



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

| | |
|-------------------------------|-------------------------------------|
| Purpose Permit number: | CPS 4220/1 |
| Permit Holder: | Robe River Mining Co Pty Ltd |
| Duration of Permit: | 14 November 2011 – 14 November 2019 |

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 construction of the Bungaroo to Millstream Water pipeline, borefield and associated infrastructure.

2. Land on which clearing is to be done

Lot 55 on Plan 212209 (Millstream 6716)
Lot 128 on Plan 240249 (Fortescue 6716)
Lot 148 on Plan 93149 (Hamersley Range 6716)
Lot 313 on Plan 63520 (Fortescue 6716)
Unallocated Crown Land (Hamersley Range 6716)
Millstream Road reserve (Fortescue 6716)

3. Area of Clearing

The Permit Holder must not clear more than 635 hectares of native vegetation within the combined areas shaded yellow on attached Plan 4220/1a and Plan 4220/1b.

4. Period in which clearing is authorised

The Permit Holder shall not clear any native vegetation after 14 November 2016.

5. 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.

6. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for activities to the extent that the Permit Holder has the power to clear native vegetation for those activities under the *Land Administration Act 1997* or any other written law.

7. Compliance with Assessment Sequence and Management Procedures

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

PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES

8. 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.

9. Weed control

- (a) 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*:
 - (i) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
 - (ii) ensure that no *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
 - (iii) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.
- (b) At least once in each 12 month period for the term of this Permit, the Permit Holder must remove or kill any *weeds* growing within areas cleared under this Permit.

10. Retain and spread 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 6 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 laying the vegetative material and topsoil retained under condition 10(a) on the cleared area(s).
- (c) within 24 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 10(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 10(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.
- (d) where *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 10(c)(ii) of this permit, the Permit Holder shall repeat condition 10(c)(i) and 10(c)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of native vegetation.
- (e) where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in condition 10(c)(i) and (ii) of this permit, that determination shall be submitted for the CEO's consideration. If the CEO does not agree with the determination made under condition 10(c)(ii), the CEO may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 10(c)(ii).

11. Flora management

Where *Indigofera* sp. Bungaroo Creek (P3) has been identified and written location(s) provided to the CEO, the Permit Holder shall ensure that no clearing occurs within 10 metres of identified *priority flora*, unless approved by the CEO.

PART III - RECORD KEEPING AND REPORTING

12. Records to be kept

- (a) The Permit Holder must maintain the following records for activities done pursuant to this Permit in relation to the clearing of native vegetation authorised under this Permit:
 - (i) the species composition, structure and density of the cleared area;
 - (ii) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (iii) the date that the area was cleared; and
 - (iv) the size of the area cleared (in hectares).
- (b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 10 of this Permit:
 - (i) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (ii) a description of the *revegetation* and *rehabilitation* activities undertaken;
 - (iii) the size of the area *revegetated* and *rehabilitated* (in hectares); and
 - (iv) the species composition, structure and density of *revegetation* and *rehabilitation*, and
 - (v) a copy of the environmental specialist's report.

13. 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 12 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding year.
- (b) Prior to 14 August 2016, the Permit Holder must provide to the CEO a written report of records required under condition 12 of this Permit where these records have not already been provided under condition 13(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 is engaged by the Permit Holder for the purpose of providing environmental advice, who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit;

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 100 kilometres of the area cleared.

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

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 or 4 in the *Department's Declared Rare and Priority Flora List for Western Australia* (as amended);

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

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

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

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

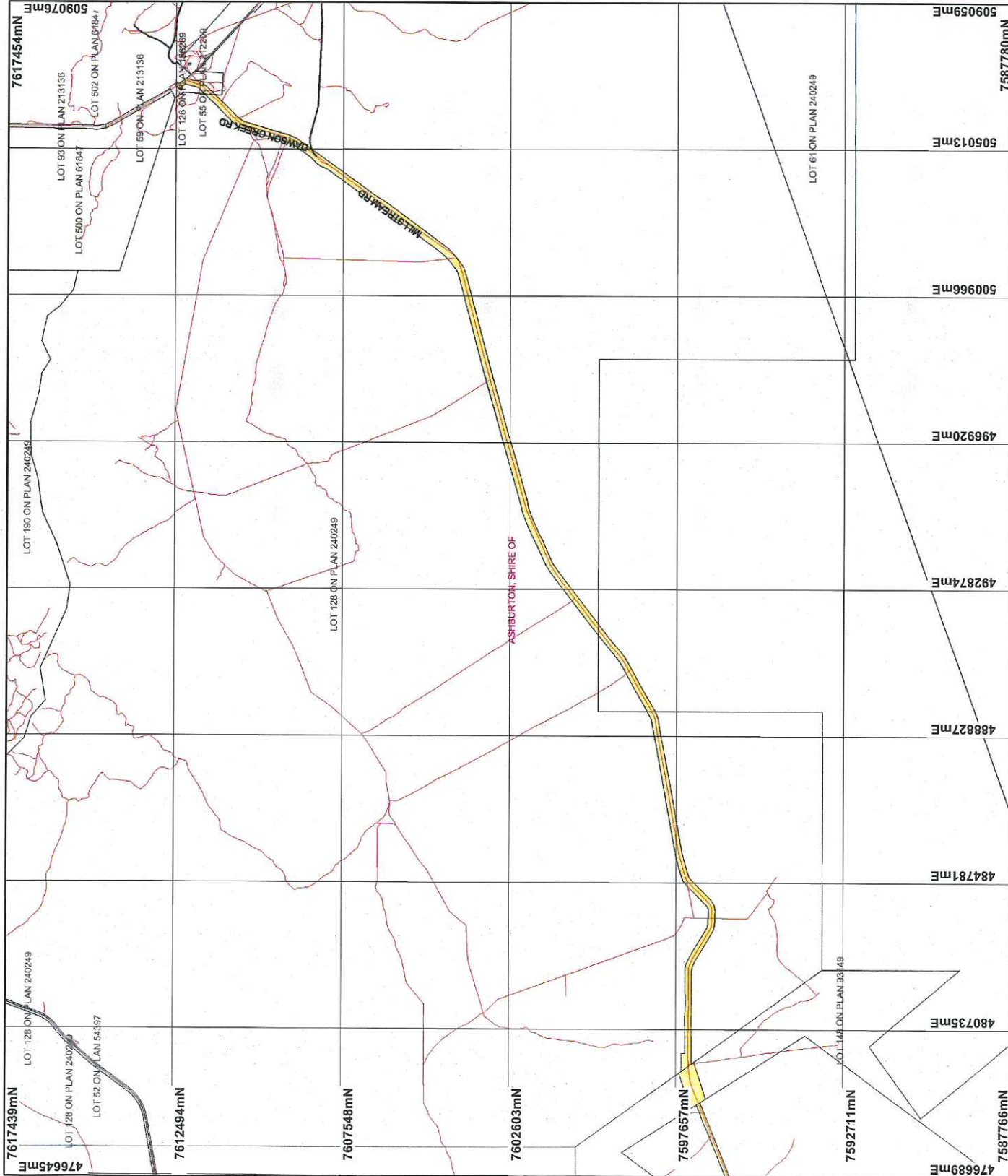


Kelly Faulkner
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

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

20 October 2011

Plan 4220/1a



LEGEND

- Clearing Instruments**
- Areas Approved to Clear
- Road Centrelines
- Cadastre for labelling
- Local Government Authorities

* Project Data is denoted by asterisk.
 This data has not been quality assured.
 Please contact map author for details.



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 (Approximate when reproduced at A4)

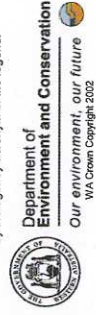
Geocentric Datum Australia 1994

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

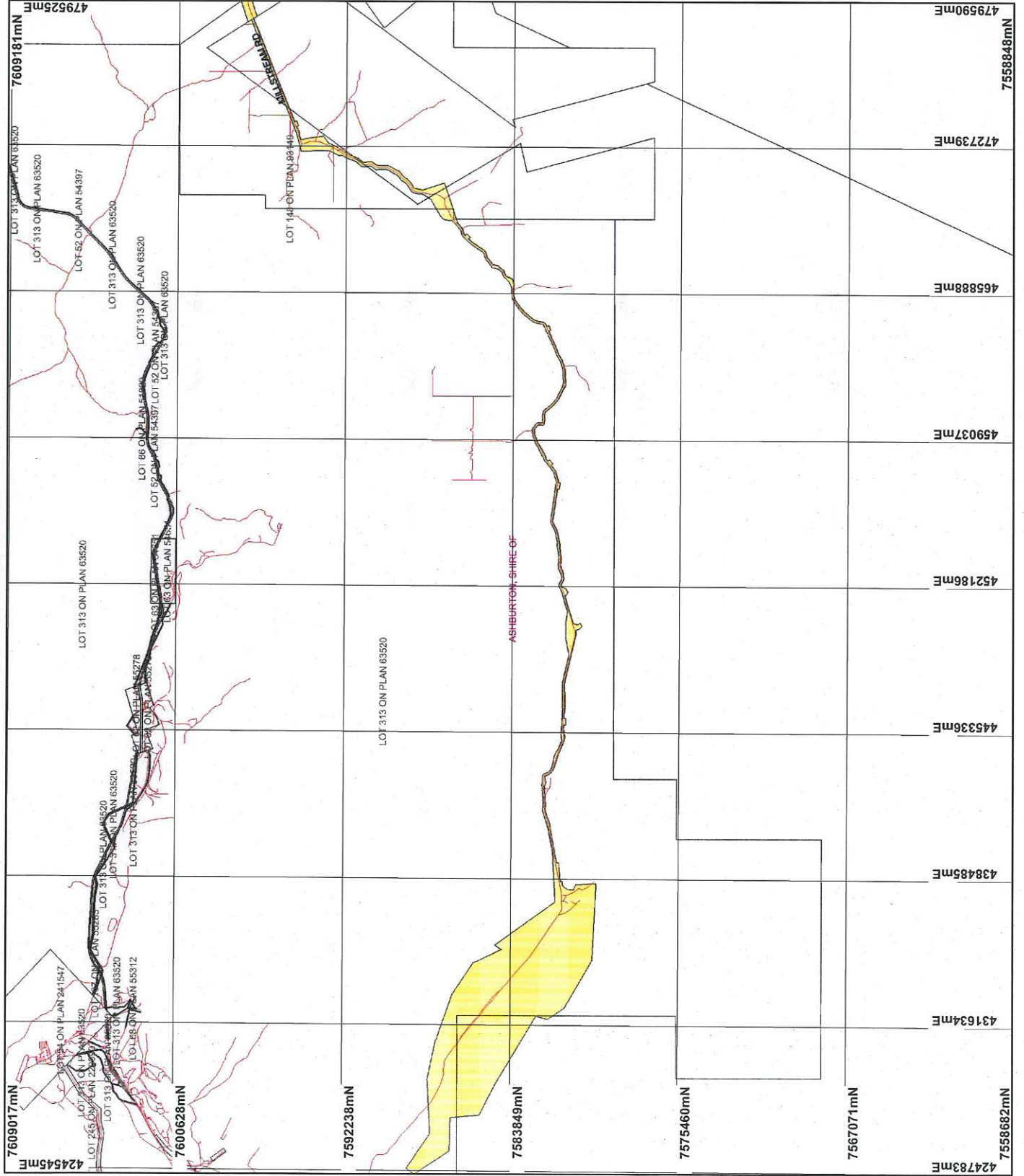
[Signature] Date 20/10/11
 K Faulkner

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

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Plan 4220/1b



LEGEND

- Clearing Instruments
- Areas Approved to Clear
- Road Centrelines
- Cadastre for labelling
- Local Government Authorities

* Project Data is denoted by asterisk.
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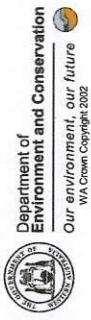
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Geocentric Datum Australia 1994

Note: the data in this map have not been projected. They result in geometric distortion or measurement inaccuracies.

K Faulkner
 Date 29/01/11

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





1. Application details

1.1. Permit application details

Permit application No.: 4220/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Mining Company Pty Ltd

1.3. Property details

Property: LOT 128 ON PLAN 240249 (FORTESCUE 6716)
LOT 55 ON PLAN 212209 (MILLSTREAM 6716)
ROAD RESERVE (FORTESCUE 6716)
UNALLOCATED CROWN LAND (HAMERSLEY RANGE 6716)
LOT 148 ON PLAN 93149 (HAMERSLEY RANGE 6716)
LOT 313 ON PLAN 63520 (FORTESCUE 6716)

Local Government Area: Shire of Ashburton

Colloquial name:

1.4. Application

| | | | |
|--------------------|-----------|--------------------|---|
| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
| 635 | | Mechanical Removal | Water/gas/cable/pipeline/power installation |

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 20 October 2011

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

| Vegetation Description | Clearing Description | Vegetation Condition | Comment |
|---|---|---|--|
| Beard vegetation association 82 - Hummock grasslands, open low tree steppe; snappy gum over <i>Triodia wiseana</i> on a lateritic crust. | The proposal is to clear 635 hectares of native vegetation in the Shire of Ashburton for the purpose of construction of the Bungaroo to Millstream Water pipeline, borefield and associated infrastructure. | Pristine: No obvious signs of disturbance (Keighery 1994) | The description and condition of the vegetation under application is determined from consultant's report (Biota 2011). |
| Beard vegetation association 175 is described as Short bunch grassland - savanna/grass plain (Pilbara). | A vegetation and flora survey was undertaken for this proposal. This survey comprised two study areas, the 8,765 ha Greater Bungaroo Flora (GBF) study area in the western section and the 1,092 ha Bungaroo Coastal Water (BCW) study area in the central and eastern sections (Biota 2011). | | |
| Beard vegetation association 609 - Mosaic: Hummock grasslands, open low tree steppe; bloodwood with sparse kanji shrubs over soft spinifex / Hummock grasslands, open low tree steppe; snappy gum over <i>Triodia wiseana</i> on a lateritic crust. | The GBF study area comprises 18 vegetation units that can be broadly defined as (Biota 2011): - Vegetation of plains - Vegetation of low hills and rises - Vegetation of creeklines and soaks | | |
| Beard vegetation association 645 - Hummock grasslands, shrub steppe; kanji & snakewood over soft spinifex & <i>Triodia wiseana</i> . | These 18 vegetation units ranged in vegetation condition (Keighery Scale 1994) from very good to pristine, with the vegetation being predominantly in pristine and excellent condition (Biota 2011). | | |
| Beard vegetation association 646 - Hummock grasslands, shrub steppe; snakewood over <i>Triodia basedowii</i> . (Hopkins et al 2001; Shepherd 2009) | The BCW study area comprises 35 vegetation units that can be broadly defined as (Biota 2011): - Vegetation of plains - Vegetation of low hills and footslopes - Vegetation of creeklines and banks - Vegetation of clay flats | | |

These 35 vegetation units ranged in vegetation condition (Keighery Scale 1994) from good to pristine, with the vegetation being predominantly in pristine condition (Biota 2011).

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

Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery 1994)

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

3. Assessment of application against clearing principles

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

Comments

Proposal is at variance to this Principle

This proposal is for the clearing of 635 ha of native vegetation within a total project footprint of 6,462 ha for the construction of the Bungaroo to Millstream Water Pipeline, borefield and associated infrastructure (Robe River 2011).

A vegetation and flora survey was undertaken for this proposal. This survey comprised two study areas, the 8,765 ha Greater Bungaroo Flora (GBF) study area and the 1,092 ha Bungaroo Coastal Water (BCW) study area (Biota 2011).

The GBF study area comprises 18 vegetation units, and two hundred and eighty-six vascular flora species, including sixteen weed species (Biota 2011). These 18 vegetation units ranged in vegetation condition (Keighery Scale 1994) from very good to pristine, with the vegetation being predominantly in pristine and excellent condition (Biota 2011).

The BCW study area comprises 35 vegetation units, and two hundred and thirty-four vascular flora species, including fourteen weed species (Biota 2011). These 35 vegetation units ranged in vegetation (Keighery Scale 1994) condition from good to pristine, with the vegetation being predominantly in pristine condition (Biota 2011).

The GBF study area encompasses the western section of the project which mostly includes the borefield. This area includes vegetation communities and flora with high conservation values (Biota 2011) including:

- identified vegetation units AiTwTspr and ChAiTwTspr (Biota 2011), inferred as Priority Ecological Community (PEC, P3) *Triodia* sp. Robe River assemblages of mesas in the Robe Valley. These vegetation units also comprise the priority flora species, *Triodia* sp Robe River (P3). The applicant has advised that AiTwTspr will be avoided, however, ChAiTwTspr will be impacted by minor clearing activities.
- identified vegetation units EvTydCYPv, ExAscICYPvCEcTe, and Wetland Mosaic, which are associated with soaks and peat soils. These communities have high conservation values due to being associated with mound springs with peat soils, the presence of priority flora species (e.g. *Eragrostis surreyana*) and very important habitat for short-range endemic invertebrates, and possibly stygobiotic fauna. An operating strategy will be implemented to monitor the impacts to Groundwater Dependant Ecosystems, including stygobiotic fauna.
- *Solanum* sp, possibly two new taxonomic species from the *Solanum* genus were collected from this area. These are very poorly known and such DEC considers it is difficult to assess the conservation status of the two possible new species. The applicant has advised that this species will not be impacted during clearing.
- *Indigofera* sp Bungaroo Creek (P3). This species is moderately geographically restricted, occurring from the Bungaroo area to Brockman. A Flora Management condition will mitigate impacts to this species.

The BCW study area encompasses the central and eastern sections of the project which mostly includes the pipelines. This area includes vegetation communities with high conservation values including:

- identified vegetation unit ChAbAsyaaAcoCEcTe, which includes *Sauropus* sp (unknown conservation significance). This is a poorly known taxa, which has been collected once during the Pilbara Biological Survey, and has been confirmed to be a new species. This vegetation unit will be impacted due to a realignment around a significant Aboriginal Heritage Site.
- identified vegetation units ASpERAxBRc and STk, these communities occur on basalt cracking clays. Vegetation units on cracking clays in other localities such as the Brockman Iron cracking clay communities of the Hamersley Range (P1) have been nominated as PECs. This area also provides suitable habitat for priority flora species *Swainsona* sp Hamersley (P3) and *Oldenlandia* sp Hamersley Station (P3).

Given the impact to vegetation communities of high conservation value, including priority ecological communities, and the impact to priority flora and significant fauna habitat; it is considered the vegetation under application comprises high biodiversity values. Therefore, the proposed clearing is at variance to this Principle.

Methodology References:
- Biota (2011)
- Robe River (2011)
- Keighery (1994)

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments **Proposal is at variance to this Principle**

A vegetation and flora survey comprised two study areas, the 8,765 ha Greater Bungaroo Flora (GBF) study area and the 1,092 ha Bungaroo Coastal Water (BCW) study area (Biota 2011).

The GBF study area comprises 18 vegetation units, and two hundred and eighty-six vascular flora species, including sixteen weed, with the vegetation being predominantly in pristine and excellent (Keighery Scale 1994) condition (Biota 2011).

The BCW study area comprises 35 vegetation units, and two hundred and thirty-four vascular flora species, including fourteen weed species, with the vegetation being predominantly in pristine (Keighery Scale 1994) condition (Biota 2011).

These 53 vegetation units were considered to represent nine broad terrestrial fauna habitat types (Biota 2011). A total two hundred and forty-eight vertebrate fauna species, including fifteen species of conservation significance may potentially occur within the study areas (Biota 2011). In addition, short-range endemic invertebrates, including mygalomorph spiders, pseudoscorpions and pulmonate snails were recorded during fauna surveys (Biota 2011). An operating strategy will be implemented to monitor impacts to groundwater dependant ecosystems, including stygobiotic fauna.

Even though the main habitat types within the study area are considered to be widespread and abundant within the extensively vegetated Pilbara bioregion, there are number of permanent and seasonal soaks which provide unique habitats within project area. In particular the identified Wetland Mosaic vegetation unit is considered to comprise high conservation values given it is a permanent water source, which is rare in the Pilbara bioregion and it is likely that a number of fauna species are dependent on this source (Biota 2011), including short-range endemic invertebrates. The applicant has advised that the Wetland Mosaic vegetation unit will be avoided.

Given the occurrence of uncommon habitat, i.e. the significant Wetland Mosaic vegetation unit, and the potential for significant habitat for short-range endemic invertebrates; it is considered the vegetation under application comprises significant habitat values. Therefore, the proposed clearing is at variance to this Principle.

Methodology References:
- Biota (2011)
- Keighery (1994)

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

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

There are no known records of rare flora within the local area (40 km radius) with the closest record, being *Lepidium catapycnon*, located over 100 km from the proposal area.

A vegetation and flora survey undertaken for this proposal did not identify any rare flora species (Biota 2011). Therefore, the proposed clearing is not likely to be at variance to this Principle.

Methodology Reference:
- Biota (2011)
GIS Database:
- SAC Bio Datasets (accessed 28 March 2011)

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

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

There are no known occurrences of threatened ecological communities within the local area (40 km radius) with the closest occurrence, being Themeda grasslands, located over 90 km from the proposal area (Biota 2011). Therefore, the proposed clearing is not likely to be at variance to this Principle.

Methodology Reference:

- Biota (2011)
- GIS Database:
- SAC Bio Datasets (accessed 28 March 2011)

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments

Proposal is not likely to be at variance to this Principle

The 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 Beard vegetation types mapped within the proposal area retain more than this 30% threshold.

In addition, within the Shire of Ashburton and the Pilbara bioregion 99.6% and 99.9% (Shepherd 2009) of pre-1750 extent of native vegetation remains, respectively.

Given that the vegetation is well represented locally and regionally, the vegetation under application it is not significant as a remnant and given the current extent remaining, the landscape is not highly cleared.

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

| | Pre-European (ha) | Current extent (ha) | Remaining (%) | Pre-European % in reserves/DEC managed lands |
|---------------------------------------|-------------------|---------------------|---------------|--|
| BIOREGION* | | | | |
| Pilbara (P) | 17,804,193 | 17,785,000 | 99.9 | N/A |
| LOCAL GOVERNMENT AUTHORITY* | | | | |
| Shire of Ashburton | 10,086,658 | 10,050,099 | 99.6 | 15.5 |
| BEARD VEGETATION ASSOCIATIONS* | | | | |
| - 82 in P bioregion | 2,563,583 | 2,563,583 | 100 | 10.5 |
| - 175 in P bioregion | 507,035 | 507,006 | 99.9 | 4.8 |
| - 609 in P bioregion | 74,186 | 74,186 | 100 | 0.0 |
| - 644 in P bioregion | 27,199 | 27,199 | 100 | 0.0 |
| - 645 in P bioregion | 84,670 | 84,670 | 100 | 0.0 |

*(Shepherd 2009)

Methodology

References:

- Commonwealth of Australia (2001)
 - Shepherd (2009)
- GIS Databases:**
- Interim Biogeographic Regionalisation of Australia
 - Pre-European Vegetation

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

Comments

Proposal is at variance to this Principle

The proposed clearing crosses Robe River, Bungaroo Creek and numerous non perennial watercourses.

A vegetation and flora survey was undertaken for this proposal. This survey comprised two study areas, the 8,765 ha Greater Bungaroo Flora (GBF) study area and the 1,092 ha Bungaroo Coastal Water (BCW) study area (Biota 2011).

The GBF study area comprises 18 vegetation units, of which six of these vegetation units are associated with the broad landscape type, creeks and soaks; and range in vegetation condition (Keighery Scale 1994) from very good to excellent (Biota 2011). This study area includes conservation significant wetland communities, identified as vegetation units EvTydCYPv, ExAsclCYPvCEcTe, and Wetland Mosaic. The applicant has advised that they will be avoiding these vegetation units.

The BCW study area comprises 35 vegetation units, of which 18 of these vegetation units are associated with the broad landscape type, creeks and soaks; and range in vegetation condition (Keighery Scale 1994) from very good to excellent (Biota 2011).

Given the presence of numerous watercourses and vegetation associated with watercourses within the

proposal footprint, the proposed clearing is at variance to this Principle.

Methodology Reference:
- Biota (2011)
GIS Databases:
- Hydrography, linear
- Hydrography, linear (hierarchy)
- Rivers

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

Comments Proposal may be at variance to this Principle

This proposal is for the clearing of 635 ha of native vegetation within a total project footprint of 6,462 ha for the construction of the Bungaroo to Millstream Water Pipeline, borefield and associated infrastructure (Robe River 2011).

The proposed clearing for the pipeline is likely to cause short term impacts, given the long and linear nature of the clearing. It is considered that the remainder of the proposed clearing, in particular within and in close proximity to watercourses and wetlands, may lead to appreciable land degradation.

It is noted that approximately 485 ha of the cleared areas not required for operations will be rehabilitated following completion of the project (Robe River 2011).

Methodology Reference:
- Robe River (2011)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments Proposal may be at variance to this Principle

Millstream Chichester National Park is located approximately 30m from the north-eastern end of the pipeline. Given the close proximity to this conservation area there may be a risk of introducing or spreading weeds into the conservation area. Therefore, the proposal may be at variance to this principle. Weed and dieback conditions will manage the potential impacts to the conservation areas.

Methodology GIS Database:
- DEC 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 Proposal is at variance to this Principle

The proposed clearing crosses Robe River, Bungaroo Creek and numerous non perennial watercourses.

A vegetation and flora survey was undertaken for this proposal. This survey comprised two study areas, the 8,765 ha Greater Bungaroo Flora (GBF) study area and the 1,092 ha Bungaroo Coastal Water (BCW) study area (Biota 2011).

The GBF study area (encompasses the borefield, western area) comprises 18 vegetation units, of which six of these vegetation units are associated with the broad landscape type, creeks and soaks (Biota 2011). The BCW study area (encompasses the pipeline, eastern area) comprises 35 vegetation units, of which 18 of these vegetation units are associated with the broad landscape type, creeks and soaks (Biota 2011).

The proposed clearing in low-lying areas and of vegetation associated with watercourses and wetlands, is likely to cause sedimentation and result in the deterioration in surface water. There is also likely to be an increase in the height of the water table, which may cause an increase in salinity of wetlands and/or an increase the area of saline influence (Biota 2011). The deterioration in water quality could result in the degradation of vegetation communities downstream of the Bungaroo Valley (western side of the proposal).

It is noted that the proposed clearing for the pipeline is likely to cause short term impacts, given the long and linear nature of the clearing. However, it is considered that the proposed clearing for the borefield will result in deterioration in the quality of surface or ground water. The applicant has implemented a construction environmental management plan which addresses this impact.

Methodology Reference:
- Biota (2011)
GIS Databases:
- Hydrography, linear
- Hydrography, linear (hierarchy)

- Rivers

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

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

The proposed clearing crosses Robe River, Bungaroo Creek and numerous non perennial watercourses.

Given the long and linear nature of the clearing for the pipeline and the occurrence of the watercourses to maintain natural water flows, the proposal is not likely to cause or increase the incidence or intensity of flooding.

Methodology

Reference:

- Biota (2011)

GIS Databases:

- Hydrography, linear

- Hydrography, linear (hierarchy)

- Rivers

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

Comments

This proposal (Pilbara Coastal Water Supply Project) is for the clearing of 635 ha of native vegetation within a total project footprint of 6,462 ha for the construction of the Bungaroo to Millstream Water Pipeline, borefield and associated infrastructure (Robe River 2011). The proposed clearing is for the following:

- underground water transfer pipeline construction corridor from Bungaroo to Millstream (86 km x 40 m)
- collector pipes from the borefield (16.5 km x 30 m)
- powerline (16.5 km x 20m)
- water and construction bores
- collector tank and pump station
- water treatment facilities
- transfer pump stations
- temporary contractor offices, laydown areas and workshops
- borrow pits for borefield pads and road maintenance
- access tracks and turning circles
- other associated activities

The Pilbara Coastal Water Supply Project was referred to the Environmental Protection Authority (EPA) in February 2010 (Robe River 2011). The EPA's decision of May 2010 was Not Assessed - Managed under Part V of the EP Act (Clearing). EPA advised that the proposal raises a number of environmental issues; however, the overall environmental impact of the proposal is not so severe as to require assessment by the EPA.

The project will involve the abstraction of groundwater. DEC considers that the groundwater abstraction will potentially impact flora and fauna (including stygobiotic fauna), in particular groundwater dependant ecosystems within the project area. A number of permanent and seasonal soaks occur in the project area (vegetation units EvTydCYPv, ExAsclCYPvCEcTe, and Wetland Mosaic) and are considered to be of high conservation significance given the unique habitat they provide. If the impacts from groundwater abstract are not appropriately managed it may result in the loss of significant species, changes in the composition of significant communities and increased fire risk due to the peat drying out. The impacts to stygobiotic fauna will be addressed through the Department of Water approval. The applicant is required to adhere to an operating strategy.

The Department of Water (DoW) advise that the proposed clearing falls within the Millstream Water Reserve which is a priority 1 water reserve, and within the proclaimed Pilbara groundwater and surface water areas. DoW (2011) advise that a bed and banks permit will be required if any interference with the bed or banks of a watercourse is to occur; also the proposal is unlikely to have an impact on the quantity or quality of groundwater provided clearing activities adhere to established codes of practice and are undertaken in accordance with the Construction Environmental Management Plan to prevent impacts to water quality.

The proposed clearing falls within the Kuruma Marthudunera Claimants, Yinjibarndi People and Ngarluma People, native title claimants' area. The native title claimants and the representatives were notified and comments were sought regarding the proposed clearing but no response has been received by DEC to date.

The proposed clearing crosses approximately fourteen Aboriginal Sites of Significance. The proponent will be advised to contact the Department of Indigenous Affairs to ensure compliance with the Aboriginal Heritage Act 1972.

Rio Tinto on behalf of Robe River has received a section 91 licence under the Land Administrative Act 1997 for the purpose of construction of the water pipeline and associated borefield the Department of Regional Development and Lands.

Methodology

References:

- DoW (2011)
- GIS databases:
 - Cadastre
 - Native Title Claims
 - Aboriginal Sites of Significance
 - Public Drinking Water Source Areas (PDWSAs)

4. References

- Biota (2011) Greater Bungaroo and Coastal Water Project Biological Review, Prepared for Rio Tinto Iron Ore, February 2011, Biota Environmental Sciences. DEC Ref A377573
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- DoW (2011) Direct Interest Submission for CPS 4220/1, Department of Water. DEC Ref A386665
- Hopkins, A.J.M., Beeston, G.R. and Harvey J.M. (2001) A database on the vegetation of Western Australia. Stage 1. CALMScience after J. S. Beard, late 1960's to early 1980's Vegetation Survey of Western Australia, UWA Press.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Robe River (2011) Pilbara Coastal Water Supply Project - Native Vegetation Clearing Permit Application Supporting Information, Robe River Mining Co Pty Ltd. DEC Ref A367729
- Shepherd, D.P. (2009) Adapted from: Shepherd, D.P., Beeston, G.R., and Hopkins, A.J.M. (2001), Native Vegetation in Western Australia. Technical Report 249. Department of Agriculture Western Australia, South Perth.

5. Glossary

| Term | Meaning |
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| BCS | Biodiversity Coordination Section of DEC |
| CALM | Department of Conservation and Land Management (now BCS) |
| DAFWA | Department of Agriculture and Food |
| DEC | Department of Environment and Conservation |
| DEP | Department of Environmental Protection (now DEC) |
| DoE | Department of Environment |
| DoIR | Department of Industry and Resources |
| DRF | Declared Rare Flora |
| EPP | Environmental Protection Policy |
| GIS | Geographical Information System |
| ha | Hectare (10,000 square metres) |
| TEC | Threatened Ecological Community |
| WRC | Water and Rivers Commission (now DEC) |