Government of **Western Australia**
Department of **Mines and Petroleum**

# Clearing Permit Decision Report

## 1. Application details

### 1.1. Permit application details

**Permit application No.:** 5557/1
**Permit type:** Purpose Permit

### 1.2. Proponent details

**Proponent's name:** **Cameco Australia Pty Ltd**

### 1.3. Property details

**Property:** Mining Lease 45/264
Mining Lease 45/266
Mining Lease 45/267
Mining Lease 45/420
Mining Lease 45/693
Mining Lease 45/694
Mining Lease 45/695
Mining Lease 45/696
Mining Lease 45/1217
Exploration Licence 45/1773
Exploration Licence 45/1774
**Local Government Area:** Shire of East Pilbara
**Colloquial name:** Kintyre Uranium Project

### 1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
|---|---|---|---|
| 52 | | Mechanical Removal | Mineral exploration and borrow pits |

### 1.5. Decision on application

**Decision on Permit Application:** Grant
**Decision Date:** 6 June 2013

## 2. Site Information

### 2.1. Existing environment and information

#### *2.1.1. Description of the native vegetation under application*

**Vegetation Description** Beard vegetation associations have been mapped for the whole of Western Australia. Two Beard vegetation associations have been mapped within the application area (GIS Database):

99: Hummock grasslands, shrub steppe; *Acacia coriacea* & hakea over hard spinifex, *Triodia basedowii*; and

117: Hummock grasslands, grass steppe; soft spinifex.

Bennett Environmental Consulting (2007; 2010) undertook a flora survey between 25 June and 4 July 2007, and 27 April and 4 May 2010 of the Kintyre Lease, encompassing a large proportion of the application area. The following 34 vegetation units were recorded during the 2007 and 2010 surveys (Bennett Environmental Consulting, 2010):

**Hillsides**

- The northern hillsides, around the proposed exploration camp site were covered in *Triodia epactia* and *Triodia wiseana*;
- Open Heath dominated by *Acacia retivenea* over Hummock Grassland of *Triodia* species with quartzite and schistose rocks;
- Woodland of *Eucalyptus leucophloia* over Scattered Herbs of *Ptilotus calostachyus* and Scattered Grasses of *Eriachne mucronata* or Hummock Grassland of *Triodia pungens*; and
- Low Open Shrubland of *Indigofera monophylla* and *Senna glutinosa* subsp. *glutinosa* over Open Herbs dominated by *Cleome viscosa* and *Boerhavia gardneri* over Grassland dominated by *Triodia pungens*.

**At the base of hills**

- Low Shrubland of *Eremophila tietkensii*. This vegetation was open with the main cover consisting of small rocks;
- Open Shrubland of *Acacia wanyu* over Low Shrubland of *Eremophila tietkensii* over Hummock Grassland of *Triodia pungens*;
- High Open Shrubland of *Acacia synchronicia* over Low Open Shrubland dominated by *Eremophila tietkensii*

over Grassland of *Triodia wiseana*; and
- Open Shrubland of *Acacia robeorum* over Very Open Tussock Grassland of *Triodia angusta*.

**Sand dunes**
The sand dunes were all low, only rising slightly above the level of the plain. Typically they included a greater number of taxa than the rocky soils with *Triodia schinzii* typically the dominant grass usually in association with *Triodia basedowii*.

**Red sandy soils - Flat**
- *Acacia inaequilatera* dominant;
- *Acacia dictyophleba* dominant;
- *Acacia ancistrocarpa* dominant typically associated with *Acacia ligulata*, *Acacia dictyophleba* and *Acacia inaequilatera*;
- *Acacia ligulata* dominant;
- *Acacia melleodora* dominant;
- *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii*;
- *Senna* taxa dominant;
- *Grevillea* taxa dominant;
- *Hakea lorea* over *Triodia basedowii*; and
- Grassland of *Triodia basedowii*.

**Lower Slope Above Creek**
- Low Open Forest of *Acacia aneura*; and
- Low Open Woodland of *Eucalyptus odontocarpa*.

**Drainage lines**
- Hill sides;
- Scree at base of hills;.
- Drainage lines at the base of hills;
- Red sandy soils - flat ground;

**Creek lines**
- Within the creeks themselves the vegetation was a High Open Woodland of *Eucalyptus camaldulensis* over Annual Tussock Grassland of several taxa including *Sorghum plumosum*; and
- On the floodplain above the banks the vegetation was Low Open Woodland of *Corymbia opaca* over Grassland dominated by *Cenchrus ciliaris* and *Sorghum plumosum*.

**Claypans**
- Scattered Shrubs of *Senna glutinosa* subsp. *glutinosa* over bare ground;
- Low Shrubland dominated by *Indigofera brevidens* over Very Open Herbs dominated by *Heliotropium* sp. over Tussock Grassland dominated by *Chrysopogon fallax*.
- Open Grassland of *Xerochloa laniflora* and *Dactyloctenium radulans*;
- Tussock Grassland of *Cenchrus ciliaris*, *Aristida inaequiglumis*, *Xerochloa laniflora* and *Eragrostis eriopoda*.
- Areas of nearly bare ground;
- Shrubland of *Eremophila forrestii* subsp. *forrestii* over Low Open Shrubland dominated by *Sclerolaena* species over Annual Tussock Grassland of *Aristida contorta*;
- Low Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii* over Tussock Grassland dominated by *Cenchrus ciliaris*; and
- Low Open Shrubland of *Sclerolaena* species.

**Clearing Description**
Cameco Australia Pty Ltd has applied to clear up to 52 hectares of native vegetation within a 10,424 hectare area for the purpose of mineral exploration, particularly new drill programs and access to borrow pits for road maintenance and construction.

**Vegetation Condition**
Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994);

To

Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).

**Comment**
The application area is located in the Little Sandy Desert region of Western Australia and is situated approximately 200 kilometres east of Nullagine.

## 3. Assessment of application against clearing principles

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

**Comments**

**Proposal may be at variance to this Principle**

The application area occurs within the Rudall (LSD1) subregion of the Little Sandy Desert Interim Biogeographic Regionalisation for Australia (IBRA) (GIS Database). This subregion is described as sparse shrub-steppe over *Triodia basedowii* on stony hills, with River Gum communities and bunch grasslands on alluvial deposits in and associated with ranges (CALM, 2002). There are extensive areas of tussock grass

associated with footslopes and River Gum communities along drainage lines (CALM, 2002). Extensive *Triodia* hummock grasslands occur on hills and surrounding plains (CALM, 2002).

The application area lies partly within the boundary of the Rudall River National Park (now Karlamilyi National Park) which is on the Register of National Estate for its significance in maintaining on-going geomorphic and ecological processes within a tropical desert environment (Australian Heritage Database, 2013). In 1994, a small area of the Karlamilyi National Park was excised and the boundary changed to follow the geology and geomorphology of the Yandagooge Inlier rather than an arbitrary straight line (Cameco Australia Pty Ltd, 2013). The Kintyre area (including the area under application) was removed from the Karlamilyi National Park, however this excised area remains on the Register of National Estate.

Hart Simpson and Associates Pty Ltd (1994) undertook detailed vegetation mapping of the Kintyre lease area and identified 7 main vegetation landform units. Surveys undertaken by Bennett Environmental Consulting (2007; 2010) in 2007 and 2010 identified 34 vegetation units. A total of 48 vascular plant families, 149 genera and 323 taxa (species, subspecies and varieties) were recorded during the survey.

During the vegetation survey undertaken by Bennett Environmental Consulting (2007) one Priority Flora species *Comesperma pallidum* (Priority 3) was recorded. A follow up survey of selected areas conducted by Bennett Environmental Consulting (2013) identified that the species originally recorded as *Eremophila tietkensii* has been renamed *Eremophila* sp. Rudall River, which is classified as a Priority 2 flora species as it has a restricted range.

A desktop search of the Western Australian Herbarium database indicated an additional 29 Priority Flora species recorded for the local area (Bennett Environmental Consulting, 2010). It is therefore possible that clearing of native vegetation could impact upon Priority Flora species. Potential impacts to Priority Flora as a result of the proposed clearing may be minimised by the implementation of a Priority Flora management condition.

According to available databases there are no Threatened or Priority Ecological Communities within the application area (GIS Database).

Bennett Environmental Consulting (2010) identified five introduced weed species. These were *Cenchrus ciliaris*, *Cucumis melo* subsp. *agrestis*, *Citrullus lanatus*, *Aerva javanica* and *Bidens bipinnata*. Weeds have the potential to alter the biodiversity of an area, competing with native vegetation for available resources and making areas more fire prone. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

A review of fauna within the Kintyre area by Bamford Consulting Ecologists (2007) recorded 5 Amphibian, 30 Mammalian, 66 Reptilian and 92 Avian species including several species of conservation significance. Targeted surveys conducted by Bamford Consulting Ecologists (2010; 2012) focusing upon conservation significant species identified the Greater Bilby (*Macrotis lagotis*), Northern Marsupial Mole (*Notorctes caurinus*), Northern Quoll (*Dasyurus hallucatus*), Mulgara (*Dasycercus* spp.), Peregrine Falcon (*Falco peregrinus*), Australian Bustard (*Ardeotis australis*) and Bush Stone-curlew (*Burhinus grallarius*) within the Kintyre Project Area, which includes the application area (Bamford Consulting Ecologists, 2012).

Given that the application area supports Priority Flora species and habitat for conservation significant fauna it is considered that the area may be likely to comprise a high level of biological diversity.

Based on the above, the proposed clearing may be at variance to this Principle.

**Methodology**

Ausralian Heritage Database (2013)
Bamford Consulting Ecologists (2007)
Bamford Consulting Ecologists (2010)
Bamford Consulting Ecologists (2012)
Bennett Environmental Consulting (2007)
Bennett Environmental Consulting (2010)
Bennett Environmental Consulting (2013)
CALM (2002)
Cameco Australia (2013)
Hart Simpson and Associates Pty Ltd (1994)
GIS Database:
- IBRA WA (regions – subregions)

**(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.**

**Comments**

**Proposal may be at variance to this Principle**

In 2007, Bamford Consulting Ecologists (2007) carried out a review of the existing fauna information for the Kintyre area to provide an updated and revised list of conservation significant fauna species likely to be present. Fauna surveys were conducted over the application area involving methods such as; on foot traverses, inspections of locations, opportunistic observations, trapping and spotlighting (Bamford Consulting Ecologists, 2007).

Bamford Consulting Ecologists (2007) recorded 5 Amphibian, 30 Mammalian, 66 Reptilian and 92 Avian species during the fauna survey. Bamford Consulting Ecologists (2007) identified that whilst the survey area is rich in fauna, the number of species recorded is not unusual based on previous surveys undertaken in the Pilbara and Great Sandy Desert. The landforms, vegetation and habitats within the survey area are well-represented regionally. Watercourses and rocky hills are considered the rarest habitats, however these occur extensively within the nearby Karlamilyi National Park (Bamford Consulting Ecologists, 2007; CALM, 2002; GIS Database).

In addition to the Bamford Consulting Ecologists (2007) survey, two targeted fauna surveys of the Kintyre Project area (which includes the application area) by Bamford Consulting Ecologists (2010; 2012). These surveys have identified the following conservation significant fauna species in the Kintyre Project area:

- Greater Bilby (*Macrotis lagotis*) – Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Vulnerable under the *Wildlife Conservation Act 1950* (WC Act);
- Northern Marsupial Mole (*Notorctes caurinus*) – Endangered under the EPBC Act, Endangered under the WC Act;
- Northern Quoll (*Dasyurus hallucatus*) – Endangered under the EPBC Act, Endangered under the WC Act;
- Mulgara (*Dasycercus* spp.) – Vulnerable under the EPBC Act; *Dasycercus cristicauda* listed as Vulnerable under the WC Act, *Dasycercus blythi* listed as Priority 4 by the Department of Environment and Conservation (DEC);
- Peregrine Falcon (*Falco peregrinus*) – Schedule 4 under the WC Act;
- Australian Bustard (*Ardeotis australis*) – DEC Priority 4; and
- Bush Stone-curlew (*Burhinus grallarius*) – DEC Priority 4.

The Peregrine Falcon (*Falco peregrinus*), Australian Bustard (*Ardeotis australis*) and Bush Stone-curlew (*Burhinus grallarius*) are all highly mobile and the low impact nature of the proposed clearing is considered unlikely to significantly impact on the conservation of these species (Bamford Consulting Ecologists, 2012).

Cameco Australia Pty Ltd have applied to clear 52 hectares of native vegetation within a 10,424 hectare area and as such, the impact of the clearing over such a large area will be minimal. However, the identification of the Greater Bilby, Northern Quoll and Mulgara within the application area is of particular importance. Bilby and Mulgara have similar habitat requirements, occurring on sandy-loam soils that support spinifex and acacia shrublands and as such are potentially widespread in the Kintyre region but are probably scarce due to the impacts of extensive recent fires and predation (Bamford Consulting Ecologists, 2010).

Mulgaras (*Dasycercus cristicauda* and *D. blythl*) and Bilby (*Macrotis lagotis*) are ground-dwelling fauna with limited dispersal abilities which are more likely to be impacted on by the proposed exploration activities. While the Great Desert Skink (*Liopholis kintorel*) hasn't been recorded within the application area, it also shares these habitat requirements and these three species live in underground burrows. Any core habitat, such as burrows, is considered significant and should be avoided.

The Northern Quoll is often associated with rocky areas in the Pilbara, but also occurs along watercourses (Bamford Consulting Ecologists, 2012). The Northern Quoll recorded within the application area was located at a permanent water pool (Bamford Consulting Ecologists, 2012). Permanent water poolsin dissected rocky environments is the preferred habitat for this species (Bamford Consulting Ecologists, 2012). This occurrence of Northern Quoll within the application area is considered to be significant as it appears to be the first record in the local area and is at the eastern most extent of its known range in this region (Bamford Consulting Ecologists, 2012). Any core habitat for this species within the application area is considered significant and should be avoided.

The implementation of fauna management conditions may minimise any potential impacts upon these conservation significant fauna species.

Based on the above, the proposed clearing may be at variance to this Principle.

**Methodology**

Bamford Consulting Ecologists (2007)
Bamford Consulting Ecologists (2010)
Bamford Consulting Ecologists (2012)
CALM (2002)
GIS Database
- DEC Tenure
- Pre-European Vegetation

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

**Comments**

**Proposal is not likely to be at variance to this Principle**

According to available databases, there are no records of Threatened Flora species within 20 kilometres of the application area (DEC, 2013; GIS Database).

A flora survey over a large portion of the application area conducted by Bennett Environmental Consulting

(2010) did not identify any Threatened Flora species.

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

**Methodology** DEC (2013)
GIS Database:
- Threatened and Prioty Flora

**(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.**

**Comments**

**Proposal is not likely to be at variance to this Principle**

There are no known records of Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is located approximately 230 kilometres south west of the application area (GIS Database). At this distance there is little likelihood of any impact to the TEC as a result of the proposed clearing.

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

**Methodology** GIS Database:
- Threatened Ecological Sites Buffered

**(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.**

**Comments**

**Proposal is not at variance to this Principle**

The application area is located within the Little Sandy Desert Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). Approximately 99.98% of the pre-European vegetation remains within the Little Sandy Desert bioregion (Government of Western Australia, 2013).

The vegetation within the application area has been broadly mapped as Beard vegetation associations:

99: Hummock grasslands, shrub steppe; *Acacia coriacea* & hakea over hard spinifex, *Triodia basedowii*; and

117: Hummock grasslands, grass steppe; soft spinifex.

Approximately 100% of Beard vegetation associations 99 and 117 remain within the Little Sandy Desert bioregion (see table below) (Government of Western Australia, 2013).

| | Pre-European area (ha)* | Current extent (ha)* | Remaining %* | Conservation Status** | Extent in DEC Managed Lands %* |
|---|---|---|---|---|---|
| IBRA Bioregion - Little Sandy Desert | 11,090,277 | 11,088,325 | ~99.98 | Least Concern | ~4.64 |
| Beard vegetation associations - State | | | | | |
| 99 | 528,692 | 528,692 | ~100 | Least Concern | ~27.02 |
| 117 | 919,517 | 886,005 | ~96.36 | Least Concern | ~13.71 |
| Beard vegetation associations - Bioregion | | | | | |
| 99 | 526,656 | 526,656 | ~100 | Least Concern | ~27.03 |
| 117 | 287,251 | 287,251 | ~100 | Least Concern | ~36.18 |

* Government of Western Australia (2013)
** Department of Natural Resources and Environment (2002)

The vegetation within the application area is not considered to be a remnant of vegetation in an area that has been extensively cleared.

Based on the above, the proposed clearing is not at variance to this Principle.

**Methodology** Department of Natural Resources and Environment (2002)
Government of Western Australia (2013)
GIS Database:
- IBRA WA (regions – subregions)
- Pre-European Vegetation

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

**Comments**

**Proposal is at variance to this Principle**

The application area intersects numerous minor, non-perennial watercourses (GIS Database). One permanent water pool was recorded within the application area during a fauna survey conducted by Bamford Consulting Ecologists (2012). Permanent water pools are important within the Pilbara region and therefore should be avoided. Permanent water pools are considered core habitat for Northern Quoll, as discussed under Principle (b), therefore a condition requiring Northern Quoll habitat to be avoided has been recommended for this permit. Potential impacts to permanent water pools as a result of the proposed clearing may be minimised by the implementation of the Northern Quoll condition.

Bennett Environmental Consulting (2010) identified six vegetation communities associated with drainage lines and creeklines within the application area. Bennett Environmental Consulting (2010) has, while not conducting formal surveys outside of the application area, identified similar vegetation units in the Karlamilyi National Park, directly adjacent to the application area.

Given the low impact nature of the proposed clearing, it is considered unlikely to significantly impact upon vegetation growing in association with the watercourses within the application area. It is however important to avoid clearing riparian vegetation where possible and ensure that the natural surface water flow is maintained.

Potential impacts to watercourses as a result of the proposed clearing may be minimised by the implementation of a watercourse management condition.

Based on the above, the proposed clearing is at variance to this Principle.

**Methodology** Bamford Consulting Ecologists (2012)
Bennett Environmental Consulting (2010)
GIS Database:
- Hydrography, linear

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

**Comments**

**Proposal is not likely to be at variance to this Principle**

The proposed clearing area lies within a broad valley bounded by the Broadhurst Range to the east and the Thressell Range to the west (Corporate Environmental Consultancy Pty Ltd, 2007). The south branch of the Yandagooge Creek meanders through the application area (Corporate Environmental Consultancy Pty Ltd, 2007).

Dames & Moore (1997) conducted a soil survey of the Kintyre area in 1996 and mapped the following seven soil types:

1. Red, deep sand on flat plains;
2. Rock fragments in sandy loam matrix, on stony hills and scree slopes;
3. Red sandy loam and silty sand on claypan areas and old drainage lines;
4. Red sand, aeolian, in scattered patches and minor dunes;
5. Red loose sand, alluvial, levee banks and marginal to major drainage lines;
6. Loose sand with gravel bars and lenses in active drainage lines; and
7. Rock outcrops, minor colluvium.

Given the size of the application area (10,424 hectares) it is likely that all these soil types would be represented within the application area. There is a moderate risk of wind and water erosion associated with several of these soil types however Cameco Australia Pty Ltd have applied to clear 52 hectares of native vegetation within a 10,424 hectare area and as such the impact of the clearing over such a large area will be minimal.

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

**Methodology** Corporate Environmental Consultancy Pty Ltd (2007)
Dames & Moore (1997)

**(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.**

**Comments**

**Proposal is not likely to be at variance to this Principle**

The Kintyre resource area was formally part of the Karlamilyi National Park (A34607) which was proclaimed in 1977. However, in 1994 the boundary of the Karlamilyi National Park was changed to follow the geology and geomorphology of the Yandagooge Inlier rather than an arbitrary straight line. The area excised from the Karlamilyi National Park included the Kintyre resource area (Cameco Australia Pty Ltd, 2013). The application area borders the Karlamilyi National Park boundary on its southern and eastern boundaries (GIS Database).

Despite being excised from the Karlimilyi National Park, the Kintyre area remains listed on the Register of National Estate (GIS Database). The Karlamilyi National Park was placed on the Register when it was initially proclaimed in 1977, however the excised portion of the National Park has never been removed from the Register (Cameco Australia Pty Ltd, 2013).

The Karlamilyi National Park is a significant transition zone for flora and fauna between the Great sandy Desert to the north, the Little Sandy Desert to the south and the semi-arid Pilbara to the west (Australian Heritage Database, 2013). It is on the Register of National Estate for its significance in maintaining on-going geomorphic and ecological processes within a tropical desert environment (Australian Heritage Database, 2013).

The National Park is rich in biodiversity, containing more than 400 flora species, including riparian woodlands which are not well represented elsewhere (Australian Heritage Database, 2013). The area acts as refugium habitat for numerous rare species of flora and fauna of the Great Sandy Desert. It contains 90% of the total bird fauna of the Great Sandy Desert, Lake Dora (which periodically acts as an important waterbird habitat), and an important population of the rare Greater Bilby (*Macrotis lagotis*) on the eastern side of Lake Dora (Australian Heritage Database, 2013). In addition to this, Karlamilyi National Park contains 6 of the 9 frog species found in the Great Sandy Desert, and has a diverse and varied reptile fauna assemblage (Australian Heritage Database, 2013).

Cameco Australia Pty Ltd has applied to clear 52 hectares of native vegetation within a 10,424 hectare area and as such the impact of the clearing over such a large area is unlikely to have any negative environmental impacts upon the adjacent National Park.

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

**Methodology**

Australian Heritage Database (2013)
Cameco Australia Pty Ltd (2013)
GIS Database
- DEC Tenure
- Register of National Estate

**(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.**

**Comments**

**Proposal is not likely to be at variance to this Principle**

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is the Nullagine Water reserve located approximately 194 kilometres west north-west of the application area. At this distance the proposed clearing is considered unlikely to impact on the quality of water within the Nullagine Water Reserve.

One waterhole has been located within the application area during a fauna survey conducted by Bamford Consulting Ecologists (2012). Given the size (52 hectares within a 10,424 hectare boundary) and the low impact nature (tracks and drill pads) of the proposed clearing, it is considered unlikely to have a significant impact on the quality of ground or surface water within the application area.

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

**Methodology**

Bamford Consulting Ecologists (2012)
GIS Database:
- Public Drinking Water Source Areas (PDWSAs)

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

**Comments**

**Proposal is not likely to be at variance to this Principle**

The Rudall subregion experiences an arid climate with hot summers and warm dry winters (CALM, 2002).

The average annual evaporation rate (3,800 millimetres) far exceeds average annual rainfall (300 millimetres) and it is therefore unlikely that there would be significant surface water flow during normal seasonal rains (GIS Database).

The application area is located within the Sandy Desert - Lake Dora catchment area of the Sandy Desert basin

(GIS Database). Given the size of the area to be cleared (52 hectares) in relation to the size of the catchment area (29,276,949 hectares) (GIS Database), the proposed clearing is not likely to increase the potential for flooding on a local or catchment scale.

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

**Methodology** CALM (2002)
GIS Database:
- Rainfall, Mean Annual
- Evaporation Isopleths
- Hydrographic Catchments - Catchments

## Planning instrument, Native Title, Previous EPA decision or other matter.

**Comments**

There are two Native Title Claims (WC06/3 and WC96/78) over the area under application (GIS Database). These claims have been registered with the National Native Title Tribunal on behalf of the claimant groups. However, the mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There several registered Aboriginal Sites of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

It is the proponent's responsibility to liaise with the Department of Environment and Conservation and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

The clearing permit application was advertised on 15 April 2013 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received in relation to the proposed clearing.

**Methodology** GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims – Determined by the Federal Court
- Native Title Claims – Registered with the NNTT
- Native Title Claims – Filed at the Federal Court

## 4. References


Australian Heritage Database (2013) Rudall River National Park (1978 boundary), Rudall River via Telfer, WA http://www.heritage.gov.au/cgi-bin/ahpi/record.pl?RNE10054 (Accessed 27 May 2013)

Bamford Consulting Ecologists (2007) Kintyre Project Area. Fauna observations from site visit. Unpublished report prepared for Canning Resources Pty Ltd dated November 2007.

Bamford Consulting Ecologists (2010) Targeted Fauna Survey for the Kintyre Uranium Mine Project. Unpublished report prepared for Cameco Australia Pry Ltd dated October 2010.

Bamford Consulting Ecologists (2012) Kintyre Uranium Project Targeted Fauna Assessment. Unpublished report prepared for Cameco Australia Pty Ltd dated December 2012.

Bennett Environmental Consulting (2007) Flora and Vegetation Kintyre Leases. Unpublished report prepared for Canning Resources Pty Ltd dated August 2007.

Bennett Environmental Consulting (2010) Flora and Vegetation Kintyre Lease. Unpublished report prepared for Cameco Australia Pty Ltd, dated July 2010.

Bennett Environmental Consulting (2013) Reassessment of selected areas Kintyre Lease. Unpublished report prepared for Cameco Australia Pty Ltd dated January 2013.

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Little Sandy Desert 1 (LSD1 – Rudall subregion). Department of Conservation and Land Management.

Cameco Australia Pty Ltd (2013) Clearing Permit Application – Kintyre Uranium Project. Letter to Virginia Simms dated 19 March 2013.

Corporate Environmental Consultancy Pty Ltd (2007) Canning Resources Pty Ltd - Application for Clearing Associated with Kintyre Evaluation Study: East Pilbara, Western Australia. Submitted under Environmental Protection (Clearing of Native Vegetation) Regulations 2004. Prepared April 2007. Attadale, Western Australia.

Dames & Moore (1997) Baseline Soils Survey. Kintyre Project. Report prepared for Canning Resources.

DEC (2013) *NatureMap: Mapping Western Australia's Biodiversity*. Department of Environment and Conservation. URL: http://naturemap.dec.wa.gov.au.

Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

Government of Western Australia (2013) 2012 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2012. WA Department of Environment and Conservation, Perth.

Hart, Simpson and Associates Pty Ltd (1994a) Kintyre Project. Fauna Studies, 1986 - 1992. Prepared for Canning Resources

Pty Ltd, October 1994
Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

## 5. Glossary

### Acronyms:

| | |
|---|---|
| **BoM** | Bureau of Meteorology, Australian Government |
| **CALM** | Department of Conservation and Land Management (now DEC), Western Australia |
| **DAFWA** | Department of Agriculture and Food, Western Australia |
| **DEC** | Department of Environment and Conservation, Western Australia |
| **DEH** | Department of Environment and Heritage (federal based in Canberra) previously Environment Australia |
| **DEP** | Department of Environment Protection (now DEC), Western Australia |
| **DIA** | Department of Indigenous Affairs |
| **DLI** | Department of Land Information, Western Australia |
| **DMP** | Department of Mines and Petroleum, Western Australia |
| **DoE** | Department of Environment (now DEC), Western Australia |
| **DoIR** | Department of Industry and Resources (now DMP), Western Australia |
| **DOLA** | Department of Land Administration, Western Australia |
| **DoW** | Department of Water |
| **EP Act** | Environmental Protection Act 1986, Western Australia |
| **EPBC Act** | Environment Protection and Biodiversity Conservation Act 1999 (Federal Act) |
| **GIS** | Geographical Information System |
| **ha** | Hectare (10,000 square metres) |
| **IBRA** | Interim Biogeographic Regionalisation for Australia |
| **IUCN** | International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union |
| **RIWI Act** | Rights in Water and Irrigation Act 1914, Western Australia |
| **s.17** | Section 17 of the Environment Protection Act 1986, Western Australia |
| **TEC** | Threatened Ecological Community |

### Definitions:

**{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005*. Department of Conservation and Land Management, Como, Western Australia} :-**

**P1** **Priority One - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

**P2** **Priority Two - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

**P3** **Priority Three - Poorly Known taxa**: taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.

**P4** **Priority Four – Rare taxa**: taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.

**R** **Declared Rare Flora – Extant taxa** *(= Threatened Flora = Endangered + Vulnerable)*: taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

**X** **Declared Rare Flora - Presumed Extinct taxa**: taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

**{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-**

**Schedule 1** **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.

**Schedule 2** **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.

**Schedule 3** **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.

**Schedule 4** **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

**{CALM (2005). *Priority Codes for Fauna*. Department of Conservation and Land Management, Como, Western Australia} :-**

**P1** **Priority One: Taxa with few, poorly known populations on threatened lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

**P2** **Priority Two: Taxa with few, poorly known populations on conservation lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

**P3** **Priority Three: Taxa with several, poorly known populations, some on conservation lands**: Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

**P4** **Priority Four: Taxa in need of monitoring**: Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

**P5** **Priority Five: Taxa in need of monitoring**: Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

**Categories of threatened species (*Environment Protection and Biodiversity Conservation Act 1999)***

**EX** **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.

**EX(W)** **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

**CR** **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

**EN** **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

**VU** **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

**CD** **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.