GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 6828/1
Permit Holder:	Shire of Wyndham East Kimberley
Duration of Permit:	19 January 2018 – 19 January 20123

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 upgrades, gravel extraction and associated activities.

2. **Land on which clearing is to be done**
   Lot 1549 on Plan 68249, Drysdale River
   Lot 17 on Plan 26267, Drysdale River
   Lot 18 on Plan 220604, Drysdale River
   Lot 19 on Plan 238153, Drysdale River
   Lot 20 on Plan 238153, Drysdale River
   Lot 21 on Plan 241779, Drysdale River
   Lot 301 on Plan 58300, Drysdale River
   Lot 39 on Plan 219612, Drysdale River
   Lot 44 on Plan 195034, Drysdale River
   Stock Route (PIN 640114, PIN 640151), Drysdale River
   Unallocated Crown Land (PIN 640122), Drysdale River
   Derby-Gibb River road reserve (PIN 11084412), Gibb
   Lot 17 on Plan 221086, Gibb
   Stock Route (PIN 639631), Gibb

3. **Area of Clearing**
   The Permit Holder must not clear more than 293 hectares of native vegetation within the area hatched yellow on attached Plans 6828/1a-6828/1j.

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 the activities described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for those activities under the *Local Government Act 1995* or any other written law.

PART II – MANAGEMENT CONDITIONS

6. 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.

7. 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.

8. Flora Management

Where *priority flora* have been identified and their written location(s), provided to the CEO, within the report **Kalumburu – Gibb River Road Supporting Information, 31 July 2017, Version 1**, the Permit Holder shall ensure that:

(a) no clearing within 50 metres of the identified *priority flora* occurs; and
(b) no clearing of the identified *priority flora* occurs.

9. Retain vegetative material and topsoil, revegetation and rehabilitation

The Permit Holder shall:

(a) 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 12 months following clearing authorised under this permit, *revegetate* and *rehabilitate* the area(s) that are no longer required for the purpose for which they were cleared under this Permit by:

  (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land; and
  (ii) ripping the ground on the contour to remove soil compaction; and
  (iii) laying the vegetative material and topsoil retained under condition 9(a) on the area(s) that are no longer required for the purpose for which they were cleared.

(c) within 24 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 9(b) of this Permit:

  (i) engage an *environmental specialist* to 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 9(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, *revegetate* the area by 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 ensuring only *local provenance* seeds and propagating material are used.

PART III - RECORD KEEPING AND REPORTING

10. 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 location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (ii) the date that the area was cleared;
- (iii) the size of the area cleared (in hectares); and
- (iv) the purpose for which clearing was undertaken.

(b) In relation to the **revegetation and rehabilitation** of areas pursuant to condition 9 revegetation and rehabilitation condition 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 or decimal degrees;
- (ii) a description of the revegetation and rehabilitation activities undertaken; and
- (iii) the size of the area revegetated and rehabilitated (in hectares).
- (iv) the species composition, structure and density of revegetation and rehabilitation, and
- (v) a copy of the environmental specialist's report.

11. Reporting

(a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:
- (i) of records required under condition 10 of this Permit; and
- (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.

(b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.

(c) Prior to 19 October 2022, the Permit Holder must provide to the CEO a written report of records required under condition 10 of this Permit where these records have not already been provided under condition 11(a) of this Permit.

DEFINITIONS

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

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;

environmental specialist: means a person 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, or who is approved by the CEO as a suitable environmental specialist.

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

local provenance means native vegetation seeds and propagating material from natural sources within **200** kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion 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;

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

priority flora means those plant taxa described as priority flora classes 1, 2, 3, 4 or 5 in the *Department of Biodiversity, Conservation and Attractions Threatened and Priority Flora List for Western Australia* (as amended);

regenerate/ed/ion means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) 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 natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.

weed/s means any plant -

(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
(b) published in a Department of Parks and Wildlife Regional Weed Rankings Summary, regardless of ranking; or
(c) not indigenous to the area concerned.

James Widenbar
MANAGER
CLEARING REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

19 December 2017

Plan 6828/1a

Legend

- Areas approved to clear
- Cadastre
- Roads
- LGA

Virtual Mosaic (LGATE-V001)

N

1:100,000

MGA 94
Geocentric Datum of Australia 1994

.....Date 19/12/17

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

GOVERNMENT OF WESTERN AUSTRALIA

Plan 6828/1b

Legend

- Areas approved to clear
- Cadastre
- Roads
- LGA

Virtual Mosaic (LGATE-V001)

N

1:100,000

MGA 94
Geocentric Datum of Australia 1994

.....Date. 19/12/17

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

GOVERNMENT OF WESTERN AUSTRALIA

Plan 6828/1c

Legend

- Areas approved to clear
- Cadastre
- Roads
- LGA

Virtual Mosaic (LGATE-V001)

N

1:100,000

MGA 94
Geocentric Datum of Australia 1994

.....Date...19/12/17

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

GOVERNMENT OF WESTERN AUSTRALIA

Plan 6828/1d

Legend

- Areas approved to clear
- Cadastre
- Roads
- LGA

Virtual Mosaic (LGATE-V001)

N

1:100,000

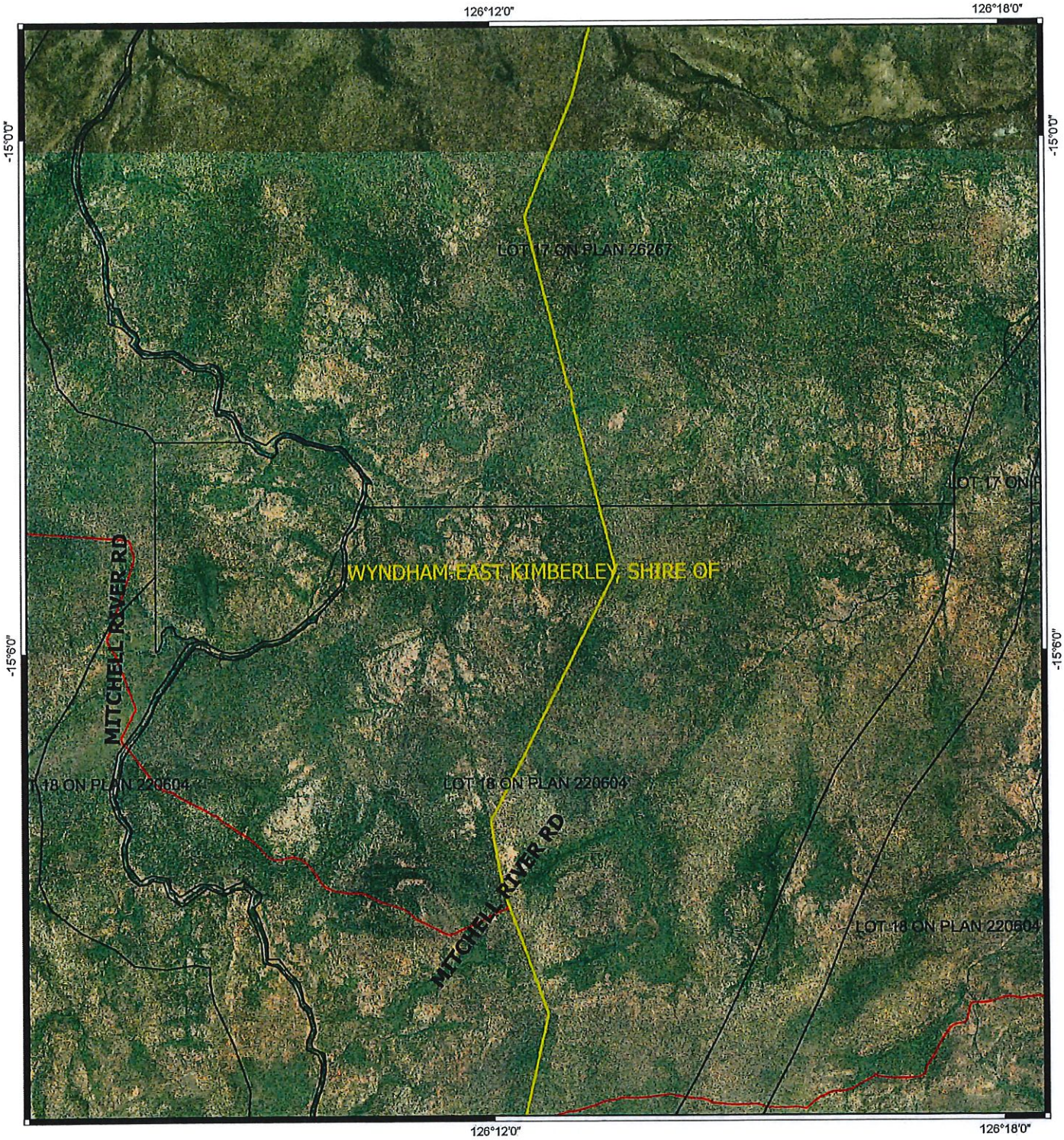
MGA 94
Geocentric Datum of Australia 1994

.....Date..19/12/11

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

GOVERNMENT OF WESTERN AUSTRALIA

Plan 6828/1e



Legend

- Areas approved to clear
- Cadastre
- Roads
- LGA

Virtual Mosaic (LGATE-V001)

N

1:100,000

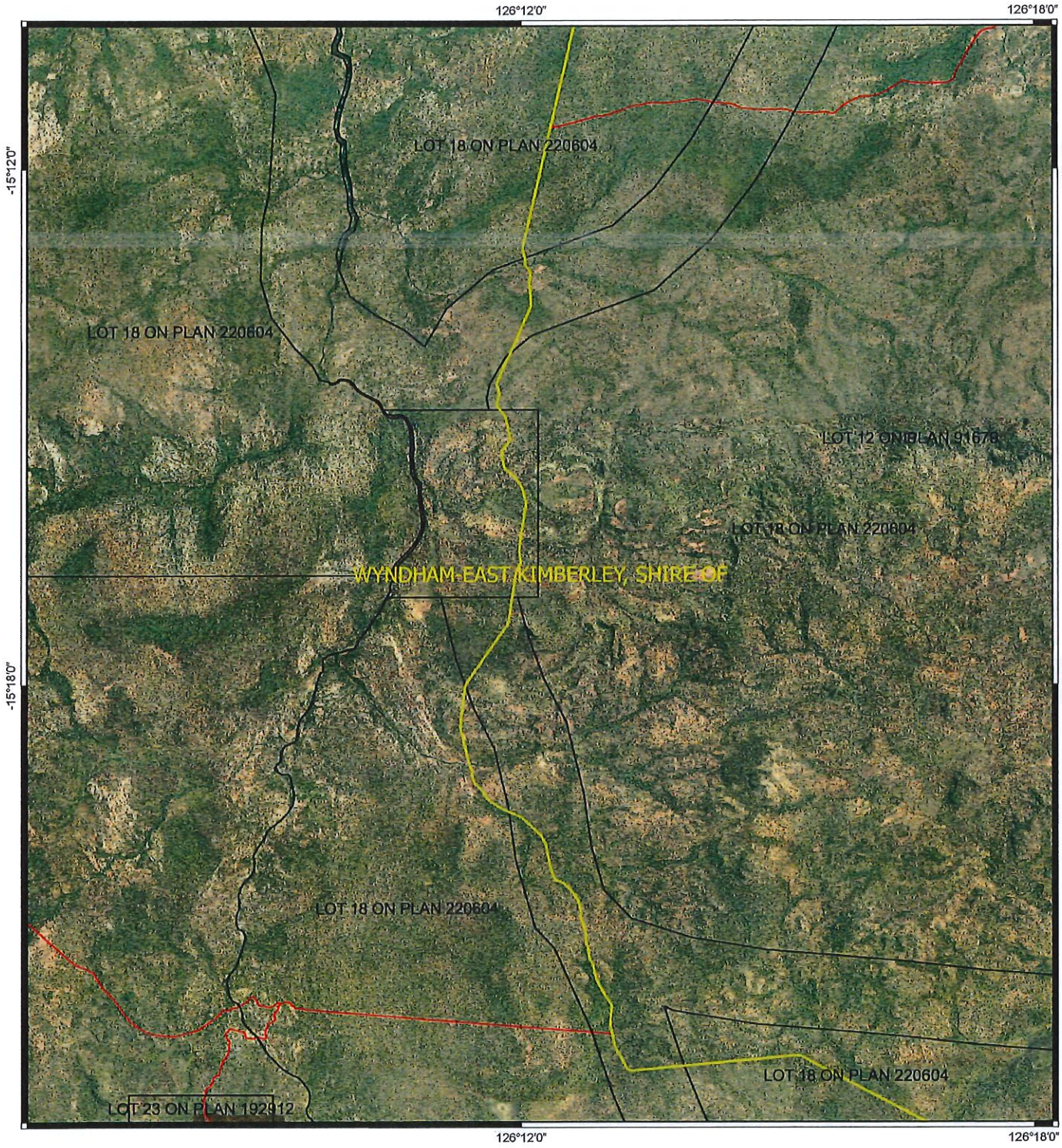
MGA 94
Geocentric Datum of Australia 1994

.....Date...19/12/17

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

GOVERNMENT OF
WESTERN AUSTRALIA

Plan 6828/1f



Legend

- Areas approved to clear
- Cadastre
- Roads
- LGA

Virtual Mosaic (LGATE-V001)

N

1:100,000

MGA 94
Geocentric Datum of Australia 1994

.....Date 19/12/17

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

GOVERNMENT OF WESTERN AUSTRALIA

Plan 6828/1g

Legend

- Areas approved to clear
- Cadastre
- Roads
- LGA

Virtual Mosaic (LGATE-V001)

N

1:100,000

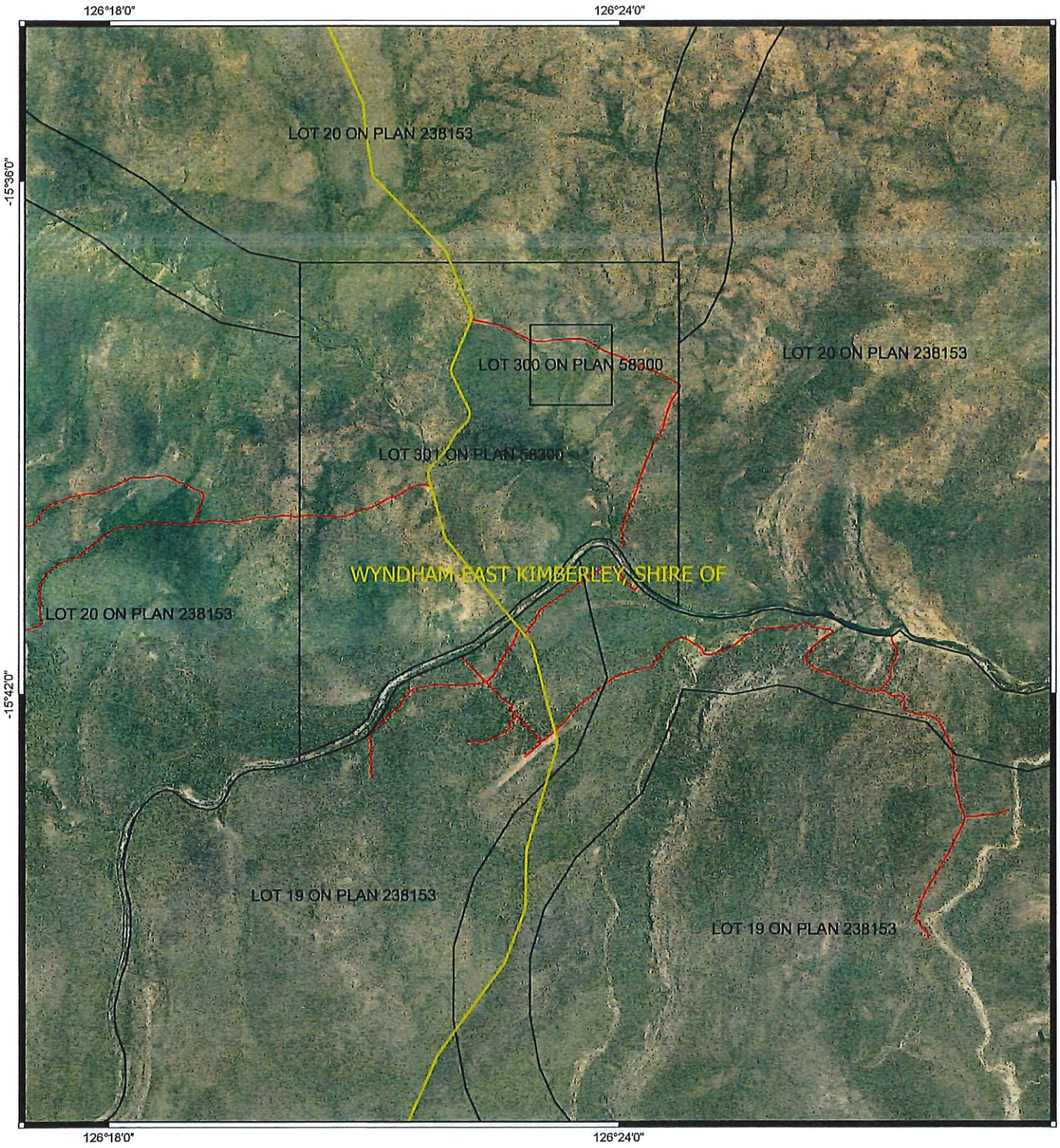
MGA 94
Geocentric Datum of Australia 1994

.....Date. 29/12/17

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

GOVERNMENT OF WESTERN AUSTRALIA

Plan 6828/1h



Legend

- Areas approved to clear
- Cadastre
- Roads
- LGA

Virtual Mosaic (LGATE-V001)

N

1:100,000

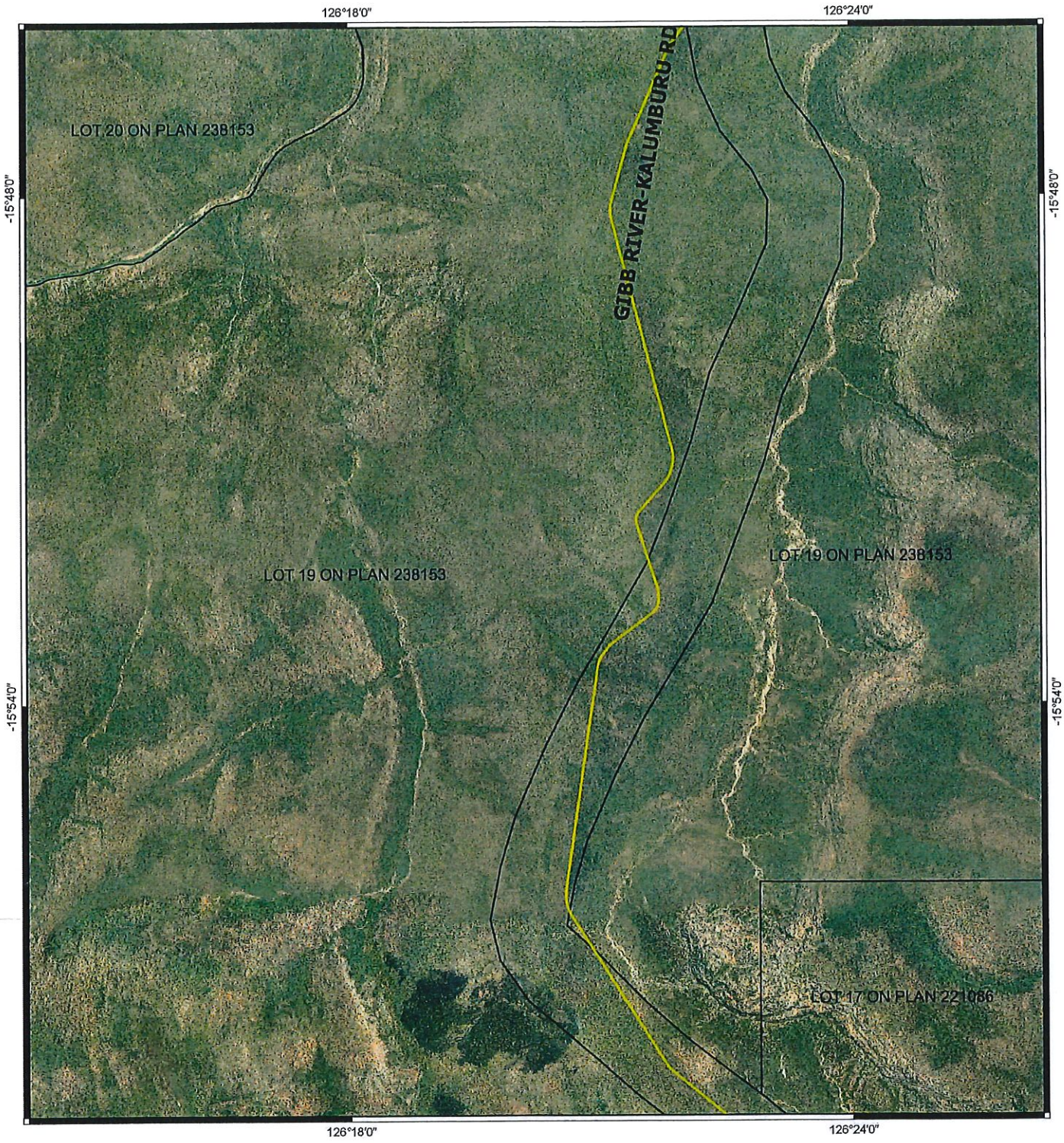
MGA 94
Geocentric Datum of Australia 1994

.....Date 19/12/17

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

GOVERNMENT OF WESTERN AUSTRALIA

Plan 6828/1i



Legend

- Areas approved to clear
- Cadastre
- Roads
- LGA

Virtual Mosaic (LGATE-V001)

N

1:100,000

MGA 94
Geocentric Datum of Australia 1994

.....Date. 19/12/17

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

GOVERNMENT OF
WESTERN AUSTRALIA

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6828/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Shire of Wyndham-East Kimberley

1.3. Property details

Property:
STOCK ROUTE, DRYSDALE RIVER
UNALLOCA
TED CROWN LAND, DRYSDALE RIVER
STOCK ROUTE, GIBB
LOT 1549 ON PLAN 68249, DRYSDALE RIVER
LOT 17 ON PLAN 26267, DRYSDALE RIVER
LOT 18 ON PLAN 220604, DRYSDALE RIVER
LOT 19 ON PLAN 238153, DRYSDALE RIVER
LOT 20 ON PLAN 238153, DRYSDALE RIVER
LOT 21 ON PLAN 241779, DRYSDALE RIVER
LOT 301 ON PLAN 58300, DRYSDALE RIVER
LOT 39 ON PLAN 219612, KALUMBURU
LOT 44 ON PLAN 195034, KALUMBURU

Colloquial name:
Local Government Authority: WYNDHAM-EAST KIMBERLEY, SHIRE OF
DER Region: North West
DPaW District: EAST KIMBERLEY
LCDC:
Localities: KALUMBURU and GIBB and DRYSDALE RIVER

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 19 December 2017
Reasons for Decision: This application was received on 28 October 2015.

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

The Delegated Officer considers that the application area;

- contains suitable habitat for and six records of priority flora species;
- intersects a number of minor and major watercourses, including Gibb River, Drysdale River, Carson River and Plain Creek and contains vegetation growing in association within a watercourse; and
- occurs within the Mitchell and Lawley River conservation areas.

The Delegated Officer had regard to the Shire's vegetation survey and the Department of Biodiversity, Conservation and Attractions (DBCA) specialist advice.

The Delegated Officer notes DBCA advice that that significant fauna habitats locally and regionally are associated with water sources, that the local area is extensively vegetated and that the application is to upgrade an existing road.

The Delegated Officer notes the Shire advised that they intend to avoid the priority flora found within the application area. In line with recommendations from DBCA to avoid and minimise impacts to conservation significant flora where possible, the Delegated Officer considers that avoid minimise and a flora management condition requiring the Permit Holder to provide a minimum 50m buffer to record popoluations of priority flora will mitigate the risk of impacts to priority flora species.

The Delegated Officer considered that given the existing road formation and drainage systems already in place, impacts to watercourses are likely to be minimial and that the natural flow regime and hydrological connection is unlikely to be changed as a result of the road upgrades.

Given the proposed clearing is within and in close proximity to conservation areas and includes high infestations of *Themeda quadrivalvis* (grader grass) or *Sida cordifolia* the proposed clearing may impact on the environmental values of conservation areas through the spread of weeds. The Delegated Officer considers that a weed management condition requiring the Permit Holder to take steps to minimise the risk of the introduction and spread of weeds within and outside of the application area will address the risk of weed spread.

The Delegated Officer notes that clearing for the purpose of gravel extracting is temporary in nature and considers that a condition requiring revegetation of the areas cleared for temporary purposes will assist in minimising long term environmental impacts.

Approximately 293 hectares of the application area is located within the exisitng road reserve and approximately 176 hectares of the application area is spread across 40 sites in close proximity to but outside of the road reserve. A section 91 licence under the *Land Administration Act 1997* is required to provide access to clear some of the application areas. On 21 April 2016 the Shire obtained a section 91 licence for part of the application area. The Shire is currently working towards amending the section 91 licence to include all application areas.

Given the protracted timeframe that this section 91 licence has taken to be amended the Shire requested that the Delegated Officer consider a partial grant of the clearing permit, for areas where the Shire currently has appropriate land access.

The Delegated Officer has considered the Shire's request for a partial grant, and has taken into consideration the low risk of significant environmental impacts from this proposal and decided to partially grant, with conditions, a clearing permit for 293 hectares for the purpose of road improvements, road surface and shoulder allowance, road drainage and gravel extraction.

2. Site Information

2.1. Existing environment and information

Vegetation Description	Clearing Description	Vegetation Condition	Comment
The application area is mapped as the following Beard vegetation associations (Shepherd et al, 2001): • 904: described as Medium woodland-tropical; stringybark and woolybutt with understory of palms (*Livistona eastonii*); • 905: described as Grasslands, high grass savanna woodland; cabbage gum and ghost gum over mixed/white grass, riverine; • 739: described as Grasslands, high grass savanna woodland; grey box (*Eucalyptus tectrifica*) and cabbage gum over white grass (*Sehima nervosum*); • 53: described as Mosaic: Grasslands / pindan; Medium woodland with mixed tree scrub over tall upland grass and *Triodia* sp.; and • 901: described as Grasslands, high grass savanna woodland; stringybark and woollybutt over upland tall grass and curly spinifex.	The applicant proposes to clear up to 469 hectares of native vegetation associated with the upgrade of Kalumburu Road for the purposes of: - Road surface and shoulder allowance = 150 hectares - Road drainage = 53 hectares - Borrow Material (Pits) and access = 176 hectares - Road improvements = 90 hectares	Excellent; Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994).	The condition of the vegetation has been determined through a targeted flora and vegetation survey undertaken by Phoenix Environmental Services Pty Ltd in February and June 2017 (Phoenix, 2017)

3. Assessment of application against clearing principles

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

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

The applicant proposes to clear up to 469 hectares of native vegetation for the purpose of upgrading Kalumburu Road. The application area extends approximately five metres either side of the existing Kalumburu Road alignment over 260 kilometres plus gravel pit areas. The proposed clearing is required for the following activities:

- Road surface and shoulder allowance = 150 hectares
- Road drainage = 53 hectares
- Borrow Material (Pits) and access = 176 hectares
- Road improvements = 90 hectares

(Preston, 2017)

Approximately 293 hectares of the application area is located immediately adjacent to, and five metres either side of, the existing road formation for the purpose of road improvements, road surface and shoulder allowance and road drainage. Approximately 176 hectares of the application area is spread across 40 sites in close proximity to the existing road formation for borrow pits and pit access (section 91 licence areas).

The application area contains vegetation representative of five mapped Beard vegetation associations that are largely uniform and are generally comprised of grasslands with high grass savanna woodland, high grass savanna woodland and medium woodland with mixed tree scrub over tall upland grass (Shepherd et al., 2001). A vegetation survey described the vegetation types at 59 releve`s and identified that the most common vegetation type comprised mid *Eucalyptus* spp. And *Corymbia* spp. Woodlands with *Eucalypts nesophila, E. tectifica, E. jensenii, Corymbia greeniana, C. grandifolia* and *C. latifolia* prominent and frequently with *Bauhinia cunninghamii* trees over open tall shrublands with *Acacia, Grevillea, Terminalia* spp. And *Petalostigma pubescens* prominent over mid mixed grasslands with *Sorghum* spp, *Atriplex* spp., *Heteropogon contortus* and *Themeda quadrivalvis* prominent (Phoenix, 2017). The plains and undulating plains contained seepage and seasonally wet areas and the study area crossed numerous creeks (Phoenix, 2017).

According to the survey undertaken by Phoenix Environmental Services Pty Ltd in 2017, the condition of the vegetation was excellent or very good (Trudgen, 1991) except for borrow pits where it was a combination of excellent (surrounding vegetation) and degraded (excavated pits) and on the road edge where it was degraded due to high infestation with *Themeda quadrivalvis* (grader grass) or *Sida cordifolia* (Phoenix, 2017).

According to available databases, no rare flora species or priority ecological communities have been recorded within the local area (defined as a 10 kilometre radius around the application area). A targeted flora survey of the application area did not observe any rare flora or vegetation representative of a known threatened or priority ecological community (Phoenix, 2017).

A total of 67 priority (P) flora species have been recorded within the local area. Of these two P1, two P2 and one P3 species are known from records within 50 meters of the application area, and from the same soil and vegetation types as found within the application area. The former Department of Parks and Wildlife (Parks and Wildlife) advised that the proposed clearing is likely to significantly impact two P1 species, and that changes to drainage flows associated with the proposed clearing may indirectly impact two P2 species (Parks and Wildlife, 2016c). A targeted flora survey of the application area identified six priority flora species within the application area including; *Haemodorum thedae* (P1), *Mitrasacme thedae* (P1), *Solanum tudunuggae* (P1), *Goodenia inudata* (P2), *Minuria macrohiza* (P2) and *Hibbertia echiifolia subsp. Echiifolia* (P3) (Phoenix, 2017).

The Department of Biodiversity, Conservation and Attractions (DBCA) provided additional advise that '*A review of the known populations of conservation significant flora searched for ...would indicate that none of these taxa are likely to be of sufficient conservation concern to warrant requesting further targeted surveys. Most are known from broader distributions, some extending across state boundaries... Additionally the linear nature of the application area in the context of the broader availability of habitat would suggest that the risk to most of these taxa is likely to be low*' (DBCA, 2017). The applicant has advised that they intend to avoid the above priority flora within the application area and provide a 50 metre buffer around populations where practical (Preston, 2017), in line with recommendations from DBCA to avoid and minimise impacts to conservation significant flora where possible (DBCA, 2017).

The application area intersects the outer buffer of the threatened ecological community (TEC) 'Black Spring organic mound spring community'. This TEC is located approximately 1.8 kilometres east of the application area (former Department of Parks and Wildlife (Parks and Wildlife), 2016a). Parks and Wildlife advised that local hydrological impacts are likely to result from the proposed clearing and end landuse, however are unlikely to be sufficiently broadscale to impact the TEC (Parks and Wildlife, 2016a). On this basis it is considered that the proposed clearing is unlikely to significantly impact the TEC.

A number of fauna species of conservation significance, including 15 species listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950*, have been recorded in the local area. Parks and Wildlife advised that that the proposed clearing along the existing road alignment is unlikely to significantly impact habitats of conservation significant fauna, and that significant fauna habitats locally and regionally are associated with water sources (Parks and Wildlife, 2016b). Given this it is unlikely that the application will significantly impact fauna habitat.

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

Methodology References:
Department of Biodiversity, Conservation and Attractions (2017)

Keighery (1994)
Parks and Wildlife (2016a)
Parks and Wildlife (2016b)
Parks and Wildlife (2016c)
Phoenix (2017)
Preston (2017)
Shepherd et al. (2001)
Trudgen (1991)

GIS databases:
- Pre European Vegetation - DA 01/01
- NLWRA, Current Extent of Native Vegetation 20 Jan 2001
- SAC BioDatasets – accessed October 2017

(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

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

The application area contains vegetation representative of five mapped Beard vegetation associations that are largely uniform and are generally comprised of grasslands with high grass savanna woodland, high grass savanna woodland and medium woodland with mixed tree scrub over tall upland grass (Shepherd et al., 2001). A vegetation survey described the vegetation types at 59 releve`s and identified that the most common vegetation type comprised mid *Eucalyptus* spp. And *Corymbia* spp. Woodlands with *Eucalypts nesophila, E. tectifica, E. jensenii, Corymbia greeniana, C. grandifolia* and *C. latifolia* prominent and frequently with *Bauhinia cunninghamii* trees over open tall shrublands with *Acacia, Grevillea, Terminalia* spp. And *Petalostigma pubescens* prominent over mid mixed grasslands with *Sorghum* spp, *Atriplex* spp., *Heteropogon contortus* and *Themeda quadrivalvis* prominent (Phoenix, 2017). The plains and undulating plains contained seepage and seasonally wet areas and the study area crossed numerous creeks (Phoenix, 2017).

According to the survey undertaken by Phoenix Environmental Services Pty Ltd in 2017, the condition of the vegetation was excellent or very good (Trudgen, 1991) except for borrow pits where it was a combination of excellent (surrounding vegetation) and degraded (excavated pits) and on the road edge where it was degraded due to high infestation with *Themeda quadrivalvis* (grader grass) or *Sida cordifolia* (Phoenix, 2017).

A number of fauna species of conservation significance, including 15 species listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950*, several priority (P) species and six species protected under international agreement or otherwise specially protected, have been recorded in the local area (10 kilometre radius) (Parks and Wildlife 2007-). Of these, noting the vegetation and soil types within the application area, the application area may comprise habitat for the purple-crowned fairy-wren (*Malurus coronatus* subsp. *coronatus*; endangered), orange leaf-nosed bat (*Rhinonicteris aurantia*; vulnerable), brush-tailed tree-rat (*Conilurus penicillatus*; vulnerable), Gouldian finch (*Erythrura gouldiae*; P4 and endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)), northern crested shrike-tit (*Falcunculus frontatus* subsp. *whitei*; P4 and vulnerable under the EPBC Act), land snail (*Torresitrachia thedana*; P1), small toadlet (*Uperoleia minima*; P1), Kalumburu Kimberley slider (*Lerista kalumburu*; P2), Drysdale grunter (*Syncomistes rastellus*; P2), Drysdale hardyhead (*Craterocephalus helenae*; P2), long-nose sooty grunter (*Hephaestus epirrhinos*; P2), short-tailed mouse/karekanga (*Leggadina lakedownensis*; P4), and freshwater crocodile (*Crocodylus johnstoni*; other protected fauna).

The purple-crowned fairy-wren is known to occur along waterways in the Kimberley division including parts of the Fitzroy River, Drysdale River, Durack River and Ord River systems. Declines in occurrence of this species have occurred in the southern reaches of the Fitzroy River and Ord River systems (Department of the Environment, 2016). The application area is associated with the Drysdale River which may be significant as a refuge for this species if extent declines persist. This species inhabits dense, riparian vegetation near permanent rivers and springs. The application area intersects a number of significant watercourses including the Drysdale River therefore it is likely that suitable habitat for this species occurs within the application area.

The orange leaf-nosed bat is known to roost in caves and mine adits (horizontal shafts which are unlikely to occur in close proximity to the existing road formation however suitable areas may be located in the areas designated for borrow pits and lay downs. Foraging habitat for this species is diverse and includes *Triodia* hummock grasslands with scattered *Eucalyptus camaldulensis* along creeks (Department of the Environment, 2016). The application area may contain suitable foraging habitat for this species.

The brush-tailed tree-rat is restricted to the northern Kimberley where its distribution is patchy across several small populations. Specific habitat requirements include mixed *Eucalyptus* open forest and woodland or on dunes with *Casuarina* which are not burnt annually and have a grassy understorey. This species is known to have a small home range of approximately one hectare (Department of the Environment, 2016). The application area may include suitable habitat for this species.

The Gouldian finch is currently known in significant numbers (greater than 50) from ten populations throughout Australia. One population of an estimated 50 to 100 individuals is along Kalumburu Road (application area). This species inhabits open woodlands dominated by *Eucalyptus* tree and support ground cover of *Sorghum* and other grasses. The application area is known to provide habitat for this species.

The northern crested shrike-tit is endemic to the Kimberley division of Western Australia and across into the Northern Territory. Two birds were recorded at Kalumburu in 1999. This species is known to inhabit *Eucalyptus* open woodlands and to a lesser extent in areas that have grassy understorey (Department of the Environment, 2016). Given that this species has been recorded in close proximity to the application area, the application area is likely to contain habitat for this species.

The land snail is known from three records (two from 1976 and one from 1986). The location of these records has uncertainty of 100 metres to one kilometre. This species is known from *Eucalyptus* woodlands with a shrubby understorey (Atlas of Living Australia, 2016). Given the close proximity of the application area to the known records of this species, and considering the homogenous vegetation complexes characteristic of the region, the application area is likely to contain suitable habitat for this species.

The small toadlet was previously thought to be restricted to the Mitchell Plateau but is now considered to be distributed throughout the northern Kimberley area. This species is known from dense grasslands subject to flooding (Department of the Environment, 2016). Given that the application area includes vegetation growing in and in association with a floodplain, habitat suitable for this species may occur within the application area.

The Kalumburu Kimberley slider is known only from a location near the boundary of the Kalumburu townsite, to which the northern most extent of the application area connects. Little is known about the habitat requirements of this species. The *Lerista* genus is highly diverse with 91 species recognised. Of these, 24 species are known to have home ranges of less than 5,000 kilometres square (including this species) (Department of the Environment, 2016). As little habitat information in known about this species, and given the proximity of known records to the application area, the application area may provide suitable habitat for this species.

The application area intersects a number of significant waterways, which may provide habitat for the Drysdale grunter, Drysdale hardyhead, long-nose sooty grunter and freshwater crocodile. Given that the impact at these sites is limited to upgrading the existing bridge infrastructure associated with the roadway, the impacts to habitat for these species is likely to be minimal and short term therefore the proposed clearing is not likely to significantly impact on these species.

The short-tailed mouse/karekanga occurs across northern Australia from Cape York to the Pilbara with one population on Thevenard Island. Home ranges for this species average 5.3 hectares and habitat includes sandy soils and cracking clays. The population on Thevenard Island is the most significant for conservation of this species (Parks and Wildlife, 2012). The application area may contain habitat suitable for this species.

The former Department of Parks and Wildlife (Parks and Wildlife) advised that the proposed clearing along the existing road alignment is unlikely to significantly impact habitats of conservation significant fauna, and that significant fauna habitats locally and regionally are associated with water sources (Parks and Wildlife, 2016b). Parks and Wildlife advised that the proposed clearing is spread across a large area, will mainly impact habitat that is not isolated or restricted, and is unlikely to have a significant impact on conservation significant species (Parks and Wildlife, 2016d).

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

Methodology

References:
Atlas of Living Australia (2016)
Department of the Environment (2016)
Keighery (1994)
Parks and Wildlife (2007-)
Parks and Wildlife (2012)
Parks and Wildlife (2016b)
Parks and Wildlife (2016d)
Phoenix (2017)
Shepherd et al. (2001)
Trudgen (1991)

GIS databases:
- SAC Biodatasets (Accessed October 2017)

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

Comments

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

According to available databases, no rare flora have been recorded within the local area (10 kilometre radius). On this basis it is considered that the application area is unlikely to include, or be necessary for the maintenance of, rare flora.

A targeted flora survey of the application area did not observe any rare flora (Phoenix, 2017).

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

Methodology

References:

Phoenix (2017)

GIS databases:
- Pre-European Vegetation - DA 10/01
- SAC Biodatasets (Accessed October 2017)

(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

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

The application area intersects approximately 0.46 hectares of the outer buffer of the threatened ecological community (TEC) 'Black Spring organic mound spring community'. This TEC is located approximately 1.8 kilometres east of the application area (Parks and Wildlife, 2016a). This TEC is listed as endangered under the *Wildlife Conservation Act 1950.* Throughout the Kimberley region freshwater seepages are seen to form springs (including organic mound springs as is the case for this TEC), and each mound spring has a unique assemblage of plants being a forest of *Melaleuca viridiflora*, *Ficus* species, *Timonius timon* and *Pandanus spiralis* with fringing *Phragmites karka* grassland (Parks and Wildlife, 2011).

The proposed clearing may result in changes to the hydrology of the local area. These hydrological changes may indirectly impact native vegetation outside of the application area (including within the TEC buffer and potentially the TEC itself). The former Department of Parks and Wildlife advised that local hydrological impacts are likely to result from the proposed clearing and end landuse, however are unlikely to be sufficiently broadscale to impact the TEC (Parks and Wildlife, 2016a). On this basis it is considered that the proposed clearing is unlikely to significantly impact the TEC.

A targeted flora survey of the application area did not observe vegetation representative of a known threatened ecological community (Phoenix, 2017).

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

Methodology

References:
Parks and Wildlife (2011)
Parks and Wildlife (2016a)
Phoenix (2017)

GIS databases:
- Pre-European Vegetation - DA 10/01
- SAC Biodatasets (Accessed October 2017)

(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

Proposed clearing is not at variance to this Principle

The National Objectives and Targets for Biodiversity Conservation include a target that prevents the clearance of ecological communities with an extent below 30 per cent of that present pre-European settlement (Commonwealth of Australia, 2001).

The application area is located within the Northern Kimberley Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and the Shire of Wyndham-East Kimberley, both of which retain approximately 98 per cent of their pre-European extents of native vegetation (Government of Western Australia, 2015). The application area is mapped as Beard vegetation associations 901, 53, 739, 905 and 904, all of which retain at least 98 per cent of their pre-European extents (Government of Western Australia, 2015). The local area (10 kilometre radius) is also extensively vegetated. On this basis, and noting the predominantly narrow linear shape of the application area, it is considered that the application area is not significant as a remnant in an area that has been extensively cleared.

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

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in Parks and Wildlife Managed Lands (%)
IBRA Bioregion*				
Northern Kimberley	8,332,025	8,197,303	98	14.9
Local government*				
Shire of Wyndham-East Kimberley	11,189,826	11,016,723	98	13.6
Beard Vegetation Association in Bioregion*				
901	4,725,054	4,649,621	98	18.7
53	943,876	941,802	99	16.9
739	1,537,881	1,518,866	99	8.3
905	53,342	53,342	100	8.2
904	142,564	141,118	99	8

Methodology

References:
Commonwealth of Australia (2001)
*Government of Western Australia (2015)

GIS databases:
- Pre-European Vegetation - DA 10/01
- Interim Biogeographic Regionalisation of Australia - EA 18/10/00
- Local Government Authorities - DLI 8/07/04

(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

Proposed clearing is at variance to this Principle

The application area intersects a number of minor and major watercourses, including Gibb River, Drysdale River, Carson River and Plain Creek. The application area includes vegetation growing in a watercourse.

The application area is located within the nationally significant King Edward River catchment area which is recognised as a priority two Wild River area (DoW, 2016). Wild rivers are defined as "those rivers which are undisturbed by the impacts of modern technological society. They remain undammed, and exist in catchments where biological and hydrological processes continue without significant disturbance (Water and Rivers Commission, 1999). The former Department of Water (DoW) advised that land uses should maintain the values of wild rivers and be compatible with their hydrological features, and that the natural flow regime and hydrological connection (i.e. the transport of matter, energy and organisms) between waterways and their floodplains are particularly important to the health of aquatic ecosystems (DoW, 2009). DoW also advised that further clearing of native vegetation in the catchment is discouraged (DoW, 2016).

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

Methodology

References:
DoW (2009)
DoW (2016)
Water and Rivers Commision (1999)

GIS databases:
- Hydrography, Linear - DOE 1/2/04

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

Comments

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

The application area is mapped as comprising soil types (Northcote et al., 1960-68):

- BA6: Rugged stony country--ridges, cuestas, and plateaux with some sloping or low hilly dissected areas on sandstone, quartzite, shale, and some limestone; many rock outcrops: chief soils are shallow sandy, often stony, soils together with shallow, often stony, loamy soils.
- JK14: Gently undulating country, developed on sandstone, with widely spaced steep-sided residuals: chief soils are sands and (sometimes with much ferruginous gravel.
- My62: Gently undulating country developed on basalt with some exposures of underlying sandstone: chief units are plains with neutral red and neutral yellow earths with a layer of fine ferruginous gravel on the surface. The low hilly interfluves have shallow stony soils.
- AZ3: Dissected basalt plateau with laterite capping; some broad valley plains. The main soil unit is the lateritic plateau crests with ironstone gravels, but in the northern portions shallow lateritic red earths (with block laterite are very common. The poorly drained flats at the laterite level have hard alkaline yellow soils, sometimes containing much ferruginous gravel. In the dissected areas the upper slopes have shallow stony. Small areas of cracking clays occur along valley floors.
- Mo22: Hilly and mountainous country developed on basalt; extensive valley plains: chief soils are neutral

red friable earths on plains of moderate to gentle slopes. Interfluves have much rock outcrop and some shallow stony soils on upper slopes. There are some quite extensive cracking clay plains.

- Mo21: Gently undulating country developed on basalt with widely separated low hilly interfluves: main soils are neutral, and also acid, red friable earths together with some gravelly soils. Rock outcrop is common on elevated country with some shallow stony soils.

The average annual rainfall of the application area is estimated to be between 900 and 1400 millimetres. The closest Bureau of Meteorology (BoM) weather station is located in Kalumburu (northern end of the application area). The average annual rainfall at the Kalumburu weather stations is 1228.3 millimetres (based on data from 1998 to 2016) (BoM, 2016). The majority of the rainfall occurs from December to March each year with monthly averages in excess of 200 millimetres in each of these months (BoM, 2016).

The application area is located in the semi-arid tropics which regularly experience high intensity rainfall. The proposed clearing will increase the potential for erosion from high intensity wind and rainfall events.

The proposed clearing is widespread and predominantly linear and it is therefore considered that erosion may occur locally, although this is unlikely to be significant.

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

Methodology

References:
BoM (2016)
Northcote et al. (1960-68)

GIS databases:
- Average Annual Rainfall Isohyets - WRC 29/09/98
- Annual Evaporation Contours (Isopleths) - WRC 29/09/98
- Hydrogeology, statewide DOW 13/07/06
- Hydrography, linear - DOW 13/7/06
- Soils, Statewide DA 11/99
- Topographic contours statewide - DOLA and ARMY 12/09/02
- Hydrogeology, Statewide 05 Feb 2002

(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

Proposed clearing may be at variance to this Principle

One conservation area occurs within the application area, being the Mitchell and Lawley River Areas (System 7 conservation reserve).

The Kimberley Science and Conservation Strategy has five key outcomes including a Conservation Reserve Corridor linking the Prince Regent National Park (west of application area) and the Drysdale River National Park (east of application area). The corridor will be achieved through voluntary partnerships and joint management with traditional owners and pastoralists (Government of Western Australia, 2011). This strategy also identifies a number of nature reserves and conservation parks between these two national parks which contribute to the functionality of this corridor.

While the application area includes vegetation within a conservation area and forms part of a priority ecological corridor the vegetation is in close proximity to existing disturbed areas. According to the survey undertaken by Phoenix Environmental Services Pty Ltd in 2017, the condition of the vegetation was excellent or very good (Trudgen, 1991) except for borrow pits where it was a combination of excellent (surrounding vegetation) and degraded (excavated pits) and on the road edge where it was degraded due to high infestation with *Themeda quadrivalvis* (grader grass) or *Sida cordifolia* (Phoenix, 2017).

Given the proposed clearing is within and in close proximity to conservation areas and includes high infestations of *Themeda quadrivalvis* (grader grass) or *Sida cordifolia* the proposed clearing may impact on the environmental values of conservation areas through the spread of these weeds into conservation significant areas.

Given the above, the proposed clearing may be at variance to this Principle. Weed management conditions will be placed on the permit to minimise the spread of weeds outside of the application area.

Methodology

References:
Government of Western Australia (2011)
Phoenix (2017)

GIS databases:
- Parks and Wildlife Tenure

(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

Proposed clearing may be at variance to this Principle

The application area is located within the nationally significant King Edward River catchment area which is recognised as a priority two Wild River area (DoW, 2016). Wild rivers are defined as "those rivers which are undisturbed by the impacts of modern technological society. They remain undammed, and exist in catchments where biological and hydrological processes continue without significant disturbance (Water and Rivers Commission, 1999). The former Department of Water (DoW) advised that land uses should maintain the values of wild rivers and be compatible with their hydrological features, and that the natural flow regime and hydrological connection (i.e. the transport of matter, energy and organisms) between waterways and their floodplains are particularly important to the health of aquatic ecosystems (DoW, 2009). DoW also advised that further clearing of native vegetation in the catchment is discouraged (DoW, 2016).

The application area intersects a number of minor and major watercourses, namely Gibb River, Drysdale River, Carson River and Plain Creek.

The average annual rainfall of the application area is estimated to be between 900 and 1400 millimetres. The closest Bureau of Meteorology (BoM) weather station is located in Kalumburu (northern end of the application area). The average annual rainfall at the Kalumburu weather stations is 1228.3 millimetres (based on data from 1998 to 2016) (BoM, 2016). The majority of the rainfall occurs from December to March each year with monthly averages in excess of 200 millimetres in each of these months (BoM, 2016).

The application area is located in the semi-arid tropics which regularly experience high intensity rainfall. The proposed clearing will increase the potential for erosion from high intensity wind and rainfall events. Noting the predominantly narrow linear shape of the application area, it is considered that erosion may occur locally. On this basis, it is considered that the proposed clearing may impact the quality of surface water expression areas within, and adjacent to, the application area. The impacts of the application are expected to be short term given the clearing of borrow pits is temporary and that road infrastructure will include management of water flow in close proximity to the road reserve.

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

Methodology

References:
BoM (2016)
DoW (2009)
DoW (2016)
Water and Rivers Commision (1999)

GIS databases:
- Hydrographic Catchments - Catchments - DOE 23/03/05
- Rainfall, Mean Annual - BOM 30/09/01
- Groundwater Salinity, Statewide - 22/02/00
- Evapotranspiration Areal Actual - BOM 30/09/01

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

Comments

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

The proposed clearing is spread across 260 kilometres. The local area (10 kilometre radius) is extensively vegetated. A number of minor and major watercourses intersect the application area and given the application area is located in the semi-arid tropics which regularly experience high intensity rainfall the proposed clearing may increase the incidence or intensity of flooding in a localised area however it is expected to be a short term impact.

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

Methodology

GIS databases:
- Hydrographic Catchments - Catchments - DOE 23/03/05
- Rainfall, Mean Annual - BOM 30/09/01
- Groundwater Salinity, Statewide - 22/02/00
- Evapotranspiration Areal Actual - BOM 30/09/01
- Topographic Contours, Statewide - DOLA 12/09/02

Planning instruments and other relevant matters.

Comments

The applicant proposes to clear up to 469 hectares of native vegetation for the purpose of upgrading Kalumburu Road. The application area extends approximately five metres either side of the existing Kalumburu Road alignment over 260 kilometres plus gravel pit areas. The proposed clearing is required for the following activities:

- Road surface and shoulder allowance = 150 hectares
- Road drainage = 53 hectares
- Borrow Material (Pits) and access = 176 hectares
- Road improvements = 90 hectares

(Preston, 2017)

Approximately 293 hectares of the application area is located immediately adjacent to, and five metres either side of, the existing road formation for the purpose of road improvements, road surface and shoulder allowance and road drainage. Approximately 176 hectares of the application area is spread across 40 sites in close proximity to the existing road formation for borrow pits and pit access (section 91 licence areas).

On 23 May 2016 the application was advertised in *The West Australian* newspaper for a 21-day submission period. No public submissions were received.

The former Department of Water (DoW) advised that the application area is located within the Canning-Kimberley Groundwater Area proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). DoW advised that a section 5C licence to take groundwater and a section 26D licence to construct or alter a well under the RIWI Act may be required for this application.

DoW advised that a section 21A permit under the RIWI Act will be required to enable interference with the bed and banks of a watercourse, as the waterways subject to disturbance are vested in the Crown. DoW noted that non-perennial rivers and creeks are still defined as waterways under the RIWI Act. DoW advised that to date no application for a section 21A permit has been received from the applicant (DoW, 2016).

On 16 April 2016 the Shire was granted a section 91 licence under the *Land Administration Act 1997* in order to access some of the land within the application area (specifically a 40m wide strip centred on the centreline of Kalumburu Road). The former DER advised the applicant of this requirement by letter dated 24 May 2016 that the Shire requires a section 91 licence for the sections outside this area. On 11 September 2017, the applicant requested that DWER consider a partial grant of this application and advised that once their section 91 licence is obtained that they will apply to amend the clearing permit area.

The application area intersects the Wilinggin Declared Indigenous Protection Area, listed as a major national reserve within a conservation management zone under the *Environmental Protection and Biodiversity Conservation Act 1999*.

There are eight known Aboriginal Sites of Significance within the application area. It is the applicant's responsibility to ensure compliance with the requirements and obligations under the *Aboriginal Heritage Act 1972*. The Aboriginal Sites of Significance are:

- BUDBUMNGORNINGARI 2 - Skeletal Material / Burial;
- TEGULAN-ODIN - Mythological, Painting;
- KIMANDU, TILWILLIE POOL. - Engraving, Painting, Skeletal Material / Burial;
- WANGULU. – Null;
- DONKEY RIDGE. - Artefacts / Scatter, Grinding Patches / Grooves, Mythological, Painting, Skeletal Material / Burial;
- DJUNGGURR - Ceremonial, Man-Made Structure;
- BUDBUMNGORNINGARI 1. - Man-Made Structure, Mythological, Painting, Skeletal Material / Burial; and
- ANUMERI 2 - Mythological, Painting.

Native Title has been determined over the application area for the Wanjina-Wunggurr community (WCD2004/001). Schedule 2 part (b) of the determination states that areas that are part of the Gibb River to Wyndham and the Gibb River to Kalumburu roads as established at the date of this determination, are excluded from claims. In addition Schedule 3 part (g) states that land that has been appropriated as at the date of the determination for use and used for roads are areas where native title does not exist (extinguishment and not excluded). As such the application area associated with clearing within the existing road reserve, is not considered to constitute a future act. Some areas under application are outside of these exclusion zones and are therefore considered to constitute a future act. The Department of Environment Regulation (DER) notified the Wanjina-Wunggurr Aboriginal Corporation and their representatives the Kimberley Land Council of the application in accordance with section 24KA of the *Native Title Act 1993*. One submission was received noting that it is possible that the traditional owners will raise heritage concerns, and that no further information or request for heritage surveys have been received (submission, 2016).

Methodology

References:
DoW (2016)
Submission (2016)

GIS databases:
- Aboriginal Sites of Significance

4. References

Atlas of Living Australia (2016)

Bureau of Meteorology (BoM) (2016) Bureau of Meteorology climate statistics for Kalumburu weather station accessed online from www.bom.gov.au/climate/averages/tables/ June 2016.

Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.

Department of Biodiversity, Conservation and Attractions (2017) Advice to the Department of Water and Environmental Regulation (DWER) regarding flora surveys for clearing permit application CPS 6828/1 (DWER ref. A1532967).

Department of Parks and Wildlife (Parks and Wildlife) (2007-) NatureMap: Mapping Western Australia's Biodiversity.

Department of Parks and Wildlife. URL: http://naturemap.dpaw.wa.gov.au/. Accessed June 2016
Department of Parks and Wildlife (Parks and Wildlife) (2011) A Guide to managing and restoring wetlands in Western Australia; Wetland vegetation and flora, part 2: Kimberley published by the former Department of Environment and Conservation accessed online via the Department of Parks and Wildlife website June 2016.
Department of Parks and Wildlife (Parks and Wildlife) (2012) Fauna profile of the Lakeland Downs Short-tailed Mouse published by the former Department of Environment and Conservation and updated by the Department of Parks and Wildlife in February 2012.
Department of Parks and Wildlife (Parks and Wildlife) (2016a) Advice to the Department of Environment Regulation in relation to threatened ecological community impacts of CPS 6828/1 prepared by the Department of Parks and Wildlife. June 2016. Department of Parks and Wildlife, Perth, Western Australia. (DER ref. A1134469)
Department of Parks and Wildlife (Parks and Wildlife) (2016b) Advice to the Department of Environment Regulation in relation to fauna impacts of CPS 6828/1 prepared by the Department of Parks and Wildlife. June 2016. Department of Parks and Wildlife, Perth, Western Australia. (DER ref. A1134471)
Department of Parks and Wildlife (Parks and Wildlife) (2016c) Advice to the Department of Environment Regulation in relation to flora impacts of CPS 6828/1 prepared by the Department of Parks and Wildlife. June 2016. Department of Parks and Wildlife, Perth, Western Australia. (DER ref. A1134472)
Department of Parks and Wildlife (Parks and Wildlife) (2016d) Additional fauna advice from the Department of Parks and Wildlife to the Department of Environment Regulation in relation to clearing permit application CPS 6828/1. (DER ref. A1137988)
Department of the Environment (DotE) (2016) Species Profile and Threats Database. URL: www.environment.gov.au/SPRAT.Accessed June 2016
Department of Water (DoW) (2009) Wild Rivers in Western Australia, Water Notes 37 published by the Department of Water January 2009
Department of Water (DoW) (2016) Advice from the Department of Water to the Department of Environment Regulation in relation to clearing permit application CPS 6828/1, June 2016. (DER ref. A1117975)
Government of Western Australia (2011) Kimberley Science and Conservation Strategy. Government of Western Australia. May 2011.
Government of Western Australia (2015) 2015 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2015. WA Department of Parks and Wildlife, Perth.
Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
Northcote, K.H. with Beckmann, G.G., Bettenay, E., Churchward, H.M., van Dijk, D.C., Dimmock, G.M., Hubble, G.D., Isbell, R.F., McArthur, W.M., Murtha, G.G., Nicolls, K.D., Paton, T.R., Thompson, C.H., Webb, A.A. and Wright, M.J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
Preston (2017) Native Vegetation clearing permit application, Kalumburu – Gibb River Road, Supporting Information, 31 July 2017, prepared for the Shire of Wyndham East Kimberley by Preston Consulting Pty Ltd (DWER Ref. A1532972).
Phoenix (2017) Native Vegetation clearing permit application, Kalumburu – Gibb River Road, Targeted Flora Survey for the proposed Kalumburu – Gibb River Road, July 2017, prepared for Preston Consulting on behalf of the Shire of Wyndham East Kimberley (DWER Ref. A1532972).
Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
Submission (2016) Submission received in relation to clearing permit application CPS 6828/1, June 2016. (DER ref. A1121459)
Trudgen, M. E., (1991), vegetation condition scale, *In*: National trust (WA) ed. 1993 *Urban Bushland Policy*. National Trust of Australia (WA), Wildflower Society of Western Australia Inc and the Tree Society Inc, Perth WA.
Water and Rivers Commission (1999) The findings of the GIS preliminary identification and verification phases of the project, report prepared by Williams, P.J., Pen, L.J. and Alford, J.J., Water and Rivers Commission, Perth.