



## CLEARING PERMIT

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

<b>Purpose Permit number:</b>	CPS 2892/1
<b>Permit Holder:</b>	Main Roads Western Australia
<b>Duration of Permit:</b>	16 August 2009 – 16 August 2014

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

### **PART I – CLEARING AUTHORISED**

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

Clearing for the purpose of road construction and maintenance and associated activities.

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

LOT 10 ON PLAN 40710  
LOT 20 ON PLAN 41704  
LOT 21 ON PLAN 41704  
LOT 106 ON PLAN 20787  
LOT 107 ON PLAN 20787  
LOT 112 ON PLAN 20787  
LOT 126 ON PLAN 20787  
LOT 127 ON PLAN 20787  
LOT 566 ON PLAN 214945  
LOT 567 ON PLAN 214945  
LOT 818 ON PLAN 219629  
LOT 100 ON DIAGRAM 89580  
LOT 103 ON DIAGRAM 84352  
LOT 104 ON DIAGRAM 84352  
LOT 105 ON DIAGRAM 84352  
LOT 710 ON PLAN 220360 (CROWN LEASE 3144-640)  
LOT 1007 ON PLAN 40710 (CROWN LEASE GE J-209138)  
LOT 3001 ON PLAN 44042 (CROWN LEASE GE I-150311)  
LOT 3002 ON PLAN 44042 (CROWN LEASE GE I-150311)  
LOT 797 ON PLAN 194467 (CROWN RESERVE 47334)  
LOT 1006 ON PLAN 40710 (CROWN RESERVE 36951)  
ROAD RESERVE (PIN 11710815, LAKE ARGYLE 6743)  
ROAD RESERVE (PIN 639040, KUNUNURRA 6743)  
ROAD RESERVE (PIN 1172505, KUNUNURRA 6743)  
ROAD RESERVE (PIN 11729345, KUNUNURRA 6743)  
ROAD RESERVE (PIN 11729347, KUNUNURRA 6743)  
ROAD RESERVE (PIN 11729350, KUNUNURRA 6743)  
UNALLOCATED CROWN LAND (PIN638551, KUNUNURRA 6743)  
UNALLOCATED CROWN LAND (PIN638910, KUNUNURRA 6743)  
UNALLOCATED CROWN LAND (PIN638917, KUNUNURRA 6743)  
UNALLOCATED CROWN LAND (PIN638954, KUNUNURRA 6743)  
UNALLOCATED CROWN LAND (PIN639067, KUNUNURRA 6743)  
UNALLOCATED CROWN LAND (PIN1106715, KUNUNURRA 6743)

UNALLOCATED CROWN LAND (PIN11079536, KUNUNURRA 6743)  
UNALLOCATED CROWN LAND (PIN11079537, KUNUNURRA 6743)

**3. Area of Clearing**

The Permit Holder must not clear more than 60 hectares of native vegetation within the area hatched yellow on attached Plan 2892/1.

**4. Application**

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

**5. Type of clearing authorised**

This Permit authorises the Permit Holder to clear native vegetation for activities to the extent that the Permit Holder has the power to clear native vegetation for those activities under the *Main Roads Act 1930* or any other written law.

**6. Compliance with Assessment Sequence and Management Procedures**

Prior to clearing any native vegetation under conditions 1, 2 and 3 of this Permit, the Permit Holder must comply with the Assessment Sequence and the Management Procedures set out in Part II of this Permit.

**PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES**

**7. Avoid, minimise etc clearing**

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

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

**8. EPA Advice**

Where the Permit Holder intends to clear native vegetation under this Permit for a *project activity* that is incorporated in a proposal referred to the *EPA*, then the Permit Holder must have regard to any advice or recommendations made by the *EPA* under section 39A(7) of the *EP Act*.

**9. Fauna management**

- (a) Prior to undertaking any clearing authorised under this Permit, the area(s) shall be inspected by a *fauna specialist* who shall identify habitat/*habitat tree(s)* suitable to be utilised by:
  - (i) Orange Leaf-nosed Bat (*Rhinionictoris aurantius*);
  - (ii) Bush Stone-curlew (*Burhinus grallarius*)
  - (iii) Burdekin duck (*Tadorna radjah*)
  - (iv) Freshwater crocodile (*Crocodyus johnstoni*)
  - (v) Saltwater Crocodile (*Crocodylus porosus*)
- (b) Prior to clearing, any habitat/*habitat tree(s)* identified by condition 9(a) shall be inspected by a *fauna specialist* for the presence of fauna listed in condition 9(a).
- (c) Prior to clearing, the Permit Holder shall ensure that any fauna identified by condition 9(b) shall be removed and relocated by a *fauna clearing person*, in accordance with a licence issued by the Department.



## 10. Weed control

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

- (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 soil, *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.

## 11. Hydrology Management Strategy Plan

- (a) The Permit Holder must prepare, implement and adhere to a *management plan* designed by an *environmental specialist*, in consultation with Kununurra Department of Environment and Conservation staff, to avoid, mitigate and / or manage the hydrology of areas identified as being in association with populations of *Typhonium* sp Kununurra (Priority 1).
- (b) The *management plan* must be developed having regard to the Permit Holder's commitment to conserve *Typhonium* sp Kununurra (Priority 1) and must involve, at a minimum, the following steps in relation to areas identified as being in association with populations of *Typhonium* sp Kununurra (Priority 1):
  - (i) Analysis of current hydrological flows within areas identified;
  - (ii) Management actions for preventing, controlling and abating changes to the hydrological flow within areas identified; and
  - (iii) Ongoing maintenance and monitoring of hydrological flows within areas identified.
- (c) Once the Permit Holder has developed a *management strategy*, the Permit Holder must provide that *management strategy* to the CEO for approval prior to undertaking any clearing authorised under this permit, and prior to implementing the *management strategy*.

## 12. Retain vegetative material and topsoil, revegetation and rehabilitation

- (a) The Permit Holder shall retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
- (b) Within six months of the area no longer being required for road maintenance or associated activities, the Permit Holder must *revegetate* and *rehabilitate* the area cross-hatched yellow on attached Plan 2892/1 by:
  - (i) laying the vegetative material and topsoil retained under condition 12(a) on the cleared area;
  - (ii) deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area; and
  - (iii) ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate* the area.
- (c) Within twelve months of undertaking *revegetation* and *rehabilitation* in accordance with condition 12(b) of this Permit, the Permit Holder must:
  - (i) determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and

- (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 12(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the Permit Holder must undertake additional *planting* or *direct seeding* of native vegetation in accordance with the requirements of condition 12(b)(ii) and (iii) of this Permit.

### **PART III - RECORD KEEPING AND REPORTING**

#### **13. Records to be kept**

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

- (a) In relation to the clearing of native vegetation authorised under this Permit:
- (i) the species composition, structure and density of the cleared area;
  - (ii) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
  - (iii) the date that the area was cleared; and
  - (iv) the size of the area cleared (in hectares).
- (b) In relation to fauna management pursuant to condition 9 of this Permit:
- (i) the location of each habitat/habitat tree identified recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
  - (ii) the species of fauna reasonably likely to utilise, or that have been observed utilising, the habitat/habitat tree(s); and
  - (iii) the location and date where relocated fauna was released, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings.
- (c) In relation to hydrology management pursuant to condition 11 of this Permit:
- (i) the hydrological flow data obtained under condition 11 b(i).
  - (ii) the management options implemented for preventing, controlling or abating hydrological change as identified under condition 11 b(ii)
  - (iii) any ongoing maintenance and monitoring information undertaken in accordance with condition 11 b(iii).
- (d) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 12 of this Permit:
- (i) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
  - (ii) a description of the *revegetation* and *rehabilitation* activities undertaken;
  - (iii) the size of the area *revegetated* and *rehabilitated* (in hectares); and
  - (iv) the species composition, structure and density of *revegetation* and *rehabilitation*.

#### **14. Reporting**

- (a) The Permit Holder must provide to the CEO, on or before 30 June of each year, a written report of records required under condition 13 of this Permit and activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding year.
- (b) Prior to 16 April 2014, the Permit Holder must provide to the CEO a written report of records required under condition 13 of this Permit where these records have not already been provided under condition 14(a) of this Permit.



## Definitions

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

**clearing principles** means the principles for clearing native vegetation set out in Schedule 5 of the *Environmental Protection Act 1986*;

**direct seeding** means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

**fauna clearing person** means a person who has obtained a licence from the *Department*, issued pursuant to the *Wildlife Conservation Regulations 1970* authorising them to take fauna;

**fauna specialist** means a person with training and specific work experience in fauna identification or faunal assemblage surveys of Western Australian fauna;

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

**environmental specialist** means a person who is engaged by the Permit Holder for the purpose of providing environmental advice, who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit;

**EP Act** means the *Environmental Protection Act 1986*;

**EPA** means the Western Australian Environmental Protection Authority;

**habitat tree(s)** means trees that have a diameter, at average adult human chest height, of greater than 70cm, healthy but with dead limbs and broken crowns that are likely to contain hollows and roosts suitable for native fauna, or where these are not present then healthy but with the potential to contain hollows and roosts;

**hydrologist** a person who is engaged by the Permit Holder for the purpose of providing *hydrology* advice, who holds a tertiary qualification in *hydrology* or equivalent, and has experience relevant to the type of *hydrology* advice that a *hydrologist* is required to provide under this Permit;

**hydrology** means the science of dealing with water on the land, or under the earth's surface, its properties, laws, geographical distributions etc.;

**local provenance** means native vegetation seeds and propagating material from natural sources within 10-40 kilometres of the area cleared;

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

**optimal time** means the period from October to December for undertaking *direct seeding*, and no undertaking of *planting* without irrigation;

**planting** means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

**priority flora taxa** means those plant taxa that described as priority flora classes 1, 2, 3 or 4 in the *Department's Declared Rare and Priority Flora List for Western Australia* (as amended);

**project activities** means those activities described in condition 8(a) of this Permit;

**referred** means referred to the Environmental Protection Authority under Part IV of the *Environmental Protection Act 1986*;

*regenerate/ed/ion* means *revegetation* that can be established from in situ seed banks contained either within the topsoil or seed-bearing *mulch*;

*rehabilitate/ed/ion* means actively managing an area containing native vegetation in order to improve the ecological function of that area;

*revegetate/ed/ion* means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area;

*term* means the duration of this Permit, including as amended or renewed; and

*weed/s* means a species listed in Appendix 3 of the "Environmental Weed Strategy" published by the Department of Conservation and Land Management (1999), and plants declared under section 37 of the *Agricultural and Related Resources Protection Act 1976*.



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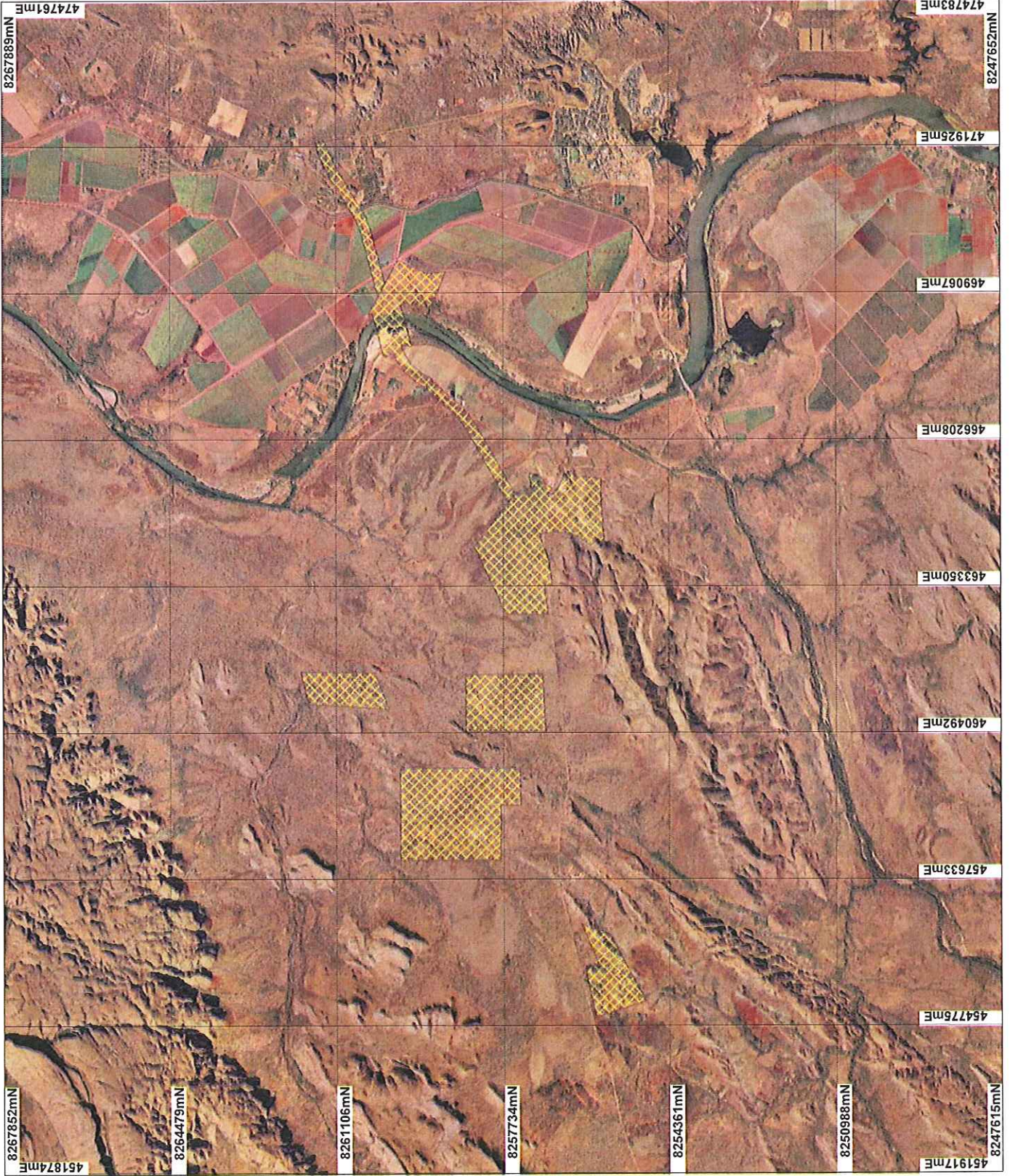
Keith Claymore  
A/ ASSISTANT DIRECTOR  
NATURE CONSERVATION DIVISION

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

16 July 2009



# Plan 2892/1



## LEGEND

Claymore Instrument  
Cadastral  
Karratha 50can Cr  
2005



0 3 km

Scale 1:104072  
(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the date in this map have not been projected. This may result in geometric distortion of measurement inaccuracies.

*Kirsty Jaymes*, Date *16/11/07*  
K Claymore

Officer with delegated authority under Section 20 of the Environmental Protection Act, 1986

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.



Department of Environment and Conservation

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## 1. Application details

### 1.1. Permit application details

Permit application No.: 2892/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Main Roads Western Australia (MRWA)

### 1.3. Property details

Property: ROAD RESERVE ( KUNUNURRA 6743)  
LOT 127 ON PLAN 20787 (Lot No. 127 WEABER PLAIN KUNUNURRA 6743)  
LOT 106 ON PLAN 20787 (Lot No. 106 WEABER PLAIN KUNUNURRA 6743)  
LOT 106 ON PLAN 20787 (Lot No. 106 WEABER PLAIN KUNUNURRA 6743)  
LOT 107 ON PLAN 20787 ( KUNUNURRA 6743)  
LOT 107 ON PLAN 20787 ( KUNUNURRA 6743)  
LOT 112 ON PLAN 20787 ( KUNUNURRA 6743)  
LOT 112 ON PLAN 20787 ( KUNUNURRA 6743)  
LOT 100 ON DIAGRAM 89580 ( KUNUNURRA 6743)  
LOT 103 ON DIAGRAM 84352 ( KUNUNURRA 6743)  
LOT 103 ON DIAGRAM 84352 ( KUNUNURRA 6743)  
LOT 104 ON DIAGRAM 84352 ( KUNUNURRA 6743)  
LOT 105 ON DIAGRAM 84352 ( KUNUNURRA 6743)  
LOT 105 ON DIAGRAM 84352 ( KUNUNURRA 6743)  
LOT 584 ON PLAN 215033 ( KUNUNURRA 6743)  
ROAD RESERVE ( KUNUNURRA 6743)  
LOT 661 ON PLAN 187706 ( KUNUNURRA 6743)  
LOT 126 ON PLAN 20787 ( KUNUNURRA 6743)  
LOT 144 ON PLAN 25251 (Lot No. 144 WHIMBREL KUNUNURRA 6743)  
LOT 144 ON PLAN 25251 (Lot No. 144 WHIMBREL KUNUNURRA 6743)  
LOT 915 ON PLAN 28481 ( KUNUNURRA 6743)  
LOT 915 ON PLAN 28481 ( KUNUNURRA 6743)  
LOT 818 ON PLAN 219629 ( KUNUNURRA 6743)  
ROAD RESERVE ( KUNUNURRA 6743)  
LOT 898 ON PLAN 28476 ( KUNUNURRA 6743)  
LOT 6 ON PLAN 15631 ( KUNUNURRA 6743)  
LOT 567 ON PLAN 214945 ( KUNUNURRA 6743)  
LOT 567 ON PLAN 214945 ( KUNUNURRA 6743)  
ROAD RESERVE ( KUNUNURRA 6743)  
LOT 566 ON PLAN 214945 ( KUNUNURRA 6743)  
UNALLOCATED CROWN LAND ( KUNUNURRA 6743)  
LOT 1006 ON PLAN 40710 ( KUNUNURRA 6743)  
UNALLOCATED CROWN LAND ( KUNUNURRA 6743)  
LOT 1007 ON PLAN 40710 ( KUNUNURRA 6743)  
LOT 1008 ON PLAN 40710 ( KUNUNURRA 6743)  
LOT 10 ON PLAN 40710 ( KUNUNURRA 6743)  
LOT 878 ON PLAN 218508 ( KUNUNURRA 6743)  
LOT 3001 ON PLAN 44042 ( KUNUNURRA 6743)  
LOT 20 ON PLAN 41704 ( KUNUNURRA 6743)  
LOT 21 ON PLAN 41704 ( KUNUNURRA 6743)  
LOT 3002 ON PLAN 44042 ( KUNUNURRA 6743)  
LOT 3000 ON PLAN 44042 ( KUNUNURRA 6743)  
LOT 3000 ON PLAN 44042 ( KUNUNURRA 6743)  
LOT 710 ON PLAN 220360 ( LAKE ARGYLE 6743)  
LOT 710 ON PLAN 220360 ( LAKE ARGYLE 6743)  
UNALLOCATED CROWN LAND ( KUNUNURRA 6743)



UNALLOCATED CROWN LAND ( KUNUNURRA 6743)  
 LOT 710 ON PLAN 220360 ( LAKE ARGYLE 6743)  
 LOT 710 ON PLAN 220360 ( LAKE ARGYLE 6743)  
 ROAD RESERVE ( LAKE ARGYLE 6743)  
 LOT 797 ON PLAN 194467 ( LAKE ARGYLE 6743)  
 Shire Of Wyndham-East Kimberley

Local Government Area:

Colloquial name:

#### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
60		Mechanical Removal	Road construction or maintenance

## 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
Beard Vegetation Units:	The proposal is to clear 60 hectares of native vegetation for the purpose of constructing the first phase of the Kununurra Heavy Vehicle Route (clearing areas include the upgrading of a roadway and several borrow pits).	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)	The condition of the vegetation was determined from the Flora and Fauna Survey conducted in March 2008. (GHD, 2008) and confirmed by a site inspection of the applied area.
52 - Sedgeland; reed swamps, occasionally with heath			
59 - Grasslands, high grass savanna sparse tree; bauhinia & coolabah over mitchell, blue & tall upland grasses	The vegetation under application varies from Very good to Good (Keighery, 1994) condition, with evidence of some fire disturbance and limited introduced species. Some areas under application (such as the agricultural areas) are impacted by greater levels of disturbance (GHD, 2008)		
901 - Grasslands, high grass savanna woodland; stringybark & woollybutt over upland tall grass & curly spinifex			
909 - Grasslands, high grass savanna woodland; bloodwood, stringybark & woollybutt over upland tall grass & curly spinifex on sandplain			

## 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 at variance to this Principle**

The proposal is to clear 60 hectares of native vegetation within and west of the Kununurra town site in order to upgrade existing roads as part of the Kununurra Heavy Vehicle Route Project.

There are 13 threatened or priority fauna species likely to occur within the applied area as well as 4 priority flora species identified within the survey area (Flora and Fauna Survey, 2008; DEC, 2009a) with an additional 4 priority flora species identified by a desktop assessment as in close proximity to the applied area and which may occur within the applied area.

One of the priority flora species recorded within the applied area, *Typhonium* sp Kununurra, has been nominated to be listed as a rare flora (DEC, 2009b). The applicant has advised that clearing will not occur within close proximity of this priority flora as the substrate is not suitable as road building material. The applicant has also recommended hydrology management actions to be undertaken in order to mitigate the potential of clearing to impact on this species (Main Roads, 2009).

Given that the area under application is likely to include genetically unique flora and provide habitat for numerous indigenous fauna species of conservation significance, the vegetation under application is considered to have a high level of biodiversity.

Therefore the clearing as proposed is at variance to this principle.

**Methodology**      **References:**  
 DEC (2009a)  
 DEC (2009b)

GHD (2008)  
Main Roads (2009)

GIS Database:  
SAC Bio Datasets accessed 29 January 2009

**(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**

The local area (20km radius) is well vegetated with approximately 85% of native vegetation remaining. The applied area is located within and west of the Kununurra town site (this townsite has been highly cleared for agricultural purposes).

There are 9 threatened and priority fauna which have been recorded within the local area (20km radius) as well as an additional 10 identified as may or likely to occur within the applied area (GHD, 2008; DEC, 2009a).

A desktop assessment of the applied area identified the Orange Leaf-nosed Bat (Vulnerable fauna species) as being recorded in one roost within the original application area (Dunham River Cave; DEC, 2009d). This species is also known to roost in hollows of mature eucalypts (DEC, 2009d). The applicant has since advised that they do not intend to access these areas (GHD, 2009) to remove road building material and thus the roost site and a buffer have been excised from the application area.

A Bush Stonecurlew was also recorded within the area under application; this species is largely nocturnal and nests on the ground. A Flora and Fauna Survey of the applied area identified that more extensive surveying was required to determine if this species was present within the survey area (GHD, 2008).

In addition, the fauna survey identified a pair of Burdekin ducks and Freshwater crocodiles within the applied area (GHD, 2008).

While the fauna survey did not identify the following species it is also considered possible and/or likely that these species will occur within the applied area; Saltwater Crocodile, Bandicoot, Magpie Goose, Black Flying Fox, Little Red Flying Fox, Gouldian Finch, Northern Shrike Tit, Little Bittern, Purple-crowned Fairy Wren, Water Rat (Rakali), Partridge Pigeon (eastern ssp.) and the Australian Painted Snipe (GHD, 2008; DEC 2009a).

Other fauna indigenous to Western Australia are also likely to occur within the project area as the vegetation under application contains many watercourses where suitable vegetation and habitat for fauna occurs for large portions of the year.

Given that the applied area has been amended to exclude a known roost site for the Orange leaf-nosed bat and taking into account that the application area may provide significant habitat for other conservation significant species, the vegetation under application may be at variance to this principle.

A fauna condition will be placed on the permit to mitigate the potential for clearing to impact on native fauna occurring within the application area.

**Methodology** References:  
DEC (2009a)  
DEC (2009d)  
GHD (2008)  
GHD (2009)

GIS Database:  
SAC Bio Datasets accessed 29 January 2009

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

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

There are no rare flora recorded within the local area (20km radius), however Typhonium sp Kununurra (Priority 1) has been recorded in close proximity to the applied area (DEC, 2009a, DEC, 2009b). This species has been nominated to the TSS Committee to be listed as rare flora (DEC, 2009b).

Typhonium sp Kununurra is known from 99 individual plant records (DEC, 2009b) the majority of which occur in 20 km of the applied area.

A Flora and Fauna Survey (GHD, 2008) of the applied area identified approximately 40 Typhonium sp. Kununurra plants north of the proposal area on black soil swamp. While the populations identified are not likely to be new populations of this species the population is highly significant to the continued survival of this species



(DEC, 2009b).

Typhonium sp. Kununurra is known only to occur on black soils, and is known to be dependant on the hydrological regime of the local area. Hydrological flow originates from the Ord River in the south east, and moves to the north west. The clearing as proposed occurs in this south east area and thus creation of the road way may result in down stream changes to the overall hydrology of the local area and thus populations of water dependant flora such as Typhonium sp. Kununurra.

Given that this species may be listed as a rare flora within the time clearing will occur and that the clearing may directly and indirectly impact on individual plants and habitat for this species, the clearing as proposed may be at variance to this principle.

The applicant has advised that clearing will not occur within close proximity of this priority flora as the substrate is not suitable as road building material. The applicant has also recommended hydrology management actions to be undertaken in order to mitigate the potential of clearing to impact on this species (Main Roads, 2009).

The area in which Typhonium sp Kununurra has been identified has been excised from the application area in order to ensure no direct impact on this species occurs as a result of this proposal.

Hydrology Management Conditions will be placed on the permit to manage the potential indirect impact of changes to local hydrological regime in Typhonium sp Kununurra.

**Methodology** References:  
DEC (2009b)  
GHD (2008)  
Main Roads (2009)

GIS Database:  
SAC Bio Datasets accessed 29 January 2008

**(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 recorded occurrences of Threatened Ecological Communities (TECs) within the local area (20km radius).

Therefore the clearing as proposed is not likely to be at variance to this principle.

**Methodology** GIS Database:  
SAC Bio Datasets accessed 5 January 2009

**(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 likely to be at variance to this Principle**  
The local area (20km radius) retains approximately 85% native vegetation with all mapped vegetation types retaining above 88% vegetation cover (of the pre-European extent) statewide and within the Victoria Bonaparte Bioregion (Hopkins et al., 2001; Shepherd et al., 2001; Shepherd, 2007).

Part of the applied area is within the Kununurra town site, an area which has been highly cleared for residential and rural uses however the vegetation under application within the townsite is highly disturbed and not likely to be significant vegetation.

Given that the vegetation under application is not considered to be significant in a highly cleared landscape the proposal is not likely to be at variance to this principle.

**Methodology** References:  
Hopkins et al. (2001)  
Shepherd et al. (2001)  
Shepherd (2007)

GIS Database:  
Interim Biogeographic Regionalisation of Australia - EA 18/10/00  
Local Government Authorities - DLI 8/07/04  
Pre European Vegetation - DA 01/01  
SAC Biodatasets - accessed 29 Jan 2009

**(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 area under application is intersected by numerous minor non perennial watercourses and drains/channels.  
  
In addition, part of the applied area intersects the Ord River (Lake Kununurra) as the proposal involves expanding existing infrastructure over the Ord River.  
  
Given that the proposal includes the removal of vegetation growing in and in association with watercourses and wetlands the clearing is at variance with this principle.

**Methodology**    GIS Database:  
ANCA wetlands - Environment Australia 26/3/99  
EPP Lakes Policy Area - DEP 14/05/97  
Clearing Regulations, Environmentally Sensitive Areas 30 May 2005  
Hydrography linear - DOW 13/7/06  
Hydrography linear (hierarchy) - DoW 13/7/06  
Ramsar wetlands - DEC 03

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

**Comments**      **Proposal is at variance to this Principle**  
Part of the area under application includes area of high relief (cliff). Clearing of these areas is likely to result in degradation of the landforms in the immediate vicinity.  
  
In addition, the applied area covers the Ord River and its banks. Clearing of these areas, particularly in the wet season, is likely to result in sedimentation of the Ord River (DEC, 2009a).  
  
Clearing associated with the borrow pits is likely to result in wind erosion due to the scale of the clearing and loose A horizon soils of the applied area.  
  
Given the above the clearing as proposed is likely to result in appreciable land degradation, the clearing as proposed is at variance to this principle.  
  
Revegetation conditions will be placed on the permit to minimise the potential of clearing to result in appreciable land degradation.

**Methodology**    References:  
DEC (2009a)  
  
GIS Database:  
Average Annual Rainfall Isohyets - WRC 29/09/98  
Annual Evaporation Contours (Isopleths) - WRC 29/09/98  
Hydrogeology, statewide DOW 13/07/06  
Hydrographic catchments, catchments - DoW 01/06/07  
Hydrography, linear - DOW 13/7/06  
Salinity Risk LM 25m - DOLA 00  
Soils, Statewide DA 11/99  
Topographic contours statewide - DOLA and ARMY 12/09/02

**(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 at variance to this Principle**  
The area under application includes the Ord River area identified as an ANCA wetland (ANCA, 1996; DEC, 2009a).  
  
Moringa oleifera is a known weed in the local area and is likely to occur within the applied area.  
  
As the applied area is likely to include weed species the clearing as proposed is likely to degrade the environmental values of the Ord River conservation area.  
  
Therefore the clearing as proposed is at variance to this principle.  
  
Weed management conditions will be placed on the permit to mitigate the potential for weeds to spread into conservation areas as a result of the proposal.



**Methodology** References:  
ANCA (1996)  
DEC (2009a)

GIS Database:  
ANCA wetlands - Environment Australia 26/3/99  
CALM Managed Lands and Waters - CALM 01/06/05  
Hydrography, linear - DOW 13/7/06  
Register of National Estate - Environment Australia, Australian and world heritage division 12 Mar 02  
System 1 to 5 and 7 to 12 areas DEC 11/7/06

**(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 at variance to this Principle**

The area under application includes many minor watercourses, drains, channels and intersects the Ord River.

Removal of vegetation in association with these watercourses is likely to increase sedimentation (DEC, 2009a) and turbidity of the waters and cause erosion (wind and water) of the watercourse banks as a result of the clearing (DAFWA, 2009).

Given the above the clearing as proposed is at variance to the principle.

**Methodology** References:  
DAFWA (2009)  
DEC (2009a)

GIS Database:  
Evapotranspiration Isopleths - WRC 29/09/98  
Groundwater Salinity Statewide DoW 13/07/06  
Hydrographic catchments, catchments - DoW 01/06/07  
Hydrography, linear - DOW 13/7/06  
Mean Annual Rainfall Isohytes (1975 - 2003) - DEC 02/08/05  
Salinity Risk LM 25m - DOLA 00  
Topographic Contours, Statewide - DOLA 12/09/02

**(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 area under application receives approximately 800 to 900mm rainfall annually with approximately 700mm of evapotranspiration annually.

Given that the local area is dissected with many non - perennial watercourses and taking into account the high vegetation representation (approximately 85%) of the local area (20km radius), the clearing as proposed is not likely to cause an increase in the incidence or intensity of flooding in the local area.

Therefore the clearing as proposed is not likely to be at variance with this principle.

**Methodology** GIS Database:  
Hydrographic catchments, catchments - DoW 01/06/07  
Hydrography, linear - DoW 13/7/06  
Mean Annual Rainfall Isohytes (1975 - 2003) - DEC 02/08/05  
Topographic Contours, Statewide - DOLA 12/09/02

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

**Comments**

The area under application is approximately 4.4 km north west of a priority 1 Public Drinking Water Source Area (PDWSA). The proposed clearing is not likely to cause deterioration in the quality of water flowing into this PDWSA as the proposed clearing is downstream of the PDWSA.

The area under application is within Rights in Water and Irrigation Act 1914 areas (Groundwater and Irrigation District). Given that the proposal area includes many watercourses, a permit to interfere with Beds and Banks, a licence to take groundwater and a licence to take surface water are required from the Department of Water (DoW).

The applicant referred the project to the EPA for consideration under Part IV of the Environmental Protection Act 1986 in December 2008 (DOC73461). A decision on the level of assessment has been set at Not Assessed

Public Advice Given and Managed under Part V of the EP Act (Clearing).

The occurrence of *Typhonium* sp. Kununurra within a nearby rural-residential subdivision has led to the excision of 12.3 hectares to create a reserve for the protection of this species (DEC, 2009c).

A number of the Material Investigation Pits contain soil or substrate that is not suitable for use as road fill, such as black soil and cliff. Some of these areas have been excised from the application area and the applicant advises that they do not intend to enter areas which do not contain suitable road building material resource (Main Roads, 2009).

**Methodology**

References:

DEC (2009a)

DEC (2009c)

Main Roads (2009)

GIS Database:

Cadastre - Landgate Dec 07

Native Title Claims - LA 2/5/07

RIWI Act, Groundwater Areas - DoW 13/07/06

RIWI Act, Irrigation Districts - DoW 13/07/06

Town Planning Scheme Zones - MFP 31/08/98

Aboriginal Sites of Significance 26 April 2007

Public Drinking Water Source Areas (PDWSAs) 07/02/06

#### 4. Assessor's comments

**Comment**

The application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the Environmental Protection Act 1986, and the proposed clearing is at variance to Principles (a), (f), (g), (h) and (i), may be at variance to principles (b) and (c) and is not likely to be at variance to the remaining clearing Principles.

#### 5. References

- ANCA (1996) A Directory of Important Wetlands in Australia. Second Edition. Australian Nature Conservation Agency, Canberra
- DAFWA (2009) Land Degradation Advice. Commissioner of Soil and Land Conservation., Department of Food and Agriculture Western Australia, DEC TRIM Ref: DOC76335.
- DEC (2009a) Kimberley Regional Advice. Department of Environment and Conservation. TRIM ref DOC73781.
- DEC (2009b) Flora Advice. Department of Environment and Conservation. Trim Ref DOC74683.
- DEC (2009c) Additional Flora Advice. Department of Environment and Conservation. Trim Ref DOC74684.
- DEC (2009d) Kimberley Regional Additional Advice. Department of Environment and Conservation. Trim Ref DOC75097.
- Flora and Fauna Survey (2008) Kununurra Heavy Vehicle Route flora and fauna survey, prepared by GHD Consultancy for Main Roads Western Australia. DOC75092.
- GHD (2008) Flora and Fauna Survey conducted by GHD Consultancy on behalf of Main Roads Western Australia, DOC75092
- GHD (2009) Targeted Flora and Fauna Survey conducted by GHD Consultancy on behalf of Main Roads Western Australia, DOC83337
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Main Roads (2009) Response to letter from DEC from Main Roads Western Australia, DOC83326
- Shepherd, D.P. (2007). Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth. Includes subsequent updates for 2006 from Vegetation Extent dataset ANZWA1050000124.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

#### 6. Glossary

Term	Meaning
BCS	Biodiversity Coordination Section of DEC
CALM	Department of Conservation and Land Management (now BCS)
DAFWA	Department of Agriculture and Food
DEC	Department of Environment and Conservation
DEP	Department of Environmental Protection (now DEC)



DoE	Department of Environment
DoIR	Department of Industry and Resources
DRF	Declared Rare Flora
EPP	Environmental Protection Policy
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
TEC	Threatened Ecological Community
WRC	Water and Rivers Commission (now DEC)