



## 1. Application details

### 1.1. Permit application details

Permit application No.: 1847/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Canning Resources Pty Limited

### 1.3. Property details

Property: Prospecting Licences: 45/2632, 45/2633, 45/2634, 45/2635, 45/2636, 45/2637, 45/2638, 45/2639, 45/2640, 45/2641, 45/2642.  
Mining Leases: 45/266, 45/267, 45/420.  
Local Government Area: Shire of East Pilbara  
Colloquial name: Kintyre Evaluation Study

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
30.5		Mechanical Removal	Mineral Exploration

## 2. Site Information

### 2.1. Existing environment and information

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

Vegetation Description	Clearing Description	Vegetation Condition	Comment
<p>The area applied to clear has been broadly mapped at a scale of 1:250000 as: Beard Vegetation Association 99: Hummock grasslands, shrub steppe; <i>Acacia coriacea</i> &amp; <i>Hakea</i> over hard Spinifex, <i>Triodia basedowii</i>; and Beard Vegetation Association 117: Hummock grasslands, grass steppe; soft Spinifex (GIS Database).</p> <p>Vegetation and flora studies of the Kintyre area were undertaken between 1986 and 1992. This involved the interpretation of aerial photography and ground truthing of vegetation in order to map the vegetation units of the area. A total of 26 vegetation units were recorded, and can be summarised by 7 main vegetation landform units:</p> <ol style="list-style-type: none"> <li>1. Shrubs and Spinifex on flat plains with silty sands;</li> <li>2. Stony hills and scree slopes;</li> <li>3. Sand dunes and sandy soils;</li> <li>4. River channels;</li> <li>5. Shrublands and woodlands in drainage channels;</li> <li>6. Clayey or silty soils; and</li> <li>7. Claypans.</li> </ol> <p>Additional flora and vegetation studies of the Kintyre area were undertaken in 1997 by Hart, Simpson and Associates. This involved further interpretation of aerial photography and vegetation surveys on the ground. A total of 24 vegetation units were mapped for the Kintyre area. Of these units, the following 17 can be found within the purpose permit boundary for this clearing permit application:</p> <ol style="list-style-type: none"> <li>1. <i>Triodia wiseana</i>;</li> <li>2. <i>Acacia ancistrocarpa</i> and <i>Acacia ligulata</i> over <i>Triodia wiseana</i>;</li> <li>3. Mixed low shrubs over <i>Triodia wiseana</i>;</li> </ol>	<p>This clearing permit application is for a purpose permit to clear up to 30.5 hectares of native vegetation within a purpose permit boundary of approximately 1,847 hectares (GIS Database). The proposed clearing is for exploration purposes, and will allow the proponent to undertake an evaluation study of the Kintyre uranium deposit, located approximately 70km south of Telfer (Corporate Environmental Consultancy Pty Ltd, 2007). Clearing is required to establish access tracks, evaluation drill pads, water exploration bores, geotechnical holes and costeans, and a laydown area (Corporate Environmental Consultancy Pty Ltd, 2007).</p>	<p>Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)</p> <p>to</p> <p>Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)</p>	<p>The area under application was subject to uranium exploration drilling programs between 1986 and 1987, and from 1995 to 1998 (Corporate Environmental Consultancy Pty Ltd, 2007).</p>

4. *Eucalyptus leucophloia* over *Triodia wiseana*;
5. Woodland of *Corymbia opaca*;
6. Woodland of *Eucalyptus camaldulensis* in river channels;
7. Sparse shrubs on clay soils;
8. Drainage line of *Acacia* species and other shrubs over soft Spinifex (*Triodia pungens*);
9. *Acacia retivenea* over *Triodia wiseana*;
10. *Acacia inaequilatera* over *Triodia basedowii* and *Triodia pungens*;
11. *Grevillea* and *Acacia* shrubs over mixed spinifex on sand;
12. *Acacia dictyophleba* over *Triodia basedowii*;
13. *Acacia wanyu* over *Triodia wiseana*;
14. Sparse shrubs over *Triodia basedowii*;
15. Cassias over grass;
16. Sand dunes; and
17. White quartzite scree slopes.

Corporate Environmental Consultancy Pty Ltd (2007) have indicated that a majority of the clearing for the proposed mineral evaluation study will occur within the following vegetation units:

- *Triodia wiseana*;
- *Acacia ancistrocarpa* and *Acacia ligulata* over *Triodia wiseana*; and
- Mixed low shrubs over *Triodia wiseana*.

There is also a possibility that the following vegetation units will be disturbed during the proposed clearing (Corporate Environmental Consultancy Pty Ltd, 2007):

- Trees of *Eucalyptus leucophloia* over *Triodia wiseana*;
- Woodland of *Corymbia opaca* (restricted to creeklines);
- Woodland of *Eucalyptus camaldulensis* in river channels;
- Sparse shrubs on clay soils; and
- Drainage line of *Acacia* species and other shrubs over *Triodia pungens*.

Several weed species have previously been recorded from the Kintyre area (Corporate Environmental Consultancy Pty Ltd, 2007). Buffel Grass (*Cenchrus ciliaris*) is the most significant of these, and is commonly found along drainage lines and disturbed areas where there is water run off (Corporate Environmental Consultancy Pty Ltd, 2007). The green melon (*Citrulus lanatus*) has also been found where there is water and disturbance, whilst Kapok Bush (*Aerva javanica*) has previously been recorded along Yandagooge Creek. Other species such as the small daisy (*Pseudognaphalium luteoalbum*) and Milk Thistle (*Sonchus oleraceus*) have previously been recorded in wet places in the Kintyre area (Corporate Environmental Consultancy Pty Ltd, 2007).

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

The proposed clearing area is located approximately 70km south of Telfer (GIS Database) in the Rudall subregion of the Little Sandy Desert Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database). The Rudall subregion is characterised by sparse shrub-steppe over *Triodia basedowii* on stony hills, with River Gum communities and bunch grasslands on alluvial deposits and associated ranges (CALM, 2001). Approximately 37.32% of the total land area in the Rudall subregion is within the Rudall River National Park (CALM, 2001). The climate is arid, and is characterised by summer rainfall (CALM, 2001). Dominant land uses in the region include conservation, unallocated crown land, mining leases and aboriginal communities (CALM, 2001).

The Rudall subregion is known to support a diversity of arid zone reptiles, particularly skink lizards from the genera *Lerista* and *Ctenotus* (CALM, 2001). The upper Rudall River (draining into Lake Dora) is listed as a rare feature of the subregion given that it is one of only two arid zone rivers with near permanent wetlands along its course (CALM, 2001). These wetlands support a biologically diverse assemblage of waterbirds, and support riparian woodland communities that are not well represented elsewhere (Australian Heritage Council, 2001).

The proposed clearing area is approximately 2.5km from the boundary of the Rudall River National Park at its nearest point (GIS Database). The Rudall River National Park is listed on the Register of the National Estate as an Environmentally Sensitive Area for its significance in maintaining on-going geomorphic and ecological processes within a tropical desert environment (Australian Heritage Database, 2007). In 1994, a small area of the Rudall River National Park was excised and the boundary changed to follow the geology and geomorphology of the Yandagooge Inlier rather than an arbitrary straight line (Corporate Environmental Consultancy Pty Ltd, 2007). The Kintyre area (including the area under application) was removed from the Rudall River National Park. This excised area remained on the Register of the National Estate, hence the requirement for this clearing permit application.

The area under application has been subject to uranium exploration activities between 1986 - 1987 and 1995 - 1998 (Corporate Environmental Consultancy Pty Ltd, 2007). Evidence of disturbance exists in the form of access tracks and drill lines (Corporate Environmental Consultancy Pty Ltd, 2007). Biodiversity values of the proposed clearing area are likely to have declined as a result of this disturbance. Impacts associated with the previous mineral exploration activities are likely to have included vegetation and habitat loss, fauna displacement and localised fragmentation.

A number of introduced mammal species have previously been recorded in the Kintyre area. Hart, Simpson and Associates (1994a) reported that the camel (*Camelus dromedaris*) was common and widespread in the area. The camel was mostly observed in small groups, but herds of over 100 individuals were seen on occasion (Hart, Simpson and Associates, 1994a). The feral cat (*Felis catus*) was widespread but scarce. Other introduced animals sighted only once in the area include the fox (*Vulpes vulpes*) and the rabbit (*Oryctolagus cuniculus*). The house mouse (*Mus musculus*) was also trapped numerous times from the Kintyre area (Hart, Simpson and Associates Pty Ltd, 1994a). The current status of feral animals at the Kintyre area is not known, but based on the work undertaken by Hart, Simpson and Associates Pty Ltd (1994a) there are likely to be feral animals present within the proposed clearing area. Adverse impacts caused by the presence of feral animals include: predation of native fauna, competition with native fauna for food and habitats, overgrazing and trampling of native vegetation and soil compaction. All of these impacts are detrimental to biological diversity.

None of the features listed as rare or unique for the Rudall subregion by CALM (2001) are present in the proposed clearing area, and the habitats present exist over vast areas within the subregion (Hart, Simpson and Associates Pty Ltd, 1994a). It is unlikely that the area applied to clear supports a higher level of biological diversity than other areas in the local or regional area.

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

**Methodology** CALM (2001).  
Corporate Environmental Consultancy Pty Ltd (2007).  
Hart, Simpson and Associates (1994a).  
GIS Database:  
- Interim Biogeographic Regionalisation for Australia (Subregions) - EA - 18/10/00.

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

The proposed clearing area was subject to several fauna surveys between 1986 and June 1992. These surveys were carried out by Martinick & Associates and Hart, Simpson and Associates (Corporate Environmental Consultancy Pty Ltd, 2007). A total of 39 individual sites were surveyed throughout the Kintyre area in an attempt to assess fauna species present or likely to be present in all habitat types (Corporate Environmental Consultancy Pty Ltd, 2007). To increase reliability, surveys were conducted over a number of seasons during a range of climatic conditions. Methods of survey were varied and included pit trapping for frogs, reptiles and small mammals; Elliot and cage trapping for mammals, mist netting for bats, opportunistic searches for birds, and observations for fauna (and evidence of fauna such as tracks, scats and burrows) (Hart, Simpson and Associates Pty Ltd, 1994a). Hart, Simpson and Associates Pty Ltd (1994a) produced a summary report of these surveys for Canning Resources Pty Ltd in October 1994.

In 2007, Bamford Consulting Ecologists were commissioned by Canning Resources Pty Ltd to carry out a review of the existing fauna information for the Kintyre area and to provide an updated and revised list of conservation significant fauna species likely to be present. The main sources of information used in conducting this review were the summary report produced by Hart, Simpson and Associates (1994a) and fauna databases (Corporate Environmental Consultancy Pty Ltd, 2007).

Based on the previous fauna surveys and the recent fauna review undertaken by Bamford Consulting Ecologists (2007), the following conservation significant fauna species may potentially occur within the application area:

Northern Quoll, *Dasyurus hallucatus*; Bilby, *Macrotis lagotis*; Orange Leaf-nosed Bat, *Rhinionictis aurantius*; Night Parrot, *Pezoporus occidentalis*; Fork-tailed Swift, *Apus pacificus*; Rainbow Bee-eater, *Merops ornatus*; Peregrine Falcon, *Falco peregrinus*; Skink, *Lerista macropisthopus remota*; Spectacled Hare Wallaby, *Lagorchestes conspicillatus leichardti*; Ghost Bat; *Macroderma gigas*; Western Pebble-mound Mouse,

*Pseudomys chapmanii*; Short-tailed Mouse, *Leggadina lakedownensis*; Grey Falcon, *Falco hypoleucos*; Australian Bustard, *Ardeotis australis*; Bush Stone-curlew, *Burhinus grallarius* and Princess Parrot, *Polytelis alexandrae* (Corporate Environmental Consultancy Pty Ltd, 2007).

Of the above listed species, the following have previously been recorded in the Kintyre area: Rainbow Bee-eater (listed as Migratory under the *Environment Protection and Biodiversity Conservation Act 1999*), Grey Falcon and Australian Bustard (both listed as Priority 4 on the Department of Environment and Conservation's Priority fauna list).

The Rainbow Bee-eater is a widespread species found throughout all of mainland Australia, except Tasmania (Department of Environment and Water Resources, 2007). Current information suggests that the distribution of the Rainbow Bee-eater has not been severely fragmented (Department of Environment and Water Resources, 2007). The Rainbow Bee-eater may be found to nest in soft soils along tracks in the application area (Corporate Environmental Consultancy Pty Ltd, 2007). Given that this species occurs in a variety of habitats such as woodlands, forests, grasslands, farmlands and urban areas throughout Australia (Department of Environment and Water Resources, 2007), the proposed clearing area is not likely to represent significant habitat for this species.

The Australian Bustard is a nomadic species which uses a wide range of habitats (Corporate Environmental Consultancy Pty Ltd, 2007). The proposed clearing area is unlikely to be representative of locally or regionally significant habitat for the Australian Bustard.

The Grey Falcon may occasionally visit the Kintyre area, and is most likely to forage in Eucalypts along watercourses (Corporate Environmental Consultancy Pty Ltd, 2007). Given that disturbance to creekline vegetation will be negligible, the Grey Falcon is not likely to be impacted by the proposed clearing.

The presence of a number of other species in the Kintyre area has been inferred by the presence of bone material which was collected from a cave in the Coolbro Hills, located immediately to the west of the Kintyre area. These bones (both historic and recent) are likely to have been deposited in the cave by Owls preying upon small mammals in the area (Hart, Simpson and Associates Pty Ltd, 1994a). The bones were analysed by a specialist at the Western Australian Museum. Species identified included the Northern Quoll (listed as Engangered under the *EPBC Act 1999*), Bilby, Orange Leaf-nosed Bat (both listed as Vulnerable under the *EPBC Act 1999* and the *Wildlife Conservation Act 1950*) and Ghost Bat (Priority 4 on the DEC's Priority fauna list).

The Northern Quoll may occur in rocky areas along watercourses in the Kintyre area (Corporate Environmental Consultancy Pty Ltd, 2007). The proposed clearing along watercourses (if any) will be restricted to existing access tracks, therefore it is unlikely that the Northern Quoll (or its suitable habitat) will be impacted.

In addition to the presence of bone material, Bilby burrows have previously been sighted in the Kintyre area during the various fauna surveys which were undertaken between 1986 - 1992 (Corporate Environmental Consultancy Pty Ltd, 2007). Hart, Simpson and Associates Pty Ltd (1994a) consider the Bilby to be unlikely to occur in the Kintyre area. A significant Bilby population is known from the eastern side of Lake Dora, however this is in excess of 100km east of the area applied to clear (Australian Heritage Council, 2001; GIS Database). As a precaution, a qualified zoologist will inspect all areas proposed for disturbance prior to clearing. Should any active Bilby burrows be identified, these areas will be clearly flagged and avoided during the clearing process (Corporate Environmental Consultancy Pty Ltd, 2007).

The Orange Leaf-nosed Bat and the Ghost Bat both require caves, shafts fissures or deep overhangings for roosting (Corporate Environmental Consulting Pty Ltd, 2007). Caves present in the Coolbro Hills, located immediately west of the Kintyre area provide suitable roosting habitat (Corporate Environmental Consulting Pty Ltd, 2007). Bone material found in these caves was old, therefore it is uncertain whether these two species still use habitat in the Coolbro Hills for roosting. Given that the proposed clearing activities are not located in the Coolbro Hills, there is unlikely to be any significant impacts upon roosting habitat important to these two bat species.

Mounds of stones believed to have been nests of the Western Pebble-mound Mouse were previously found to the south and west of the Kintyre area (Hart, Simpson and Associates Pty Ltd, 1994a). These mounds were very old and clearly inactive (Hart, Simpson and Associates Pty Ltd, 1994). There is very little habitat in the Kintyre area capable of supporting the Western Pebble-mound Mouse (Hart, Simpson and Associates Pty Ltd, 1994a) and it is therefore considered that the proposed clearing will not impact upon this species.

A number of other species have not been recorded in the Kintyre area but habitat has been deemed suitable. These species include the Peregrine Falcon, Night Parrot, Fork-tailed Swift, Bush Stone-curlew, Princess Parrot, Spectacled Hare-Wallaby, Short-tailed Mouse and *Lerista macropisthopus remota* (Corporate Environmental Consultancy Pty Ltd, 2007). However, the Kintyre area has no unique landscape features and provides habitats which exist over vast areas in the bioregion (Hart, Simpson and Associates Pty Ltd, 1994a). Vegetation in the proposed clearing area has been mapped at a broad scale as Beard Vegetation Associations 99 and 117 (GIS Database). Approximately 100% of each of these vegetation associations remain in the Rudall subregion, and approximately 30.8% and 43.7% are represented in conservation reserves respectively (Shepherd et al, 2001). It is therefore unlikely that the proposed clearing area represents significant habitat for

any of these species in a regional context.

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

**Methodology** Australian Heritage Council (2001).  
Bamford Consulting Ecologists (2007).  
Corporate Environmental Consultancy Pty Ltd (2007).  
Department of Environment and Water Resources (2007).  
Hart, Simpson and Associates (1994a).  
Shepherd et al (2001).  
GIS Database:  
- Pre-European Vegetation - DA 01/01.

**(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**

There are no known records of Declared Rare Flora (DRF) species within the proposed clearing area, or in the Rudall subregion (GIS Database; CALM, 2001). The nearest known record of DRF to the Kintyre area is 6 populations of *Lepidium catapycnon*, located approximately 268km west-south west (GIS Database). As a precaution, the proponent will employ a qualified botanist to undertake a visual inspection for the presence of DRF species at each proposed clearing site, prior to any clearing activity. Any species not identifiable in the field shall be collected and lodged with the Western Australian Herbarium for identification. The findings of this DRF search shall be documented in a report which is to be submitted to DoIR prior to clearing. Should any DRF species be found, the proponent shall not clear any of these species without written consent from the Environment Minister, in accordance with Section 23F of the *Wildlife Conservation Act 1950*.

Five Priority Flora species have previously been recorded from the Rudall subregion, two of these by Hart, Simpson and Associates Pty Ltd (1994b; 1997) and three recorded as collected by Hart at "Rudall" in the collections of the Western Australian Herbarium (Corporate Environmental Consultancy Pty Ltd, 2007). These 5 species include *Acacia auripila* (P2), *Thysanotus sp. Desert East of Newman* (P2), *Goodenia hartiana* (P2), *Ptilotus mollis* (P4) and *Acacia balsamea* (P4) (Corporate Environmental Consultancy Pty Ltd, 2007). None of these 5 Priority species have been recorded from the clearing permit application area (Corporate Environmental Consultancy Pty Ltd, 2007; GIS Database).

In addition to the 5 Priority Flora species listed as occurring in the Rudall subregion by Corporate Environmental Consultancy Pty Ltd (2007), the Department of Conservation and Land Management (now known as Department of Environment and Conservation) lists the following species: *Eremophila tenella ms* (P1), *Bulbine pendula* (P3), *Goodenia purpurascens* (P3) and *Sauropus arenosus* (P3) (CALM, 2001). None of these Priority species have previously been recorded in the clearing permit application area (GIS Database).

Based on habitat preferences and known distributions, it is possible that the above listed Priority species may be present in the clearing permit application area. As a precaution, the proponent will employ a qualified botanist to undertake a visual inspection for the presence of Priority species at each proposed clearing site. Particular attention should be paid to the above listed species which are known to occur in the Rudall subregion. The visual inspection shall take place prior to clearing. The findings of the Priority Flora search shall be documented in a report which is to be submitted to DoIR prior to clearing. Should any Priority Flora be located, the proponent has committed to flagging and avoiding these plants.

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

**Methodology** CALM (2001).  
Corporate Environmental Consultancy Pty Ltd (2007).  
Hart, Simpson and Associates Pty Ltd (1994b)  
Hart, Simpson and Associates Pty Ltd (1997)  
GIS Database:  
- Declared Rare and Priority Flora List - CALM 01/07/05.

**(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 Threatened Ecological Communities (TEC's) within, or in close proximity to, the clearing permit application area (GIS Database). The nearest known TEC is approximately 247km west-south west of the area under application (GIS Database).

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

**Methodology** GIS Database:  
- Threatened Ecological Communities - CALM 12/04/05.

**(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 area applied to clear is within the Interim Biogeographic Regionalisation for Australia (IBRA) Rudall subregion of the Little Sandy Desert bioregion (GIS Database). According to Shepherd et al (2001) there is approximately 100% of the pre-European vegetation remaining in the Rudall subregion. The vegetation of the application area is classified as Beard Vegetation Association 99: Hummock grasslands, shrub steppe; *Acacia coriacea* & *Hakea* over hard Spinifex, *Triodia basedowii*; and Beard Vegetation Association 117: Hummock grasslands, grass steppe; soft Spinifex (GIS Database).

Both Beard Vegetation Associations 99 and 117 are well represented within conservation reserves in the Rudall IBRA subregion; with 30.8% and 43.7% of these vegetation types represented in reserves respectively (Shepherd et al. 2001). The area proposed to clear does not represent a significant remnant of vegetation in the wider regional area. The proposed clearing will not reduce the extent of Beard Vegetation Association 99 or 117 below current recognised threshold levels, below which species loss increases significantly.

	Pre-European Area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	% in IUCN Class I-IV Reserves*
IBRA subregion – Rudall	991,277	991,277	100%	Least concern	37.4%
Shire of East Pilbara - Beard Vegetation Associations -	No information available				
-99	461,480	461,480	100%	Least concern	30.8%
-117	191,412	191,412	100%	Least concern	43.7%

\* Shepherd et al. (2001)

\*\* Department of Natural Resources and Environment (2002)

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

**Methodology** Department of Natural Resources and Environment (2002).

Shepherd et al (2001).

GIS Databases:

- Interim Biogeographic Regionalisation of Australia - EA 18/10/00.
- Interim Biogeographic Regionalisation of Australia (subregions) - EA 18/10/00.
- Pre-European Vegetation - DA 01/01.

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

There are no permanent wetlands or watercourses in the proposed clearing area (GIS Database). The South Branch of the Yandagooge Creek flows through the area under application, and based on vegetation mapping produced by Hart, Simpson and Associates Pty Ltd (1997) there would appear to be riparian vegetation present within, and surrounding, this creek. The following vegetation communities are present within the application area and are indicative of riparian vegetation:

- Woodland of *Corymbia opaca*;
- Woodland of *Eucalyptus camaldulensis* in river channels; and
- Drainage line of *Acacia* species and other shrubs over *Triodia pungens*.

The proponent has provided details of the proposed drilling activities, and no clearing for drilling purposes will be required within 300 metres of the Yandagooge creekline (Corporate Environmental Consultancy Pty Ltd, 2007).

However, in order to conduct evaluation studies in the Kintyre area, the proponent will need to re-establish access to the site. Two old creek crossings which were established during earlier evaluation studies may need to be re-opened to gain site access (Corporate Environmental Consultancy Pty Ltd, 2007). These creek crossings will only be re-opened if access is not practicable to the evaluation study site by other areas (Corporate Environmental Consultancy Pty Ltd, 2007). Disturbance to creekline vegetation, if any, will be minimal should the old creek crossings need to be re-established. It is the proponent's responsibility to liaise with the Department of Water to determine if a Bed and Banks Permit is required for the proposed works, in accordance with Section 17 of the *Rights in Water and Irrigation Act 1914*.

Given that some creekline vegetation may be disturbed, the proposed clearing may be at variance to this Principle. Vegetation on the previously cleared tracks is likely to consist of Spinifex (*Triodia pungens*), and

possibly some Acacias, River Gums (*Eucalyptus camaldulensis*) and/or *Corymbia opaca* (Hart, Simpson and Associates Pty Ltd, 1997). Given that these tracks were used during the previous exploration programs at Kintyre between 1986 - 1987 and 1995 - 1998, vegetation is likely to consist of sparse re-growth. The access tracks are not likely to support mature or significant wetland vegetation communities.

**Methodology** Corporate Environmental Consultancy Pty Ltd (2007).  
Hart, Simpson and Associates Pty Ltd (1997).  
Rio Tinto Exploration (2006).  
GIS Database:  
- Hydrography, linear - DOE 01/02/04.

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

**Comments Proposal may 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 Throssell 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 7 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.

The clearing permit application area is dominated by red, deep sand (more than 2 metres thick) on flat plains (Dames & Moore, 1997). Meteorological monitoring results indicate that the Kintyre area receives a majority of its rainfall over short periods of time during summer (Corporate Environmental Consultancy Pty Ltd, 2007). This rainfall is likely to be of a high intensity and associated with tropical cyclones and thunderstorms.

Based on the above, there is a moderate risk of soil erosion occurring on cleared tracks following high intensity rainfall events. The following management measures will be implemented by the proponent when constructing, using and rehabilitating access tracks (Rio Tinto Exploration, 2006):

- clearing will be kept to a necessary minimum;
- raised blade clearing for the establishment of tracks to minimise soil disturbance;
- adequate drainage systems will be installed on all tracks to minimise water erosion;
- set speed limits on all tracks;
- topsoil and vegetative material from cleared tracks will stockpiled for use in rehabilitation;
- stockpiled topsoil will be stored in windrows no higher than 0.5m alongside tracks. Drainage will be constructed through these stockpiles to ensure they are not susceptible to water erosion.
- cleared areas will be rehabilitated as soon as practicable.

Based on the above, the proposed clearing may be at variance to this Principle. However, the risk of land degradation can be reduced by the implementation of appropriate management measures such as those outlined above.

**Methodology** Corporate Environmental Consultancy Pty Ltd (2007).  
Dames & Moore (1997).  
Rio Tinto Exploration (2006).

**(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 area was formally part of the Rudall River National Park (A34607) which was proclaimed in 1977 (Corporate Environmental Consultancy Pty Ltd, 2007). However, in 1994 the boundary of the Rudall River National Park was changed to follow the geology and geomorphology of the Yandagooge Inlier rather than an arbitrary straight line (Corporate Environmental Consultancy Pty Ltd, 2007). The area excised from the Rudall River National Park included the Kintyre area, including the area under application for this clearing permit (Corporate Environmental Consultancy Pty Ltd, 2007). The current Rudall River National Park boundary is approximately 2.5 kilometres south east of the purpose permit boundary for this clearing permit application (GIS Database).

Despite being excised from the Rudall River National Park, the Kintyre area remains listed on the Register of National Estate (GIS Database). The Rudall River 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 (Corporate Environmental Consultancy Pty Ltd, 2007).

The Rudall River National Park is the largest National Park in Western Australia (Corporate Environmental Consultancy Pty Ltd, 2007). It is on the Register of the National Estate for its significance in maintaining on-going geomorphic and ecological processes within a tropical desert environment (Australian Heritage Database, 2007). The Rudall River National Park contains an entire landscape system which includes dunefields, tablelands, river system, alluvial formations, saline lakes and palaeodrainage lines (Australian Heritage Council, 2001). The National Park is rich in biodiversity, containing more than 400 flora species, including riparian woodlands which are not well represented elsewhere (Australian Heritage Council, 2001). The area acts as refugium habitat for numerous rare species for flora and fauna of the Great Sandy Desert, contains 90% of the total bird fauna of the Great Sandy Desert, contains Lake Dora which periodically acts as an important waterbird habitat, and contains an important population of the rare greater Bilby (*Macrotis lagotis*) on the eastern side of Lake Dora (Australian Heritage Council, 2001). In addition to this, Rudall River National Park contains 6 of the 9 frog species found in the Great Sandy Desert, and has a diverse and varied reptile fauna (Australian Heritage Council, 2001).

The area under application has been historically disturbed by access tracks and exploration drilling, and is therefore unlikely to be contributing important environmental values to the nearby Rudall River National Park. The area contains vegetation types and habitats which are well represented and conserved within the 1,283,406 hectare Rudall River National Park (GIS Database). The small area under application (30.5 hectares) is highly unlikely to be acting as an important buffer for, or ecological linkage to, the Rudall River National Park given its level of historic disturbance and the fact that the area surrounding Rudall River National Park is largely uncleared.

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

**Methodology** Australian Heritage Council (2001).  
Corporate Environmental Consultancy Pty Ltd (2007).  
GIS Databases:  
- CALM Managed Lands and Waters - CALM 01/07/05.  
- Register of National Estate - EA 28/01/03 (STATUS).

**(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**

There are no Public Drinking Water Source Areas (PDWSA's) in close proximity to the proposed clearing area (GIS Database). The proposed vegetation clearing is not likely to have a significant impact upon the groundwater levels or quality in the Kintyre area. Groundwater levels may be impacted by groundwater extraction for the evaluation studies (Corporate Environmental Consultancy Pty Ltd, 2007), but this is outside the scope of this clearing permit application assessment. It is the proponent's responsibility to liaise with the Department of Water to obtain the necessary groundwater licences.

If unmanaged, the proposed clearing has the potential to affect the water quality of surface water drainage features such as the Yandagooge Creek by increasing sediment loads. However, the proponent will implement the following strategies to minimise sedimentation (Rio Tinto Exploration, 2006):

- clearing will be kept to a necessary minimum;
- no drill pads will be constructed within 300 metres of the South Branch of the Yandagooge Creek (which runs through the proposed clearing area);
- areas with high erosion potential will be identified and avoided;
- tracks will be established along the contour, and steep gradients will be avoided;
- trenches and costeans will be constructed across slopes rather than down slopes; and
- areas of disturbance will be rehabilitated as soon as practicable.

Given the above management measures, the proposed clearing is not likely to cause or increase sedimentation of surface water drainage features on site or off site. Adverse impacts of sedimentation such as turbidity are therefore not expected.

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

**Methodology** Corporate Environmental Consultancy Pty Ltd (2007).  
Rio Tinto Exploration (2006).  
GIS Database:  
- Public Drinking Water Source Areas (PDWSA's) - DoW (Display).



**(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 is characterised by a semi-arid climate with hot summers and warm dry winters (Corporate Environmental Consultancy Pty Ltd, 2007). Meteorological monitoring was undertaken in the Kintyre area between 1987 - 1992, and again in 1996 - 1997. A number of climatic variables such as temperature, rainfall, evaporation, and humidity were measured (Corporate Environmental Consultancy Pty Ltd, 2007).

The Kintyre area had an average annual rainfall of 232mm during the 1987 - 1992 monitoring period (Corporate Environmental Consultancy Pty Ltd, 2007). This may have been an unusually dry period for the Kintyre area given that the average annual rainfall for Telfer (approximately 70km to the north) was 311mm for the same period. Similarly, rainfall measurements taken from the Kintyre area from June 1996 to May 1997 recorded 484mm of rainfall (Corporate Environmental Consultancy Pty Ltd, 2007).

Average annual evaporation at the Kintyre area far exceeds rainfall, and was approximately 3,800mm during the 1987 - 1992 and 1996 - 1997 monitoring periods (Corporate Environmental Consultancy Pty Ltd, 2007). It is therefore expected that there would be little surface water flows during normal seasonal rains.

The proposed clearing activities are within the upper reaches of the Yandagooge Creek catchment, which forms a broad valley bounded by flat topped hills of the Broadhurst Range to the east, Throssell Range to the west, and Watrara Range to the south (Corporate Environmental Consultancy Pty Ltd 2007; GIS Database). The Yandagooge Creek feeds into the Coolbro creek further to the north, away from the ranges. From here, the Coolbro creek disperses water into the sandridges of the Great Sandy Desert (Corporate Environmental Consultancy Pty Ltd, 2007). The proposed clearing is not expected to increase the incidence or intensity of natural flood events, which may occasionally occur following cyclonic activity.

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

**Methodology** Corporate Environmental Consultancy Pty Ltd (2007).  
GIS Database:  
- Topographic Contours, Statewide - DOLA 12/09/02.

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

**Comments**

There is one native title claim over the area under application (GIS Database). This claim (WC96/078) has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). However, the mining tenement 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 is one registered Site of Aboriginal Significance within the area applied to clear (Site ID 11786) (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act* 1972 and ensure that no Sites of Aboriginal 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.

**Methodology** GIS Databases:  
- Aboriginal Sites of Significance - DIA 04/07/02.  
- Native Title Claims - DLI 19/12/04.

**4. Assessor's recommendations**

Purpose	Method	Applied area (ha)	Comment / recommendation
Mineral Exploration	Mechanical Removal	30.5	<p>The clearing principles have been addressed and the proposed clearing may be at variance to principle (f) and (g), is not likely to be at variance to principle (a), (b), (c), (d), (h), (i) or (j), and is not at variance to principle (e). The assessing officer recommends that the clearing permit be granted, subject to the following conditions:</p> <ol style="list-style-type: none"> <li>The Permit Holder shall record the following for each instance of clearing: <ul style="list-style-type: none"> <li>a) the location of where the clearing occurred, expressed as grid coordinates using the Geocentric Datum of Australia 1994 coordinate system;</li> <li>b) the size of the area cleared in hectares;</li> <li>c) the dates on which the area was cleared;</li> <li>d) the area rehabilitated in hectares;</li> <li>e) the method of clearing;</li> </ul> </li> </ol>

f) the purpose of clearing.

2. Prior to clearing, all areas proposed for disturbance pursuant to this Permit shall be walked and inspected by a qualified botanist who shall identify if any Declared Rare or Priority Flora species are present. Should any Declared Rare or Priority Flora species be found, these plants are to be clearly flagged and avoided.

3. Prior to clearing, the Permit Holder shall provide a report to the Director, Environment Division, of the Department of Industry and Resources, detailing the findings of the qualified botanist as described under condition 2 of this permit.

4. Prior to clearing, a qualified zoologist shall walk and inspect all areas proposed for disturbance pursuant to this Permit to identify if any active Bilby (*Macrotis lagotis*) burrows are present. If found, all active Bilby burrows are to be clearly flagged and avoided.

5. Prior to clearing, the permit holder shall provide a report to the Director, Environment Division, of the Department of Industry and Resources, detailing the findings of the qualified zoologist as described under condition 4 of this permit.

6. When undertaking any clearing, revegetation and rehabilitation, or other activity pursuant to this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of weeds:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no weed-affected road building materials, mulch, fill or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

7. The Permit Holder shall provide a report to the Director, Environment Division, Department of Industry and Resources by 30 September each year for the life of this permit, demonstrating adherence to all conditions of this permit, and setting out the records required under Condition 1 of this permit in relation to clearing carried out between 1 July and 30 June of the previous financial year.

#### **Explanatory Note:**

In this permit **qualified botanist** means a person who has had formal training and/or experience in ecology and taxonomy of the Australian flora. They shall have had a minimum of 3 years experience in the survey of Western Australian flora and vegetation.

In this permit **qualified zoologist** means a person who has had training, experience and mentoring in the area of fauna identification/fauna and faunal assemblage surveys and/or specific training in elements of survey or sampling theory and Australian fauna identification and zoogeography. They shall have had a wide exposure to Western Australia's fauna and faunal assemblages.

## **5. References**

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- Hart, Simpson and Associates Pty Ltd (1994a) Kintyre Project. Fauna Studies, 1986 - 1992. Prepared for Canning Resources Pty Ltd, October 1994.
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- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

## 6. Glossary

### Acronyms:

<b>BoM</b>	Bureau of Meteorology, Australian Government.
<b>CALM</b>	Department of Conservation and Land Management, Western Australia.
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia.
<b>DA</b>	Department of Agriculture, Western Australia.
<b>DEC</b>	Department of Environment and Conservation
<b>DEH</b>	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
<b>DEP</b>	Department of Environment Protection (now DoE), Western Australia.
<b>DIA</b>	Department of Indigenous Affairs
<b>DLI</b>	Department of Land Information, Western Australia.
<b>DoE</b>	Department of Environment, Western Australia.
<b>DoIR</b>	Department of Industry and Resources, Western Australia.
<b>DOLA</b>	Department of Land Administration, Western Australia.
<b>DoW</b>	Department of Water
<b>EP Act</b>	Environment Protection Act 1986, Western Australia.
<b>EPBC Act</b>	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
<b>GIS</b>	Geographical Information System.
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia.
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>RIWI</b>	Rights in Water and Irrigation Act 1914, Western Australia.
<b>s.17</b>	Section 17 of the Environment Protection Act 1986, Western Australia.
<b>TECs</b>	Threatened Ecological Communities.

### 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} :-

<b>P1</b>	<b>Priority One - Poorly Known taxa:</b> 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.
<b>P2</b>	<b>Priority Two - Poorly Known taxa:</b> 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.
<b>P3</b>	<b>Priority Three - Poorly Known taxa:</b> 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.
<b>P4</b>	<b>Priority Four – Rare taxa:</b> 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.
<b>R</b>	<b>Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):</b> 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.
<b>X</b>	<b>Declared Rare Flora - Presumed Extinct taxa:</b> 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] :-

<b>Schedule 1</b>	<b>Schedule 1 – Fauna that is rare or likely to become extinct:</b> being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
<b>Schedule 2</b>	<b>Schedule 2 – Fauna that is presumed to be extinct:</b> 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.