



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number: CPS 6921/1
Permit Holder: Commissioner of Main Roads Western Australia
Duration of Permit: 11 June 2016 to 11 June 2021

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.

2. Land on which clearing is to be done

Lot 97 on Plan 217531, Karramindie
Lot 759 on Plan 207952, Ghooli
Lot 371 on Plan 220598, Yilkari
Lot 345 on Plan 220598, Yilkari
Lot 298 on Plan 217534, Yilkari
Lot 19 on Plan 221047, Boorabbin
Lot 193 on Plan 217533, Karramindie
Lot 192 on Plan 217533, Mount Burges
Lot 174 on Plan 217880, Wallaroo
Lot 173 on Plan 217879, Victoria Rock
Lot 172 on Plan 217878, Victoria Rock
Lot 171 on Plan 217877, Wallaroo
Lot 170 on Plan 217876, Wallaroo
Lot 170 on Plan 217876, Victoria Rock
Lot 169 on Plan 217876, Wallaroo
Lot 169 on Plan 217876, Victoria Rock
Lot 165 on Plan 217874, Boorabbin
Lot 164 on Plan 217874, Boorabbin
Lot 155 on Plan 42256, Boorabbin
Lot 149 on Plan 31145, Boorabbin
Lot 125 on Plan 217531, Karramindie
Lot 1042 on Plan 217869, Mount Palmer
Lot 1041 on Plan 217868, Mount Palmer
Lot 1028 on Plan 217864, Ghooli
Lot 1027 on Plan 217863, Ghooli
Great Eastern Highway road reserve (PINs 11469661, 1324783, 11253300, 11716512, 11716513, 11723665, 11716541, 11437979, 11694021, 11694020, 11716551, 11694024, 11714623, 11714624) Mount Burges, Karramindie, Wallaroo, Boorabbin, Ghooli, Victoria Rock.

3. Area of Clearing

The Permit Holder must not clear more than 100 hectares of native vegetation within the combined areas hatched yellow on attached Plan 6921/1 (a), Plan 6921/1 (b), Plan 6921/1 (c), Plan 6921/1 (d) and Plan 6921/1 (e).

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 purpose described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out works involving clearing for that purpose under the *Main Roads Act 1930* 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 pursuant to this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no *weed*-affected 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.

DEFINITIONS

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

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

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

weed/s means any Plant -

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



Simon Weighell
A/MANAGER
CLEARING REGULATION




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

19 May 2016

Plan 6921/1 (a)



Legend

-  Roads
-  LGA
-  Cadastre
- Virtual Mosaic (LGATE-V001)
-  Areas approved to clear



1:87,554

MGA 94

Geocentric Datum of Australia 1994

S. Weighell Date *19/5/16*
Simon Weighell

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







GOVERNMENT OF
WESTERN AUSTRALIA

Plan 6921/1 (b)



Legend

-  Areas approved to clear
-  Roads
-  Cadastre
- Virtual Mosaic (LGATE-V001)
-  LGA



1:84,321

MGA 94
Geocentric Datum of Australia 1994

S. Weighell Date *19/5/16*
Simon Weighell

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



Plan 6921/1 (c)



Legend

— Roads

□ LGA

□ Cadastre

Virtual Mosaic (LGATE-V001)

□ Areas approved to clear



1:162,090

MGA 94
Geocentric Datum of Australia 1994

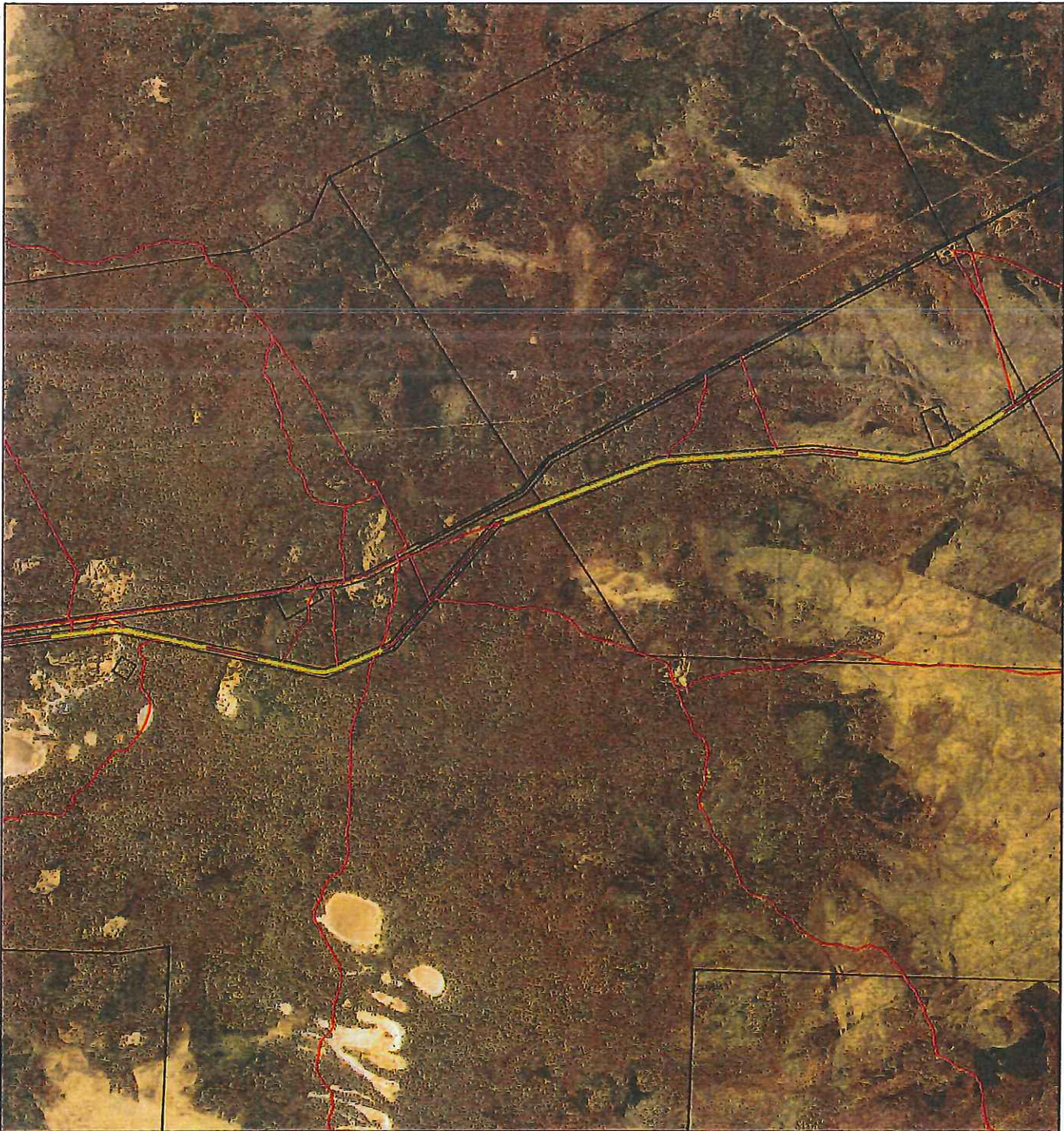
S. Weighell
Simon Weighell Date: 19/5/16

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



GOVERNMENT OF
WESTERN AUSTRALIA

Plan 6921/1 (d)



Legend

— Roads

□ LGA

□ Cadastre

Virtual Mosaic (LGATE-V001)

□ Areas approved to clear



1:162,090

MGA 94
Geocentric Datum of Australia 1994

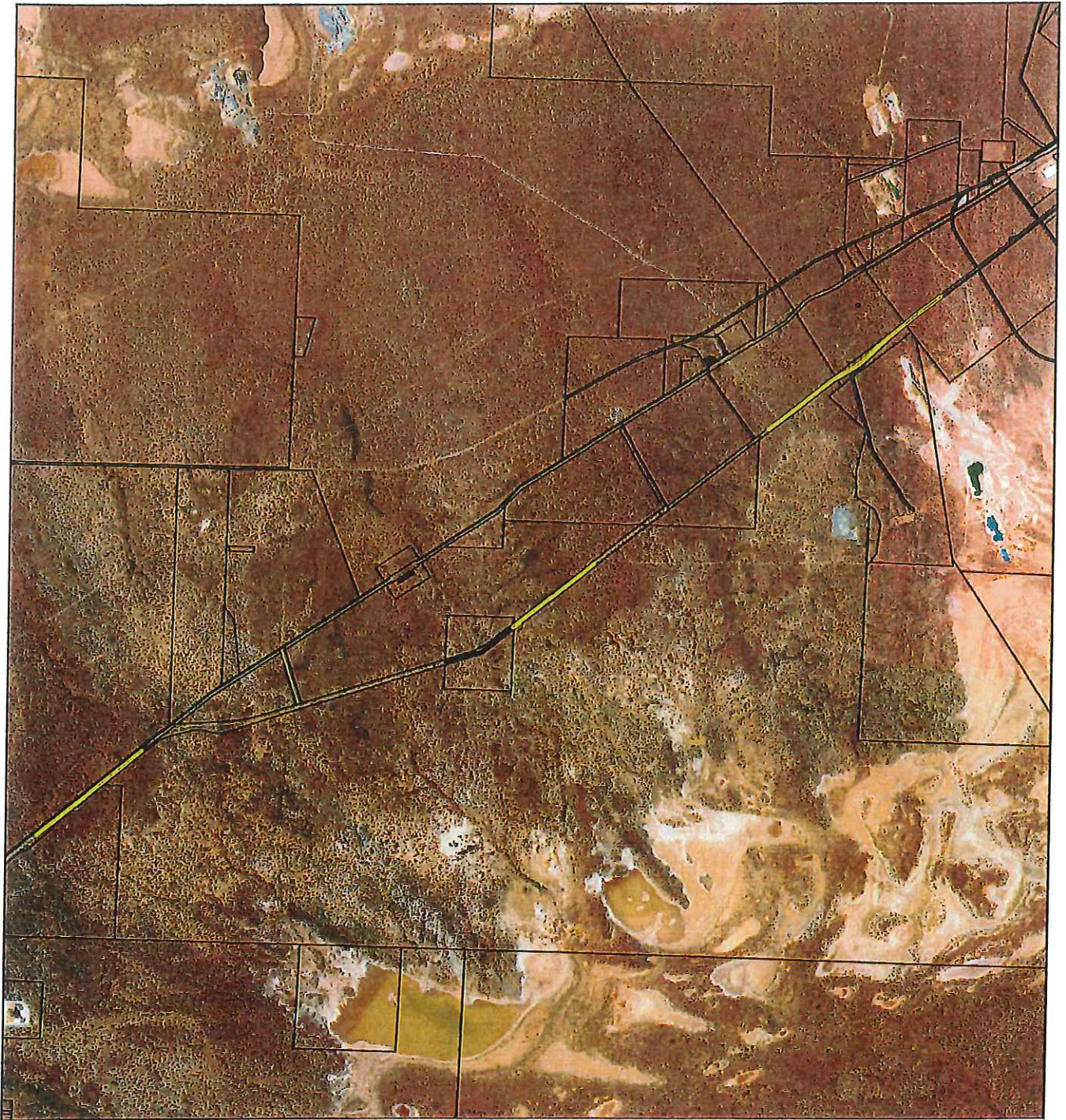
S. Weighell Date *19/5/16*
Simon Weighell

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



GOVERNMENT OF
WESTERN AUSTRALIA

Plan 6921/1 (e)



Legend

— Roads

□ LGA

□ Cadastre

Virtual Mosaic (LGATE-V001)

□ Areas approved to clear



1:128,486

MGA 94
Geocentric Datum of Australia 1994

S. Weighell Date *19/5/16*
Simon Weighell

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





1. Application details

1.1. Permit application details

Permit application No.: 6921/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Commissioner of Main Roads Western Australia

1.3. Property details

Property: Great Eastern Highway road reserve and various properties (dedicated roads)
Colloquial name: Great Eastern Highway
Local Government Authority: Shire of Coolgardie, City of Kalgoorlie-Boulder and Shire of Yilgarn
DER Region: Goldfields
Localities: Boorabbin, Karramindie, Ghooli, Yilkari, Mount Burges, Victoria Rock, Wallaroo, Binduli, Mount Palmer

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 19 May 2016
Reasons for Decision: 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 has concluded that the proposed clearing is at variance to principle (f), may be at variance to principle (h), and is not likely to be at variance to the remaining clearing principles.

Through assessment it has been determined that the clearing will include vegetation growing in association with the Yilgarn River, however, it is considered unlikely that the proposed clearing will result in significant impacts to the environmental values of the river.

Through assessment it has been determined that the clearing may impact on the environmental values of conservation areas through the introduction or spread of weeds. Weed management conditions will minimise impacts to the conservation areas.

Relevant State policies and other relevant policies have been taken into consideration in the decision to grant a clearing permit.

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
The application area contains the following mapped vegetation types (Shepherd et al., 2001): Beard vegetation association 214, described as medium woodland comprising goldfield eucalypts /succulent steppe with open low woodland of myoporum over saltbush (Shepherd et al., 2001). Beard vegetation association 536 is described as medium woodland of morrell & rough fruited mallee (Eucalyptus corrugata). Beard vegetation	Main Roads Western Australia (MRWA) has applied to clear up to 100 hectares of native vegetation along the Great Eastern Highway between Southern Cross and Kalgoorlie within the Goldfields Region for the construction of 15 passing lanes and associated works. The proposed works are to improve road safety, reduce freight costs and improve amenity for local, tourist and heavy traffic in regional Western Australia (GHD, 2016a).	Excellent; Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery, 1994). To Completely Degraded: No longer intact; completely /almost completely without native species (Keighery, 1994)	The vegetation condition and description was determined via Biological Assessments (GHD, 2016a; GHD 2016b). The Biological Assessments incorporated level 1 flora and fauna surveys, undertaken within larger survey areas (including the application area). The survey areas comprise 12 separate linear sections that range in length from approximately three kilometres to seven kilometres and are 100 metres wide, which largely extend 50 metres from the road centreline on both sides of Great Eastern Highway. The Biological Assessments identified 17 native vegetation types within the survey areas which are described below (GHD, 2016a; GHD, 2016b). Vegetation type Allocasuarina and Acacia

association 511 is described as medium woodland of salmon gum & morrel.

Beard vegetation association 128 is described as bare areas; rocky outcrops.

Beard vegetation association 435 is described as shrublands of *Acacia neurophylla*, *A. beauverdiana* & *A. resinomarginea* thicket.

Beard vegetation association 1148 is described as shrublands of scrub-heath in the Coolgardie Region.

Beard vegetation association 9 is described as medium woodland of coral gum (*Eucalyptus torquata*) & goldfields blackbutt (*E. le souffii*).

Beard vegetation association 522 is described as medium woodland of redwood (*Eucalyptus transcontinentalis*) & merrit (*E. floctoniae*).

Beard vegetation association 1294 is described as medium woodland of coral gum.

Beard vegetation association 1413 is described as shrublands of acacia, casuarina & melaleuca thicket.

shrubland (VA03) comprises *Callitris preissii*, *Acacia yorkrakinensis* subsp. *acrita*, *A. resinomarginea*, *Hakea* spp. tall open shrubland with *Eucalyptus rigidula*, *E. horistes* low isolated mallee over *Allocasuarina corniculata*, *A. campestris*, *Acacia beauverdiana*, *Melaleuca atroviridis* mid shrubland over *Thryptomene kochii*, *Micromyrtus obovata*, *Phebalium filifolium*, *Euryomyrtus maidenii*, *Beyeria sulcata* var. *sulcata* low open shrubland over *Triodia rigidissima* isolated hummock grasses.

Vegetation type Mixed shrubland (VA04) comprises *Hakea erecta*, *H. platysperma*, *Callitris preissii* tall sparse shrubland with *Grevillea pterosperma*, *H. francisiana* emergent low trees/tall shrubs and *Eucalyptus leptopoda* subsp. *leptopoda* mallees over *Allocasuarina campestris*, *A. corniculata*, *Melaleuca atroviridis*, *Baeckea elderiana* mid shrubland over *M. calyptroides*, *Micromyrtus obovatus*, *Euryomyrtus maidenii*, *M. cordata* low shrubland over *Ecdeiocolea monostachya*, *Lepidosperma sanguinolentum*, *Lepidobolus preissianus* subsp. *volubilis* sedgeland /rushland and *Triodia rigidissima* isolated hummock grasses.

Vegetation type *Melaleuca* tall shrubland (VA06) comprises *Melaleuca atroviridis*, *M. eleuterostachya*, *M. atroviridis* tall shrubland with *Eucalyptus rigidula* isolated mallee over *M. atroviridis*, *Beyeria sulcata* var. *sulcata*, *Phebalium filifolia* mid-open shrubland over *Acacia merrallii* low isolated shrubs.

Vegetation type *Eucalyptus eremophila* mallee woodland (VA07) comprises *Eucalyptus pileata* open woodland over *Melaleuca sheathiana* tall sparse shrubland over *M. lateriflora*, *Daviesia grahamii* mid isolated shrubs over *Olearia muelleri*, *D. benthamii* subsp. *acanthoclona*, *Maireana villosa* low sparse shrubland over *Podolepis capillaris*, *Angianthus tomentosa*, *Erodium cygnorum* isolated herbs.

Vegetation type *Eucalyptus pileata* open woodland over *Melaleuca sheathiana* (VA08) comprises *Eucalyptus eremophila* mallee woodland over *Acacia* sp., *A. hemiteles* mid/open shrubland over *Olearia exiguiifolia*, *Daviesia benthamii* subsp. *acanthoclona* low sparse shrubland over *Podolepis capillaris*, *Actinobole uliginosum* isolated herbs.

Vegetation type Mixed *Eucalyptus* open forest (VA10) comprises *Eucalyptus salmonophloia*, *E. salubris* and *E. transcontinentalis*, *E. yilgarnensis*, *E. celastroides* subsp. *celastroides*, *E. tenuis* open forest over *Santalum acuminatum* low isolated trees over *Melaleuca sheathiana*, *M. uncinata*, *Leptomeria preissiana* tall sparse shrubland over *Daviesia benthamii* subsp. *acanthoclona*, *Acacia hemiteles*, *Eremophila* species (spp.) mid- open shrubland over *Scaevola spinescens*, *Senna artemisioides* subsp. *filifolia*, *Grevillea acuaria* over isolated tussock

grasses.

Vegetation type *Eucalyptus capillosa* subsp. *capillosa* open forest (VA12) comprises *Eucalyptus capillosa* subsp. *capillosa* open forest over *Acacia gibbosa* tall open shrubland over *Melaleuca zeteticorum*, *Westringia cephalantha*, *Daviesia benthamii* subsp. *acanthoclona* mid- shrubland over *Philotheca coccinea*, *Olearia muelleri*, *O. pimelioides* low sparse shrubland over *Triodia* sp. sparse hummock grassland.

Vegetation type *Eucalyptus salubris* and *Eucalyptus capillosa* subsp. *capillosa* open forest (VA13) comprises *Eucalyptus salubris*, *E. capillosa* subsp. *capillosa* open forest over *Santalum acuminatum* low isolated trees with *Melaleuca sheathiana*, *Alyxia buxifolia* tall isolated shrubs over *Daviesia benthamii* subsp. *acanthoclona*, *Eremophila ionantha*, *E. scoparia* mid-open shrubland over *Scaevola spinescens*, *Olearia muelleri*, *E. decipiens* subsp. *decipiens* low open shrubland over *Brachycome ciliaris*, *Schoenia cassiniana* isolated herbs.

Vegetation type *Eucalyptus* low open forest over *Acacia acuminata* (VA14) comprises *Eucalyptus loxophleba* subsp. *lissophloia*, *E. yilgarnensis* low open forest interspersed with *Acacia acuminata*, *Leptomeria preissiana*, *Acacia tetragonophylla* tall open shrubland over *Eremophila ionantha*, *Acacia hemiteles*, *Senna artemisioides* subsp. *filifolia* mid open shrubland over *Olearia pimelioides*, *Rhagodia eremaea*, *Platysace trachymenioides* low sparse shrubland over *Austrostipa elegantissima*, *Amphipogon caricinus* var. *caricinus* isolated tussock grasses over *Waitzia acuminata* var. *acuminata*, *Rhodanthe chlorocephala* subsp. *rosea* isolated herbs.

Vegetation type *Acacia acuminata* tall shrubland (VA16) comprises *Acacia acuminata*, *Melaleuca atroviridis* tall shrubland over *Dianella revoluta* var. *divaricata* and *Waitzia acuminata* var. *acuminata* isolated herbs.

Vegetation type *Tecticornia* low shrubland with fringing *Melaleuca* tall shrubland (VA17) comprises *Tecticornia pergranulata* subsp. *pergranulata*, *T. halocnemoides* complex low shrubland with *Carpobrotus modestus* isolated herbs on lower saline banks/slopes. *Melaleuca atroviridis*, *M. eleuterostachya* tall shrubland over *Darwinia* sp. *Karonie* (K. Newbey 8503) low sparse shrubland on upper saline slopes/banks.

Vegetation type Mixed *Acacia* shrubland (VA18) comprises *Acacia yorkkrakinensis* subsp. *acrita*, *Allocasuarina corniculata*, *Callitris preissii* tall shrubland with *Eucalyptus pileata*, *E. leptopoda* subsp. *leptopoda* low open mallee woodland over *A. resinimarginea*, *A. yorkkrakinensis* subsp. *acrita*, *Melaleuca atroviridis*, *Thryptomene kochii* mid shrubland over *Beyeria sulcata*

var. *sulcata*, *Phebalium filifolium*, *Euryomyrtus maidenii*, *Stenanthemum stipulosum* over *Triodia rigidissima* isolated hummock grasses.

Vegetation type Mixed Eucalyptus woodland (VA19) comprises *Eucalyptus tenuis*, *E. longissima* with *E. salmonophloia*, *E. transcontinentalis* woodland over *Eremophila caperata*, *Melaleuca sheathiana*, *Acacia nigripilosa* subsp. *nigripilosa* tall sparse shrubland over *E. caperata*, *Exocarpos aphyllus*, *A. tetragonophylla* mid- open shrubland over *Scaevola spinescens*, *Beyeria sulcata* var. *sulcata*, *Olearia muelleri*, *Maireana* spp. low sparse shrubland over *Austrostipa elegantissima* isolated tussock grasses.

Vegetation type *Eucalyptus torquata* low open forest (VA25) comprises *Eucalyptus torquata* low open forest over *Exocarpos aphyllus*, *Acacia hemiteles*, *Senna artemisioides* subsp. *filifolia*, *Dodonaea stenozyga* tall to mid/open shrubland over *Westringia rigida*, *E. parvifolia* subsp. *auricampa*, *A. erinacea* low sparse shrubland.

Vegetation type Mixed Eucalyptus woodland (VA26) comprises *Eucalyptus moderata*, *E. salubris*, *E. salmonophloia*, *E. lesouefii*, *E. griffithsii* woodland over *Eremophila oppositifolia* subsp. *angustifolia*, *E. scoparia* tall sparse shrubland over *Senna artemisioides* subsp. *filifolia*, *Acacia hemiteles*, *Cratystylis conocephala* mid open shrubland over *Olearia muelleri*, *Maireana* spp., *Scaevola spinescens*, *Atriplex vesicaria* low sparse shrubland over *Austrostipa elegantissima* isolated tussock grasses.

Vegetation type *Eucalyptus salmonophloia* woodland (VA27) comprises *Eucalyptus salmonophloia* woodland over *E. salubris* low open woodland over *Eremophila scoparia*, *E. oppositifolia* subsp. *angustifolia* and *Acacia hemiteles* tall to mid sparse shrubland, over *Atriplex nummularia* subsp. *spathulata*, *A. vesicaria*, *Maireana* spp. low sparse shrubland, over *Austrostipa elegantissima* isolated tussock grasses.

Vegetation type Mixed Eucalyptus mallee woodland (VA28) comprises *Eucalyptus oleosa* subsp. *oleosa*, *E. concinna*, *E. cylindrocarpa*, *E. yilgarnensis*, *E. loxophleba* subsp. *lissophloia*, *E. pileata* low open mallee woodland over *Acacia tetragonophylla*, *Melaleuca eleuterostachya*, *Exocarpos aphyllus* tall isolated shrubs over *Beyeria sulcata* var. *sulcata*, *Eremophila caperata*, *A. merrallii*, *Scaevola spinescens* mid open shrubland over *Olearia muelleri*, *Westringia rigida* and *O. exiguifolia* low sparse shrubland, over *Triodia rigidissima* sparse hummock grassland over *Austrostipa elegantissima* isolated tussock grasses.

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

Main Roads Western Australia has applied to clear up to 100 hectares of native vegetation along the Great Eastern Highway between Southern Cross and Kalgoorlie within the Goldfields Region. The purpose of the proposed clearing is to improve road safety, reduce freight costs and improve amenity for local, tourist and heavy traffic in regional Western Australia (GHD, 2016a). The application areas comprise of separate linear sections (15 passing lanes, other road upgrades and associated laydown areas) spanning the Shires of Yilgarn and Coolgardie and the City of Kalgoorlie-Boulder.

Two Biological Assessments encompassing the application area have been undertaken by GHD. The first Biological Assessment (GHD, 2016a) was undertaken for the majority of the application area, incorporating 15 passing lanes, other road upgrades and several laydown areas. The second Biological Assessment (GHD, 2016b) was undertaken for two passing lanes that were extended (passing lanes 12 and 13), located at Straight Line Kilometre 490.7 to 512. Both Biological Assessments incorporated level 1 flora and fauna surveys, undertaken within larger survey areas, which are largely 100 metres wide, extending 50 metres from the road centreline on both sides of Great Eastern Highway (GHD, 2016a; GHD, 2016b).

The initial Biological Assessment identified 333 flora taxa representing 53 families and 157 genera (GHD, 2016a). The second Biological Assessment identified 160 taxa representing 35 families and 89 genera (GHD, 2016b). The vegetation ranges from excellent to completely degraded (Keighery, 1994) condition, with the majority of the vegetation in excellent (Keighery, 1994) condition (GHD, 2016a; GHD 2016b). Disturbances recorded throughout the survey area included dumped rubbish, vehicle tracks and the presence of weed species (GHD, 2016a).

Passing lanes 1 and 2 (passing lanes numbered from west to east) are largely dominated by *Allocasuarina* and *Acacia* shrubland (vegetation type VA03). *Melaleuca* tall shrubland (vegetation type VA06), *Eucalyptus eremophila* mallee woodland (vegetation type VA07) and *Eucalyptus pileata* open woodland over *Melaleuca sheathiana* (vegetation type VA08) also forms small components of these areas (GHD, 2016a).

Passing lanes 3 and 4 and 11 and 12 are largely dominated by *Eucalyptus* woodlands on sandy loam to clay loam soils (vegetation type VA10) and *Eucalyptus* low open forest over *Acacia acuminata* (vegetation type VA14), interspersed with shrublands on sand plains (vegetation types VA03, VA04) and mixed *Acacia* shrubland (vegetation type VA18) (GHD, 2016a). Other vegetation associations such as *Eucalyptus capillosa* subsp. *capillosa* open forest (vegetation type VA12) and *Eucalyptus salubris* and *Eucalyptus capillosa* subsp. *capillosa* open forest (vegetation type VA13) also form small components (GHD, 2016a; GHD, 2016b).

Passing lanes 5 to 8 included mixed shrubland vegetation type VA04. Two vegetation types are restricted to passing lane 9, these being, *Acacia acuminata* tall shrubland (vegetation type VA16) and *Tecticornia* low shrubland with fringing *Melaleuca* tall shrubland (vegetation type VA17) and passing lane 10 comprises *Eucalyptus* low open forest over *Acacia acuminata* (vegetation type VA14) and Mixed *Eucalyptus* open forest (VA10) (GHD, 2016a).

Passing lanes 13 to 15 are largely dominated by mixed *Eucalyptus* woodland (vegetation type VA26). Small components of *E. salmonophloia* woodland (vegetation type VA27) and *Eucalyptus torquata* low open forest (VA25) also occur (GHD, 2016a).

The Biological Assessments identified that the majority of vegetation associations are well represented adjacent to the survey areas (GHD, 2016a) whereby the Coolgardie Bioregion is extensively vegetated and retains 98 per cent of its pre-European vegetation extent (Government of Western Australia, 2014).

The closest priority ecological community (PEC) to the application area is the Duladgin Quartzite Ridge (Priority 3) located approximately 12 kilometres north of the westernmost application area. The vegetation units identified within the survey areas do not align with this or any other known priority or threatened ecological community (GHD, 2016a; GHD 2016b).

The application area is within the mapped occurrence of the Great Western Woodlands (GWW), which is recognised as an internationally significant area of great biological richness (DEC, 2010). The GWW cover an area of nearly 16 million hectares, whereby it comprises a continuous band of native vegetation that stretches from the edge of the Western Australian Wheatbelt to Kalgoorlie-Boulder in the north, to the inland deserts to the north-east and the Nullarbor Plain to the east (DEC, 2010). Woodland communities cover approximately 63 per cent of the GWW, shrublands comprise 20 per cent and mallee vegetation 10 per cent, with bare areas (five per cent) and grassland (two per cent) over the remainder (DEC, 2010). While the application area will remove vegetation associated with the GWW, it is not likely that the proposed roadside linear clearing of 100 hectares will impact significantly on the values of the greater GWW area.

Level 1 flora surveys identified three priority flora species within the larger survey areas encompassing the application area (GHD, 2016a; GHD, 2016b). Approximately 1099 individuals of *Melichrus* sp. Coolgardie (K.R. Newbey 8698) (Priority 1), 363 individuals of *Acacia desertorum* var. *nudipes* (Priority 3) and a patch (one location) of *Gnephosis intonsa* (Priority 3) were recorded within the survey areas (GHD, 2016a; GHD, 2016b).

Melichrus sp. Coolgardie (K.R. Newbey 8698) is a low, often compact shrub that grows to approximately 0.5 metres high and is characterised by pink and white flowers (Western Australian Herbarium, 1998-). This

species grows in yellow sand or loamy sand on plains and is currently known from the Coolgardie Bioregion (Western Australian Herbarium, 1998-). This species was recorded growing within vegetation type VA18, and was scattered in the areas that it occurred (GHD, 2016a; GHD, 2016b). Previous records indicate that this species is locally common and is likely to occur throughout the Coolgardie sandplain area (Department of Parks and Wildlife (Parks and Wildlife), 2016). It is considered that the proposed clearing is unlikely to have a significant impact on the local population or conservation status of this species (Parks and Wildlife, 2016), given that it is considered to be common on a regional and local scale.

Gnephosis intonsa is a herb that grows between 0.01 and 0.04 metres high, flowering yellow or brown between September and October (Western Australian Herbarium, 1998-). This species grows within red/brown clay and stony saline loam. *Gnephosis intonsa* is currently known from the Avon Wheatbelt, Coolgardie, Esperance Plains, Mallee and Murchison Bioregions (Western Australian Herbarium 1998-). Whilst this species was recorded in the larger survey area, it appears that it will not be impacted by the proposed clearing as the closest record occurs approximately 2.6 kilometres west of the nearest section of the application area.

Acacia desertorum var. *nudipes* is a dense or open shrub or tree (rarely) that grows between 0.6 and 2 metres high, flowering between August and October. This species grows within yellow sand and lateritic gravel on sandplains and flats (Western Australian Herbarium, 1998-). This species is currently known from the Coolgardie Bioregion. Approximately 363 individuals of this species were recorded from the westernmost section of the application area, growing within *Allocasuarina* and *Acacia* shrubland (vegetation type VA03) (GHD, 2016a). There are six known locations for this species, with many of the Western Australian Herbarium collections recording this species as common or frequent (Parks and Wildlife, 2016b). Therefore, it is considered locally common and the proposed clearing is not likely to have a significant impact on the local population or conservation status of this species (Parks and Wildlife, 2016b).

The application area has the potential to provide suitable habitat for seven fauna species of conservation significance (GHD, 2016a; GHD, 2016b). Fauna surveys of the application area did not identify any of these species (GHD, 2016a; GHD, 2016b), and given the presence of extensive undisturbed areas of native vegetation surrounding the application area, it is not likely to provide significant habitat for fauna.

The proposed clearing may remove a component of vegetation that forms part of a local and regional wildlife corridor, whereby the overall width of the corridor within the road reserve will be reduced. However, the proposed clearing will not sever or fragment the corridor, therefore it is unlikely that it would significantly limit fauna movement within the landscape.

The application area includes Priority 1 and Priority 3 flora species, however given that these species are locally common, and that the vegetation types mapped within the application area are well represented throughout the Coolgardie Bioregion, it is unlikely that the application area comprises a high level of biological diversity. The proposed clearing is not likely to be at variance to this Principle.

Methodology

References:

DEC (2010)
GHD (2016a)
GHD (2016b)
Government of Western Australia (2014)
Keighery (1994)
Parks and Wildlife (2016a)
Parks and Wildlife (2016b)
Western Australian Herbarium (1998-)

GIS Databases:

SAC Bio Datasets (accessed April 2016)

(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

An assessment on the likelihood of conservation significant fauna occurring in one or more of the passing lane survey areas (based on species biology, habitat requirements, quality and availability of suitable habitat and records in the survey area and surrounding area) identified that the following seven species have the potential to occur; chuditch (*Dasyurus geoffroii*) (classified as Vulnerable under the Wildlife Conservation Act 1950 (WC Act)), malleefowl (*Leipoa ocellata*) (classified as Vulnerable under the WC Act), woma (*Aspidites ramsayi*) (classified as Priority 1 by Parks and Wildlife), central long-eared bat (*Nyctophilus major tor*) (classified as Priority 4 by Parks and Wildlife), masked owl (*Tyto novae-hollandiae novaehollandiae*) (classified as Priority 4 by Parks and Wildlife), western rosella (*Platycercus icterotis xanthogenys*) (classified as Priority 4 by Parks and Wildlife) and rainbow bee-eater (*Merops ornatus*) (classified as a Migratory Terrestrial species).

The application area is within the Coolgardie Bioregion, which is extensively vegetated and retains 98 per cent of its pre-European vegetation extent (Government of Western Australia, 2014). The local area (10 kilometre radius) surrounding the application area is also extensively vegetated. Contributing to these high native vegetation retention figures is the presence of nearby large remnants secured within conservation estate, namely Goldfields Woodlands National Park (approximately 64,000 hectares), Goldfields Woodlands Conservation Park (approximately 33,000 hectares), Boorabbin National Park (approximately 28,000 hectares) and Kurrawang Nature Reserve (approximately 635 hectares).

While suitable habitat for the masked owl, western rosella and central long eared bat exists within the application area (GHD, 2016a; GHD, 2016b), none of these species have been recorded within the local area and given the abovementioned extensive surrounding remnant vegetation, the application area is not likely to comprise significant habitat for these species.

The rainbow bee-eater is a migratory avian species that occupies large home ranges and is widespread throughout Australia. This species has been recorded multiple times within the local area, is considered relatively common, and given the abundance of suitable breeding and foraging habitat within the surrounding landscape, the application area is not likely to provide significant habitat for this species.

The woma has been recorded twice within the local area, and although the application area may provide suitable breeding and hunting habitat for this species (GHD, 2016a), it is more likely to be a transient visitor to the site whilst moving to more heavily vegetated nearby areas further from the road.

The chuditch has been recorded twice within the local area. Chuditch have a preference for eucalypt forest (especially *Eucalyptus marginata*), dry woodland and mallee shrublands and utilise horizontal hollow logs or earth burrows as dens or refuge (DotE, 2014). The application area provides suitable breeding and foraging habitat for this species, however given the availability of nearby extensive high quality vegetation, the application area is not likely to provide significant habitat for this species.

Malleefowl (*Leipoa ocellata*) occur in shrublands and low woodlands that are dominated by mallee vegetation (DotE, 2015). Malleefowl require a sandy substrate and abundance of leaf litter to build nesting mounds (DotE, 2015). Nesting mounds have previously been found within close proximity to roads and there are three records of this species within five kilometres of the application area (GHD, 2016a). No nest mounds were recorded during recent field studies (GHD, 2016a; GHD 2016b), and although there may be potential for this species to construct nesting mounds within habitats of the application area in the future, the application area does not currently provide significant habitat for this species.

The proposed clearing may remove a component of vegetation that forms part of a local and regional wildlife corridor, whereby the overall width of the corridor within the road reserve will be reduced. However, the proposed clearing will not sever or fragment the corridor, and it is unlikely that it would significantly limit fauna movement within the landscape.

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

Methodology References:
DotE (2014)
DotE (2015)
GHD (2016a)
GHD (2016b)
Government of Western Australia (2014)

GIS Databases:
NLWRA, Current Extent of Native Vegetation

(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**
One species of rare flora has been recorded within the local area, which at its closest point occurs approximately 8.7 kilometres east of the application area.

Biological Assessments which included a level 1 flora survey of the application area, did not identify any rare flora (GHD, 2016a; GHD, 2016b), and it is unlikely that rare flora will be impacted by the proposed clearing.

The proposed clearing is not likely to be at variance to this Principle.

Methodology References:
GHD (2016a)
GHD (2016b)
GIS Databases:
SAC Bio Datasets (accessed April 2016)

(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 at variance to this Principle**
There are no threatened ecological communities (TECs) recorded within the local area (10 kilometre radius) and the vegetation units identified within the application area are not consistent with the description of any Commonwealth or State listed TECs (GHD, 2016a; GHD, 2016b).

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

Methodology References:
GHD (2016a)
GHD (2016b)

GIS Databases:
SAC Bio Datasets (accessed April 2016)

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

The Coolgardie Bioregion, Shire of Coolgardie, City of Kalgoorlie-Boulder, and Shire of Yilgarn all retain greater than 80 per cent of their pre-European vegetation extents (Government of Western Australia, 2014). The ten Beard vegetation associations mapped within the application area all retain greater than 70 per cent of their pre-European vegetation extents within the Coolgardie Bioregion (Government of Western Australia, 2014).

Given the remaining vegetation extents outlined above, the application area is not considered to be within an extensively cleared landscape.

The proposed clearing is not at variance to this Principle.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent DPaW Lands (%)
IBRA Bioregion*				
Coolgardie	12,912,204	12,648,491	98	16
Shire*				
Coolgardie, Shire of	3,029,733	3,017,747	99	14
Kalgoorlie-Boulder, City of	9,543,262	9,526,651	99	4
Yilgarn, Shire of	3,042,759	2,480,372	82	29
Beard Vegetation Associations in Bioregion*				
9	240,442	235,101	98	8
522	688,407	687,920	99	6
1294	6,295	6,047	96	2
1413	1,061,213	1,042,555	98	18
1148	254,932	252,776	99	17
435	738,214	732,470	99	28
536	738,214	732,470	99	28
511	2,006	1,463	73	0
128	464,424	435,177	94	20
214	184,550	183,891	99	18
	16,585	16,585	100	16

Methodology References:
Commonwealth of Australia (2001)
Government of Western Australia (2014)

(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

One section of the application area (passing lane 9) intersects the Yilgarn River. This location also includes areas influenced by increased surface water runoff attributable to the presence of nearby granite outcrops. The application area also intersects several minor non-perennial watercourses.

A Biological Assessment identified vegetation growing in association with the Yilgarn River within the application area (GHD, 2016a). The vegetation at this location comprises Tecticornia low shrubland with fringing Melaleuca tall shrubland (vegetation type VA17) (GHD, 2016a). This vegetation type supports taxa associated with waterlogged soils such as *T. pergranulata* subsp. *pergranulata* and *T. halocnemoides* complex (GHD, 2016a).

At the locality of proposed passing lane 9, the Yilgarn River has been impacted previously by road construction and drainage maintenance, which has resulted in changes to the natural watercourse hydrology, including the installation of culverts to manage water flow.

Given the above the proposed clearing is at variance to this Principle. However, given the disturbed roadside location and narrow linear nature of the application area, the proposed clearing is not likely to significantly impact on wetlands or watercourses.

Methodology References:
GHD (2016a)

GIS Databases:
Hydrography, hierarchy
Hydrography, linear
Wheatbelt Wetlands

(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 comprised of six soil landscape types;

- Mx41 is described as flat to undulating pediments with granitic rock outcrops and some low escarpments comprising chief soils of alkaline red earths, often underlain by nodular limestone pans at shallow depth.
- Mx42 is described as broad flat to undulating valleys with isolated granitic rock outcrops, low escarpments, some seasonal lakes and clay pans comprising chief soils of alkaline red earths with nodular limestone pans, and calcareous earths on low rises;
- Mx43 is described as gently undulating valley plains and pediments, with chief soils of alkaline red earths with limestone or limestone nodules at shallow depth. Associated are clay plains flanking ultrabasic rock outcrop;
- AC1 is described as gently sloping to gently undulating plateau areas, or uplands, on granites, gneisses, and allied rocks, with long gentle slopes and, in places, abrupt erosional scarps, some granitic bosses, and tors, irregularly traversed by narrow shallow valleys and flats. Chief soils comprise yellow earthy sands and sandy yellow earths on depositional sites, and ironstone gravels on erosional sites where they are underlain by hardened mottled-zone material;
- DD 15 is described as undulating plains with some low dunes, seasonal lakes, and claypans with chief soils comprising brown and grey-brown calcareous earths; and
- BB 5 is described as rocky ranges and hills of greenstones, basic igneous rock with chief soils comprising shallow calcareous loamy soils, with shallow brown and grey-brown calcareous earths. Associated soils may include alkaline red earths.

(GHD, 2016a; GHD, 2016b)

Red earths and yellow earthy sands can be susceptible to wind erosion, however, given the linearity of the proposed clearing, which is spread out over approximately 50 kilometres, and that the majority of exposed surfaces will be sealed, the risk of appreciable wind erosion is low.

The application area intersects the Yilgarn River and several minor non perennial watercourses. Given this, there is the potential for some water erosion to occur post clearing, particularly during heavy rainfall. Any erosion as a result of water flow from clearing would likely be greatest within the Yilgarn River. The application area associated with the Yilgarn River appears to be relatively sparsely vegetated, and it is not expected that clearing within this area would result in any significant water erosion.

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

Methodology References:
GHD (2016a)
GHD (2016b)

GIS Databases:
Hydrography, hierarchy
Hydrography, linear

(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

There are several Parks and Wildlife managed lands within the local area. The closest of these are Kurrawang Nature Reserve and Boorabbin National Park which are located immediately adjacent to sections of the application area. Goldfields Woodlands National Park and Goldfields Woodlands Conservation Park are also located within 100 metres of sections of the application area.

The application area does not extend beyond the road reserve and therefore there will not be any direct impacts to these conservation areas as a result of clearing. Further, given that the landscape surrounding the application area is extensively vegetated, it is not likely that the proposed clearing will impact on any linkage values between conservation areas. However, given the close proximity of the application area to Kurrawang Nature Reserve and Boorabbin National Park, there is the potential for weeds to spread and proliferate within these areas as a result of clearing. Therefore, the proposed clearing may be at variance to this Principle. Weed management measures will assist in mitigating this risk of weeds spreading into the abovementioned conservation areas.

Methodology 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 is not likely to be at variance to this Principle

The application area intersects the Yilgarn River and several minor non perennial watercourses.

The Yilgarn River and minor non perennial watercourses only flow after major rainfall events. The proposed clearing may result in some increased surface water sedimentation, particularly if rainfall occurs during works. However, this issue is likely to be minimal and short term, given the narrow linear areas proposed for clearing.

Groundwater salinity mapped within the application area is largely between 14000 and 35000 milligrams per litre (measured as Total Dissolved Solids) and numerous salt lakes occur within the local area. Given that the local area is largely intact with remnant native vegetation, and the application area is linear in nature, no significant rise in groundwater levels is expected. Therefore deterioration in the quality of surface and/or underground water via increased salinity is not expected.

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

Methodology GIS Databases:
Groundwater Salinity, Statewide
Hydrography, hierarchy
Hydrography, linear

(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 application area is located within an extensively vegetated landscape which typically experiences low annual rainfall (300 millimetres). Therefore it is not expected that the proposed clearing will cause or exacerbate the incidence or intensity of flooding.

The proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Databases:
Rainfall, Mean Annual

Planning instruments and other relevant matters.

Comments There have been no submissions received from the public in response to the proposed clearing.

The application area does not occur within any Aboriginal Sites of Significance.

Methodology GIS Databases:
Aboriginal Sites of Significance

4. References

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- Government of Western Australia (2014) 2014 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of June 2014. WA Department of Parks and Wildlife, Perth.
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- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed May 2016).