GHD (2018). These comprise low open woodland over open shrubland, shrubland, scattered shrubs on a drainage line and highly disturbed areas (GHD 2018). GHD (2018) noted during their survey of the application area that the habitats present within this area had high connectivity to the surrounding region and were well represented in the broader area. GHD (2018) also noted that the fauna habitats within the application area have been impacted by tracks, previous grazing, feral animals and historical clearing. There was no sign of fire impacts within the application area, with the last fire event affecting this area anticipated to have occurred over ten years prior to the survey (GHD 2018). GHD (2018) advise that the overall value of the application areas fauna habitats was considered to be low to moderate due to the quality of the habitats found in the application area and there connectivity to the broader region.

The survey of the application area recorded 21 vertebrate fauna species including 15 bird, four mammal and two reptiles (GHD 2018). The four mammal species recorded during this survey included three introduced fauna species comprising the european cattle (*Bos taurus*), dog (*Canis lupis*) and rabbit (*Ocytolagus cuniculus*), which are common in the wider region (GHD 2018). No fauna species of conservation significance were identified during this survey (GHD 2018).

A review of available databases found that seven conservation significant fauna species have been recorded within the local

area (Department of Biodiversity, Conservation and Attractions 2007-). Noting the habitat requirements of these species, only one species was deemed likely to occur in the application area: the Peregrine Falcon (*Falco peregrinus*) (Listed as Other Specially Protected Fauna under the *Wildlife Conservation Act 1950* (WC Act). The Peregrine Falcon occupies a wide array of habitats, ranging from open grasslands to woodlands and coastal cliffs, although this species is found less frequently in arid regions (Department of the Environment and Energy 2018).

The application area could comprise suitable habitat for the Peregrine Falcon. Given the knowledge that the habitats found in the application area are present in the surrounding environment and that significant connectivity exists between the application area and the surrounding environment, the application area is unlikely to comprise the whole or a part of, or be necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Based on the above, the proposed clearing is not likely to be at variance to this principle.

**(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.**

**Proposed clearing is not likely to be at variance to this Principle**

The survey of the application area undertaken by GHD (2018) did not locate any threatened flora species within the application area. As discussed under principle (a), the review of available databases determined that no threatened flora species have been recorded within the local area.

Given the above, the proposed clearing is not likely to be at variance to this principle.

**(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.**

**Proposed clearing is not likely to be at variance to this Principle**

No vegetation communities consistent with a recognised TEC were recorded in the application area (GHD 2018). A review of available databases has determined that no TEC's are situated within the local area.

Given the above, the proposed clearing is not likely to be at variance to this principle.

**(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.**

**Proposed clearing is not likely to be at variance to this Principle**

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia 2001).

As indicated in Table 1, the IBRA bioregion and the mapped vegetation association are above the recommended 30 per cent retention threshold. Based on aerial imagery, the local area retains approximately 100 per cent of its pre-European clearing extent.

As discussed under principles (a), (b), (c) and (d), the application area is unlikely to comprise a high level of biological diversity, or comprise significant habitat for indigenous fauna including conservation significant species, or be necessary for the maintenance for rare flora species, or comprise a TEC or be necessary for the maintenance of a TEC.

Given the above, the application area is unlikely to be significant as a remnant of native vegetation in an area that has been extensively cleared. The proposed clearing is not likely to be at variance to this principle.

Table 1: Vegetation extents

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Current Extent in DCBA Managed Lands	
				(ha)	(%)
<b>IBRA Bioregion*</b>					
Murchison	28,120,586.77	28,044,823.42	99.73	2,185,995.62	7.79
<b>Beard vegetation association*</b>					
29	7,903,991.46	7,900,200.42	99.95	496,367.52	6.28

**(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.**

**Proposed clearing is at variance to this Principle**

A review of the materials provided in support of this clearing permit application and aerial photography of the application area has determined that the proposed clearing activities are likely to result in the clearing of vegetation growing in association with an ephemeral watercourse. Based on the above, the proposed clearing activities is at variance to this principle.



The application area is situated approximately 80 metres from the ephemeral watercourse and aerial photography of the application areas surrounding environment has found that the vegetation growing in association with this watercourse is predominantly undisturbed. Consequently, the proposed clearing activities will likely result in the loss of a small extent of vegetation on the fringes of the vegetation community growing in association with this watercourse. Since the vegetation growing in association with the watercourse will remain mostly intact, the proposed clearing is not anticipated to adversely impact the ecological values of the watercourse or inhibit any ecological linkages promoting species diversity and recruitment within the vegetation communities associated with this watercourse. The proposed clearing may result in the sedimentation of surface water, however these impacts are likely to be minimal and short term.

**(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.**

**Proposed clearing is not likely to be at variance to this Principle**

A review of land system mapping produced by the Department of Primary Industry and Regional Development (DPIRD) (2017) has found the application area is situated within the Beringarra and Yanganoo land systems. The Beringarra Land System has a high risk of acidification and subsurface compaction, variable water storage capacity and a low risk of water repellence and salinity (DPIRD 2017). The Yanganoo land system has a high risk of acidification and subsurface compaction, moderate water storage capacity and a low risk of water repellence and salinity (DPIRD 2017). The Beringarra land system is prone to erosion, with historical overuse having resulted in large areas becoming degraded and eroded (DPIRD 2017, Curry et al 1994). The Yanganoo land system shows little susceptibility to erosion (Curry et al 1994).

As discussed earlier in this report, the local area retains almost 100 per cent of its pre-European clearing extent. In addition, a review of aerial photography of the application area has found no evidence of land degradation impacts associated with past clearing activities for the establishment of the existing airstrip. When the above is considered alongside the limited extent of the proposed clearing, it is not anticipated that the proposed clearing activities will not likely result in appreciable land degradation.

Given the above, the proposed clearing is not likely to be at variance to this principle.

**(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.**

**Proposed clearing is not likely to be at variance to this Principle**

A review of available databases found that the nearest conservation area to the application area is the Toolonga Nature Reserve, situated approximately 92.5 kilometres west from the application area. Given the separation distances between the application area and managed conservation areas, the proposed clearing is unlikely to adversely impact any conservation areas or any ecological linkages promoting species diversity and recruitment within conservation areas.

Based on the above, the proposed clearing is not likely to be at variance to this principle.

**(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.**

**Proposed clearing is not likely to be at variance to this Principle**

Based on the nature of the proposed clearing activities, the most likely impact to surface water quality arising from the clearing activities would be the sedimentation of surface water flows. As discussed under principle (f), the nearest surface water feature to the application area is an ephemeral watercourse situated approximately 80 metres from the application area. Surface water flows within the application area would therefore likely be limited to temporary sheet flows arising from significant rainfall events. A review of aerial photography of the application area has found no evidence that the previous land clearing activities undertaken to establish the existing airstrip have resulted in the problematic release of sediment into the surrounding environment. The proposed clearing will be undertaken in the same land systems as the original airstrip development and will comprise an extension of the existing airstrip. Given the above, no adverse impacts to surface water quality are expected to result from the proposed clearing activities.

Given the extent of the proposed clearing and the amount of native vegetation remaining within the local area, no adverse impacts to ground water quality are expected to result from the proposed clearing activities.

Based on the above, the proposed clearing activities are not likely to be at variance to this principle.

**(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.**

**Proposed clearing is not likely to be at variance to this Principle**

A review of the application area and its surrounds using topographic contours, aerial photography and the mapping of the Beringarra and Yanganoo Land Systems by DPIRD (2017) has determined the application area is situated within a riverine plain environment. The topography of the application area and its immediate surrounds is consistently flat, with no ridges or other significant changes in elevation evident. As discussed under principle (f), the application area is situated approximately 80 metres from the nearest surface water feature and the proposed clearing activities are not anticipated to result in significant changes to the extent of the vegetation communities growing in association with this watercourse. In addition, as discussed in principle (e), the local area retains approximately 100 percent of its pre-European native vegetation extent.

The topographical constraints of the application area, the distance of this area from surface water features, the limited impact of the proposed clearing on riparian vegetation communities and the significant extent of remnant native vegetation in the local area are anticipated to inhibit both surface water flows into the application area and the conveyance of surface water flows from the application area into the surrounding region. When the above is considered alongside the limited extent of the proposed clearing, no changes to the flooding regime of the local area are expected to result from the proposed clearing activities.

Based on the above, the proposed clearing is not likely to be at variance to this principle.

#### **Planning instruments and other relevant matters.**

No Aboriginal sites of significance have been mapped within the application area.

The clearing permit application was advertised on the Department of Water and Environmental Regulation's (DWER) website on 07 March 2018 with a 21 day submission period. One public submission was received in relation to this application (Submission 2018). This submission raised concerns in relation to the proposed clearing, including a lack of supporting documentation and maps to inform decision making efforts, a lack of information about the steps which will be implemented to minimise impacts to conservation significant flora and fauna species if they are found in the application area, the limited number of public flora and fauna surveys from the surrounding region to provide a basis of comparison with the application areas environmental values, a lack of information on the impact of the proposed clearing on the local hydrology and concerns that the clearing was likely to be at variance to numerous clearing principles. The submission also advised that the clearing should not be approved if conservation significant flora or fauna species are impacted by the clearing. An extract of the application form, maps of the application area and a copy of the GHD (2018) survey report were available for public viewing on the DWER website (<ftp://ftp.dec.wa.gov.au/Permit/>) under file number 8003. The remaining matters have been considered through the assessment and addressed in this report.

The submission also made comment on mitigation measures which should be implemented, should the clearing permit be granted. These comprised the applicant providing evidence of the actions considered and taken to avoid and minimise the clearing of vegetation and strictly limiting clearing to the minimum area required. These matters are addressed through the 'avoid, minimise and reduce the impacts and extent of clearing' condition incorporated into the clearing permit. Additional mitigation measures suggested in the submission included the applicant preparing plans with sufficient details and providing appropriate supervision to prevent over-clearing of any areas approved to be cleared. As stated earlier in this report, maps detailing the area to be cleared were provided on DWER's website. The clearing permit has been conditioned to confine clearing to the area nominated on the plan attached to this permit. The submission also requested the applicant undertake planting of vegetation in degraded or open areas to compensate on a 4 to 1 basis for any vegetation removed. No offsets to mitigate the environmental impact of the proposed clearing were considered necessary during the assessment of this application, due to the considerable extent of remnant native vegetation remaining in the local area and the knowledge that both the Murchison IBRA region and Beard vegetation association 29 retain over 99 per cent of their pre-European clearing extent. In addition, the submission requested that DWER undertake early and regular inspection, policing and enforcement of clearing permit conditions and that a completion report with photos of the application area before and after clearing be submitted by the applicant to DWER. The submission advised that this report should be made publically available to stakeholders. These matters are addressed by the conditions on the clearing permit governing record keeping and reporting.

#### **4. References**

- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Curry P.J., Payne A.L., Leighton K.A., Hennig P, and Blood D.A. (1994) An inventory and condition survey of the Murchison River catchment and surrounds, Western Australia. No. 84. Prepared by the Department of Agriculture Western Australia. South Perth. Western Australia.
- Department of Biodiversity, Conservation and Attractions (2007-) NatureMap: Mapping Western Australia's Biodiversity Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed June 2018.
- Department of the Environment and Energy (2018) The Peregrine Falcon (*Falco peregrinus*). Available from: <http://www.environment.gov.au/resource/peregrine-falcon-falco-peregrinus>. Accessed June 2018.
- Department of Primary Industry and Regional Development (2017). NRInfo Digital Mapping. Department of Primary Industry and Regional Development. Government of Western Australia. URL: <https://maps.agric.wa.gov.au/nrm-info/>. Accessed June 2018.
- Department of Primary Industry and Regional Development (2018) Western Australian Organisms List. Available from: <https://www.agric.wa.gov.au/bam/western-australian-organism-list-waol>. Accessed June 2018.
- Environmental Protection Authority (2016) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment. Published December 2016.
- GHD (2018) Butterfields Services (Aust) Pty Ltd. CSIRO Boolardy Aerodrome Upgrade Works, Biological Assessment. Prepared by GHD.
- Government of Western Australia (2017) 2017 State-wide vegetation statistics (formerly the CAR reserve analysis) – full report. Remote Sensing and Spatial Analysis Section, Geographic Information Services and Corporate Records Branch, Department of Biodiversity, Conservation and Attractions. Published February 2018.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Submission (2018) Public submission received in relation to clearing permit application CPS 8003/1 (DWER Ref. A1636653).
- Trudgen, M.E. (1988). A Report on the Flora and Vegetation of the Port Kennedy Area. Unpublished report prepared for Bowman Bishaw and Associates, West Perth.
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <http://florabase.dpaw.wa.gov.au/> (accessed June 2018).

GIS Databases:

- Aboriginal Sites of Significance
- Department of Biodiversity, Conservation and Attractions, Tenure
- Midwest contours (50m)
- Pre-European vegetation complexes
- Remnant vegetation
- SAC bio datasets
- Soils, Statewide
- TPFL Data May 2018
- WAHerb Data May 2018
- WA TEC PEC Boundaries