



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 4392/1
Permit Holder:	Oakajee Port and Rail Pty Ltd
Duration of Permit:	29 August 2011 –29 August 2016

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 groundwater investigations, access tracks, drill pads, laydown areas and pipelines.

2. Land on which clearing is to be done

Lot 86 on Deposited Plan 238307, Yalgoo
Lot 116 on Deposited Plan 238307, Yalgoo
Lot 14 on Deposited Plan 238307, South Murchison
Lot 28 on Deposited Plan 220349, Weld Range
Lot 124 on Deposited Plan 220349, Weld Range
Lot 132 on Deposited Plan 220349, Weld Range
Lot 128 on Deposited Plan 29079, Crown Reserve 12300, Lake Austin
Lot 141 on Deposited Plan 29079, Crown Reserve 12300, Lake Austin
Lot 23 on Deposited Plan 220763, South Murchison
Lot 22 on Deposited Plan 220764, South Murchison
Lot 91 on Deposited Plan 220764, South Murchison
Lot 11811 on Deposited Plan 220764, South Murchison
Lot 94 on Deposited Plan 220763, South Murchison

3. Area of Clearing

The Permit Holder must not clear more than 130 hectares of native vegetation within the area crosshatched yellow on attached Plan 4392/1.

4. Application

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

5. Type of clearing authorised

(a) In accordance with this Permit, the permit holder may clear *native vegetation* for *project activities*, which means any one or more of the following:

- (i) establishment of water *bores* and water pipelines
- (ii) construction of *turkey nest dams*
- (iii) maintenance of existing access tracks
- (iv) construction of up to 8m wide access tracks
- (v) construction of 50m by 50m drill pads
- (vi) construction of evaporation sumps and re-circulation tanks
- (vii) construction of containment bunds
- (viii) construction of *laydown areas*
- (ix) construction of crib rooms, sheds, workshops and security gates
- (x) installation of *temporary structures*
- (xi) excavation of test pits and geotechnical works
- (xii) construction of fences around *heritage sites* and other areas to be protected
- (xiii) installation and maintenance of signage
- (xiv) *rehabilitation* of cleared areas and rework of *rehabilitated* areas

(b) 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.

6. Compliance with Assessment Sequence and Management Procedures

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

PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES

7. Avoid, minimise etc clearing

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

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

8. 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.

9. Fauna management

(a) Prior to undertaking any clearing authorised under this Permit, the areas shall be inspected by a *fauna specialist* who shall identify habitats suitable to be utilised by fauna species listed below:

- (i) *Egernia stokesii subsp. Badia* (Western Spiny-tailed Skink);
- (ii) *Leipoa ocellata* (Malleefowl)
- (iii) *Petrogale lateralis subsp. Lateralis* (Black-footed Rock Wallaby)
- (iv) *Lerista eupoda* (Good-legged Lerista)
- (v) *Ardeotis australis* (Australian Bustard)

(b) Where *Egernia stokesii subsp. Badia* (Western Spiny-tailed Skink), *Petrogale lateralis subsp. Lateralis* (Black-footed Rock Wallaby) and *Lerista eupoda* (Good-legged Lerista) habitat is

identified in relation to condition 9(a)(i), (iii) and (iv) of this Permit, the Permit Holder shall ensure that no clearing occurs within 50 metres of the identified habitat, unless approved by the CEO.

- (c) Where *Leipoa ocellata* (Malleefowl) or *Ardeotis australis* (Australian Bustard) nests are identified in relation to conditions 9(a)(ii) and (v) of this Permit, the Permit Holder shall ensure that no clearing occurs within 50 metres of the identified *Leipoa ocellata* (Malleefowl) and *Ardeotis australis* (Australian Bustard) nests, unless approved by the CEO.

10. Flora management

- (a) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *botanist* to inspect that area for the presence of rare flora listed in the *Wildlife Conservation (Rare Flora) Notice 2010 (2)* and *priority flora*.
- (b) Where rare flora or *priority flora* are identified in relation to condition 10(a) of this Permit, the Permit Holder shall ensure that:
- (i) no clearing occurs within 50 metres of identified rare flora, unless approved by the CEO, and no clearing of identified rare flora occurs unless approved under section 23F(2) of the *Wildlife Conservation Act 1950*; and
 - (ii) no clearing of identified *priority flora* occurs and no clearing occurs within 20 metres of identified *priority flora*, unless approved by the CEO.

11. 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) At an optimal time within 12 months following completion of geotechnical investigations, *revegetate* and *rehabilitate* areas not required for future scheduled and approved development, by:
- (i) ripping the ground on the contour to remove soil compaction; and
 - (ii) laying the vegetative material and topsoil retained under condition 11(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 11(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 11(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 additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 11(c)(ii) of this permit, the Permit Holder shall repeat condition 11(c)(i) and 11(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 11(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 11(c)(ii), the CEO may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 11(c)(ii).

PART IV – RECORD KEEPING AND REPORTING

12. Records must be kept

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

- (a) In relation to the clearing of native vegetation authorised under this Permit:
 - (i) the species composition, structure and density of the cleared area;
 - (ii) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (iii) the date that the area was cleared; and
 - (iv) the size of the area cleared (in hectares)

- (b) In relation to fauna management pursuant to condition 9 of this Permit:
 - (i) the location of each habitat identified recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; and
 - (ii) the species of fauna reasonably likely to utilise, or that have been observed utilising, the habitat/s.

- (c) In relation to flora management pursuant to condition 10 of this Permit:
 - (i) the location of each rare or priority flora species, 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 species name of each rare or priority flora species identified; and
 - (iii) a copy of the botanist's flora survey report.

- (d) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 11 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;
 - (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.

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 22 May 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:

bore an opening in the ground made or used to obtain access to underground water;

botanist means a person with specific training and/or experience in the ecology and taxonomy of Western Australian flora;

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;

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

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

heritage sites means:

- (a) an "Aboriginal site" as defined in the *Aboriginal Heritage Act 1972* (WA);
- (b) a "significant Aboriginal area" or "significant Aboriginal object" as defined in the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth); or
- (c) a site that has or is proposed to be listed on the "Register", as that term is defined in the *Heritage of Western Australia Act 1990* (WA); and
- (d) a place that is listed, or proposed to be listed on the "National Heritage List", as that term is defined in the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

laydown areas means a place where materials and equipment can be regularly stored on the ground for a period of time;

local provenance means native vegetation seeds and propagating material from natural sources within 50 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;

native vegetation has the meaning given to it in sections 3 and 51A of the Environmental Protection Act 1986 and regulation 4 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004;

optimal time means the period from April to May for undertaking *direct seeding*, and the period from May to June for undertaking *planting*;

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);

project activities means those activities described in condition 5(a) of this Permit;

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;

temporary structure means a structure not placed on permanent footings;

turkey nest dam means a dam constructed on relatively flat ground with earth walls on all sides;

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.



M Warnock
A/MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

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

4 August 2011

Plan 4392/1



LEGEND

Local Government Authorities

Western Australia Landsat Mosaic 25m - AGO 2006

Clearing Instruments

Areas Approved to Clear



Geocentric Datum Australia 1994

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

M Warnock Date *4/8/11*

M Warnock

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

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



Department of Environment and Conservation

Our environment, our future
WA Crown Copyright 2002

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



1. Application details

1.1. Permit application details

Permit application No.: 4392/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Oakajee Port and Rail Pty Ltd

1.3. Property details

Property:

LOT 86 ON PLAN 238307 (YALGOO 6635)
LOT 14 ON PLAN 238307 (SOUTH MURCHISON 6635)
LOT 116 ON PLAN 238307 (YALGOO 6635)
LOT 132 ON PLAN 220349 (WELD RANGE 6640)
LOT 28 ON PLAN 220349 (WELD RANGE 6640)
LOT 124 ON PLAN 220349 (WELD RANGE 6640)
ROAD RESERVE (WELD RANGE 6640)
CROWN RESERVE 12300 (LAKE AUSTIN 6640)
LOT 141 ON PLAN 29079 (LAKE AUSTIN 6640)
LOT 128 ON PLAN 29079 (LAKE AUSTIN 6640)
LOT 23 ON PLAN 220763 (SOUTH MURCHISON 6635)
ROAD RESERVE (SOUTH MURCHISON 6635)
LOT 91 ON PLAN 220764 (SOUTH MURCHISON 6635)
LOT 94 ON PLAN 220763 (SOUTH MURCHISON 6635)
LOT 11811 ON PLAN 220764 (SOUTH MURCHISON 6635)
LOT 22 ON PLAN 220764 (SOUTH MURCHISON 6635)

Local Government Area: Shire of Murchison, Shire of Yalgoo and Shire of Cue

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
130		Mechanical Removal	Geotechnical investigations

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 4 August 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 associations:	This application is to clear up to 130 hectares of native vegetation within two clearing footprint areas totalling 126,380ha within the Shires of Murchison, Yalgoo and Cue. The purpose is for groundwater investigations along the Sanford River paleochannel to locate a sustainable water source (OPR, 2011). This application also includes the construction of 8m wide access tracks, 50m by 50m drill pads, laydown areas and pipelines (OPR, 2011).	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994)	The condition of the vegetation was determined from aerial photography and a level 1 Vegetation, Flora and Fauna Desktop Assessment (Astron, 2011).	
18- Low woodland; mulga (Acacia aneura)		To		
1125- Succulent steppe with scrub; Acacia victoriae & snakewood over saltbush & bluebush				
29- Sparse low woodland; mulga, discontinuous in scattered groups		The area under application is primarily pastoral leasehold land with the remainder unallocated Crown land which has historically has been subjected to a long history of pastoral activities and feral grazing (Astron, 2011). The vegetation under application consists primarily of Acacia victoria bounded by A. eremaea open shrubland over chenopod shrub community (Astron, 2011). The riparian vegetation of the tributaries is primarily A. aneura open shrubland over mixed Eremophila spp. and the areas adjacent to the river channels have been mapped as isolated A. aneura and Acacia spp. shrubs with a chenopod understory such as Atriplex spp. and Maireanna spp. (Astron, 2011).		Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994)
326- Low woodland over scrub; mulga over bowgada & minnieritchie scrub				
39- Shrublands; mulga scrub (Shepherd, 2009)				

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 may be at variance to this Principle

This application by Oakajee Port and Rail Pty Ltd (OPR) is to clear up to 130 hectares of native vegetation within two footprint areas totalling 126,380ha (an eastern 55,362ha area and a western 71,017ha area) within the Shires of Murchison, Yalgoo and Cue, for the purpose of Sanford River paleochannel groundwater investigations, involving the construction of access tracks, drill pads, laydown areas and pipelines (OPR, 2011).

OPR provided the Oakajee Port and Rail Sanford River Paleochannel Level 1 Vegetation, Flora and Fauna Desktop Assessment May 2011 (Astron, 2011) for Oakajee Port and Rail in May 2011.

Five Beard vegetation associations have been mapped within the application area, all of which have 100% of pre-European vegetation remaining in the Murchison bioregion. The surrounding landscape is predominantly flat and dominated by low mulga woodlands and saltbush scrublands with a long history of pastoral activities and feral grazing (Astron, 2011).

21 species of priority flora are known to occur within and in close proximity to the areas under application, seven of which are listed as Priority 1 species. No priority flora species are known to occur within the eastern area under application and two are known to occur within the western area under application; *Lepidium scadens* (P3) and *Gunnipopsis divisa* (P1). The majority of these species have been recorded on the same soil and vegetation types as the areas under application and have the potential to occur within the application areas. Requirements to undertake flora surveys prior to clearing and avoid identified priority flora species will mitigate the impact to the conservation values of priority flora in the area.

OPR have advised that areas of native vegetation in the vicinity of the known locations of *Acacia subsessilis* (P3) and *Goodenia neogoodenia* (P4) will be avoided with a buffer of 20m, and a qualified Environmental Advisor will inspect the sites for priority flora prior to clearing for the purposes of site demarcation (OPR, 2011).

No Priority Ecological Communities (PECs) are known to occur within the application areas however the following four priority 1 communities have been mapped nearby:

- New Forest (including Twin Peaks) banded ironstone formation (P1) 3.5km N
- Meka Calcrete (P1) 31km N
- Gabyon Calcrete (P1) 32km S
- Weld Range vegetation complexes (P1) is 28km NE

These PECs all occur within the same vegetation types, and two occur on both the same soil and vegetation types, as the proposed clearing. Therefore these four Priority Ecological Communities have the potential to occur within the application areas. Requirements to avoid or minimise will reduce possible impacts to the conservation values of these communities.

Eleven conservation significant fauna species were identified by Astron (2011) as likely to occur within the application areas, including three that are federally protected under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*. These species are the endangered *Egernia stokesii* subsp. *Badia* (Western Spiny-tailed Skink), vulnerable *Leipoa ocellata* (Malleefowl) and vulnerable *Acanthiza iredalei* subsp. *iredalei* (Slender-billed Thornbill, western species). Requirements to survey for known priority and specially protected fauna and avoid identified habitat will mitigate impacts on these species.

Given the potential impact to priority flora, conservation significant fauna habitat, and priority ecological communities, it is considered the vegetation under application may comprise high biodiversity values. Therefore, the proposed clearing may be at variance to this Principle.

Methodology

Astron, 2011
OPR, 2011
Shepherd, 2009

GIS Databases:

- Interim Biogeographic Regionalisation for Australia (IBRA)
- SAC Biodatasets (Accessed 21 July 2011)
- Local Government Authorities

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

Comments

Proposal may be at variance to this Principle

A total of three conservation significant fauna species have been recorded near the application areas.

Egernia stokesii subsp. *Badia* (Western Spiny-tailed Skink- EN) is listed as endangered and is protected under both the state *Wildlife Conservation Act 1950* and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. This reptile shelters in hollow logs, behind bark of fallen trees and in granite crevices (DEC, 2007). Prior surveys undertaken by Ecologia in 2010 for OPR's rail corridor within the same area recorded these species in granites with boulders or crevices; those granites with no boulders or crevices

recorded no Western Spiny-tailed Skinks (Astron, 2011).

Ardeotis australis (Australian Bustard- P4) is uncommon, occurs in open or lightly wooded grasslands and nests on the ground, laying one or two eggs (DEC, 2007) As this species is often found near water and has been recorded near the application area it is likely to occur within the application areas near the Sanford River and its watercourses. Bustards are known to readily desert nests in response to disturbance by humans, sheep or cattle (Burbidge, 2004) therefore Bustard nests should be avoided and will be managed by a fauna condition to protect identified nests.

Burhinus grallarius (Bush Stone-curlew- P4). The Bush Stone-curlew inhabits sparsely grassed, lightly timbered open forest or woodlands (DEC, 2007). As the areas under application include low acacia woodland (Shepherd, 2009) and has been recorded near the application area this species is likely to occur. However, given the highly mobile nature of this species and similar habitat in the local area, impacts on this species are likely to be low.

Astron's Level 1 Vegetation, Flora and Fauna Desktop Assessment completed in May 2011 identified a further eight conservation significant fauna species that are likely to occur within the application areas. These are listed below:

- *Lerista eupoda* (Good-legged Lerista) (Priority 1)
- *Acanthiza iredalei* subsp. *Iredalei* (Slender-billed Thornbill, western species) (Vulnerable)
- *Amytornis textillis* subsp. *Textillis* (Thick-billed Grasswren, western subspecies) (Priority 4)
- *Cacatua leadbeateri* (Major Mitchell's Cockatoo) (specially protected fauna)
- *Falco peregrinus* (Peregrine Falcon) (specially protected fauna)
- *Leipoa ocellata* (Malleefowl) (Vulnerable)
- *Petrogale lateralis* subsp. *Lateralis* (Black-footed rock wallaby) (Vulnerable)
- *Branchinella wellaerdi* (Fairy Shrimp) (IUCN Red List)

Leipoa ocellata (Malleefowl) and *Petrogale lateralis* subsp. *Lateralis* (Black-footed Rock Wallaby) are likely to be impacted by the clearing due to habitat loss or disturbance.

Malleefowl build distinctive nests that comprise a large mound of soil covering a central core of leaf litter, on average spanning more than five metres and up to one metre high. Breeding malleefowl tend to be sedentary, as they nest and roost in the same area year after year, and will only take to flight as a last resort (Burbidge, 2004) therefore are vulnerable to disturbance.

Petrogale lateralis subsp. *Lateralis* subspecies of Black-footed rock wallaby is shy and lives in granite outcrops and hummock grasslands. Current populations remain restricted to suitable habitat in the Little Sandy Desert, Cape Range, Wheatbelt, and Barrow and Salisbury Islands. (Burbidge, 2004). Due to the small population size and restricted distribution of this subspecies in the Little Sandy Desert and within the application footprint area, it is likely to be impacted by the clearing. Therefore suitable habitat for this subspecies should be avoided.

Lerista eupoda's (Good-legged Lerista) distribution is highly restricted and only known to occur in the semi-arid interior of Western Australia between Cue and Meekatharra in open mulga vegetation on red and sandy loams (Astron, 2011).

Amytornis textillis subsp. *Textillis* (Thick-billed Grasswren, western subspecies) is unlikely to occur within the application areas as it is restricted to the Shark Bay region (Burbidge, 2004).

Branchinella wellaerdi (Fairy Shrimp) is a freshwater crustacean that the IUCN has listed as Vulnerable and may occur in the Sanford River and its tributaries (Astron, 2011) however impacts from the proposed terrestrial vegetation clearing are likely to be minimal given the aquatic nature of this species.

The remaining three conservation significant fauna species that are likely occur within the application areas are highly mobile with widespread distributions throughout Australia, and given the large extent of similar habitat in the local area, impacts on these species are likely to be low in the context of the local landscape.

Astron's Level 1 Vegetation, Flora and Fauna Desktop Assessment also identified the following three bird species listed as Migratory under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* that may potentially occur within or visit the application areas:

- *Apus pacificus* (Fork-tailed Swift)
- *Ardea alba* (Great Egret)
- *Merops ornatus* (Rainbow Bee-eater)

Given the migratory nature of these species and extensive similar habitat in the local area, impacts on these species are likely to be low.

It is noted that OPR will implement the following fauna management practices:

- consult with DEC regarding any fauna recorded within the application area and potential relocations
- ensure that rocky habitats, such as granite rock areas, will be avoided as they are habitat for *Egernia stokesii* subsp. *Badia* (Western spiny-tailed skink)
- engage a suitably qualified ecologist to conduct a thorough search of the disturbance areas for conservation significant fauna (identified in Astron's desktop survey) prior to any disturbance
- should conservation significant fauna be located, the proposed works will be modified and site locations

- adjusted to avoid the fauna and any associated suitable habitat
- all tracks and excavations will be sloped to allow fauna to escape
 - all holes and excavations will be covered where possible to ensure that native fauna do not become trapped
 - any death of conservation significant fauna will be reported to DEC

Given that the vegetation of the proposed clearing comprises habitat for a number of conservation significant fauna that have been recorded nearby the application areas, the proposed clearing may be at variance to this Principle.

Requirements to survey for protected fauna and avoid identified habitat will mitigate the impact of clearing potentially significant fauna habitat.

Methodology Astron, 2011
Burbidge, 2004
DEC, 2007-
DEC, 2007
OPR, 2011
Shepherd, 2009

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

Comments Proposal may be at variance to this Principle

No declared rare flora (DRF) has been recorded within the application areas.

The closest known records of DRF are *Stylidium* sp. Yalgoo (D. Coultas *et al.* Opp 01) (a species of triggerplant), located 57km south and *Eremopila rostrata* subsp. *Rostrata* located 47km east of the eastern area under application and listed as threatened (considered to be facing a high risk of extinction in the wild) under the *Wildlife Conservation Act 1950*. These species occur in the same vegetation and soil type as the application area hence may occur within the application area.

It is noted that OPR will conduct pre-clearance targeted inspections for DRF by a qualified botanist and a buffer of 20m will be implemented should such species be identified (OPR, 2011). Requirements to survey for DRF and avoid identified habitat will mitigate impacts on these species.

Given that the vegetation of the proposed clearing may comprise habitat for two DRF species that have been recorded in the area, the proposed clearing may be at variance to this Principle.

Methodology OPR, 2011
Western Australian herbarium, 1998-

GIS Databases:
- SAC Biodatasets (Accessed 21 July 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 records of Threatened Ecological Communities (TEC's) within the application area. The closest occurrence being the Moonagin System, located over 180kms south of the application area.

Given the distance to the nearest TEC, it is considered that the proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Databases:
- SAC Biodatasets (Accessed 21 July 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

Within the Murchison Bioregion 100% of each of the five mapped Beard vegetation associations remain.

Given that the vegetation is well represented locally and regionally, the vegetation under application it is not significant as a remnant and the current extent remaining, the clearing as proposed is not likely to be at variance to this Principle.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DEC Managed Lands (%)
IBRA Bioregion*				
Murchison	28,120,586.84	28,120,586.84	100.00	7.71
Shires*				
Shire of Murchison	4,504,590.91	4,503,951.98	99.99	7.65
Shire of Cue	1,358,218.28	1,358,218.28	100.00	3.79
Shire of Yalgoo	2,794,609.16	2,793,362.30	99.96	23.35
Beard Vegetation Associations in Bioregion*				
18	12,403,172.36	12,403,172.36	100.00	4.96
1125	65,214.28	65,214.28	100.00	0.00
29	2,956,382.07	2,956,382.07	100.00	3.16
326	494,516.70	494,516.70	100.00	21.28
39	1,148,400.31	1,148,400.31	100.00	3.58

*(Shepherd, 2009)

Methodology GIS Databases:
 -Western Australian Landsat Mosaic 25m- AGO 2006
 -Interim Biogeographic Regionalisation for Australia (IBRA)
 -NWLRA, Current Extent of Native 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

161.3ha of the proposed 126,281ha footprint area consists of the Sanford River and its primary tributaries (including Ilkabiddy, Choallie and Waterfall Creeks), which drain from the Yilgarn Plateau to the Indian Ocean at Kalbarri (OPR, 2011). The area under application is completely within the Murchison drainage basin (Astron, 2011).

The Sanford River is a major, non perennial watercourse which is a tributary of the Murchison River. Along the Sanford River paleochannel are the sites of the hydrogeological investigations to find a sustainable groundwater source (OPR, 2011). There are also 30.7 kilometers of minor watercourses, including Bingangwah Brook, Gunnethurra Creek and Twenty Seven Mile Creek (Astron, 2011).

The riparian vegetation of the tributaries and watercourses is rated poor to fair and consists of primarily *A. aneura* open shrubland over mixed *Eremophila* spp (Astron, 2011). The areas adjacent to the river channels have been mapped as isolated *A. aneura* and *Acacia* spp. shrubs with a chenopod understory such as *Atriplex* spp. and *Maireanna* spp. (Astron, 2011). It is also expected that there will be riparian vegetation extending well beyond the defined tributaries and watercourses, such as flood plain areas.

Previous pastoral activities undertaken close to the Sanford River and its tributaries within the application area may have already degraded the riparian vegetation and top soil (Astron, 2011). It is noted that OPR will minimise the clearing of riparian vegetation and avoid the disturbance of river banks and the associated vegetation communities where possible (OPR, 2011). Requirements to avoid or minimise clearing will reduce possible impacts to the values of the riparian vegetation.

Given the presence of numerous watercourses and vegetation associated with watercourses within the proposed clearing footprint, the proposed clearing is at variance to this Principle.

Methodology Astron, 2011
 OPR, 2011

GIS Databases:
 - Rivers

- Hydrography, linear
- ANCA, Wetlands
- RAMSAR, Wetlands

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

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

The western 71,017ha area under application can be generally described as alluvial flats that are frequently saline and flank river courses. Chief soils are hard alkaline and hard neutral red soils and there are some extensive areas of saline red soils and brown calcareous soils (Northcote *et al* 1960 - 1968).

The eastern 55,362ha area under application can be generally described as extensive flat and gently sloping plains with a scatter of surface gravels. Chief soils are shallow acid red earths and shallow earthy loams often occurring in intimate micro-association (Northcote *et al* 1960 - 1968).

The areas under application are in a remote pastoral lease area associated with zero groundwater salinity, low annual rainfall (~300mm) and low relief topography. The landscape of the Murchison area is recognised as suffering landscape stress after a long history of pastoral activities and grazing pressure from feral animals such as goats and rabbits (Astron, 2011).

It is noted that OPR will not carry out excavations when heavy rain or extreme weather events are forecast. In addition to this DEC recommends that the operation be limited to dry soil conditions as much as possible, due to the possibility of boggy conditions in drainage lines and the associated erosion risks.

It is noted that OPR will retain a buffer of at least 50m between the 50m by 50m drill pads and any defined drainage line and use existing track crossings of defined creek or drainage lines to minimise disturbance to the Sanford paleochannel as much as possible (OPR, 2011).

21 weed species have been identified within or close to the application areas including the highly invasive *Cenchrus ciliaris* (buffel grass) (Astron, 2011). It is noted that OPR will implement strict weed control measures to avoid the introduction of weeds to non-weed infested areas and not disturb or destabilise the river banks to reduce the risk of soil bank erosion and increased sediment load in the river system. It is also noted that OPR will implement a rehabilitation program to ensure there is no increased erosion (OPR, 2011).

Astron (2011) recommend that all logs and vegetation debris from areas of operation are retained for reuse as they are not only important components of fauna habitat but also help reduce sheetflow erosion thus aiding in water infiltration (Astron, 2011). Requirements to rehabilitate and control weeds will reduce possible land degradation impacts.

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

Methodology Astron, 2011
Northcote *et al.* (1960- 68)

GIS Databases:
-Western Australian Landsat Mosaic 25m- AGO 2006
-Topographic contours, statewide
-Rainfall, mean annual
-Groundwater salinity, statewide
-Soils, statewide

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

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

The areas proposed to be cleared are not located within or adjacent to any conservation areas. The closest conservation area is the Dalgara lease held in name of CALM Executive Body located 10km south of the eastern area under application.

Given the distance to the nearest conservation area, the proposed clearing is not likely to be at variance to this Principle.

Methodology GIS Databases:
-Western Australian Landsat Mosaic 25m- AGO 2006
- 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 not likely to be at variance to this Principle

The proposed clearing occurs along the Sanford River, numerous creeks and watercourses.

The Department of Water (DoW) advise that the areas under application are within a proclaimed groundwater area however the proposed clearing is not believed to have a negative impact on the water quality of the groundwater source (DoW, 2011). DoW advise the clearing may impact the erosion associated with surface water flow however due to the low rainfall in the area this is not expected to be a concern (Dow, 2011).

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

Methodology DoW, 2011
OPR, 2011

GIS Databases:
- Rivers
- 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 Proposal is not likely to be at variance to this Principle

There are no mapped wetlands within the application areas. The nearest wetland is an ANCA wetland located 22 kilometres northwest of the eastern application area.

The areas proposed to be cleared occur on extensive flat and gently sloping plains with hard red soils and shallow earthy loams (Northcote *et al*, 1960- 68) in an area of low annual rainfall (~300mm).

Given the low topography, low rainfall and the occurrence of the watercourses to maintain natural water flows, the proposed clearing is not likely to cause or increase the incidence or intensity of flooding and therefore is not likely to be at variance to this Principle.

Methodology Northcote *et al*. (1960- 68)

GIS Databases:
- ANCA, Wetlands
- RAMSAR, Wetlands
- Topographic contours, statewide
- Rainfall, mean annual

Planning instruments, Native Title, Previous EPA decisions or other matters.

Comments

This application (part of the Oakajee Rail Development) is for the clearing of up to 130 ha of native vegetation within a total project footprint area of 126,380ha for the purpose of groundwater investigations along the Sanford River paleochannel to locate a sustainable water source (OPR, 2011). These investigations are located outside of the Oakajee Rail Development area which is currently under EPA assessment (Assessment No.1818). This application also includes, but is not limited to, the construction of 8m wide access tracks, 50m by 50m drill pads, laydown areas, pipelines, water pumps, fuel storage, containment bunds for potential pipeline breaches, turkey nests, water truck stand pipes, sheds, workshops, fences, security gates and signage (OPR, 2011).

The applicant has provided a copy of the 26D Licence to Construct or Alter Well, issued by the Department of Water under the *R/W Act 1914*, valid from 21 July 2011 to 1 August 2012.

The area under application occurs within the boundaries of the Wadjari Yamatji native title claim. These claimants and their representative body, the Yamatji Marlpa Aboriginal Corporation, have been notified by DEC of this application.

Seven Aboriginal heritage sites that have been registered with the Department of Indigenous Affairs (DIA) occur within the application areas. It is noted that OPR are yet to receive approval from DIA to disturb a registered heritage site, as required under Section 18 of the *Aboriginal Heritage Act 1972*.

The areas under application are zoned Rural/ Mining.
No public submissions have been received.

Methodology OPR (2011)

GIS Databases:
-Western Australian Landsat Mosaic 25m- AGO 2006

- Cadastre- Landgate 2008
- Town Planning Scheme Zones
- RIWI Act, groundwater
- Aboriginal Sites of Significance
- Native Title Claims- Registered with the NNTT

4. References

- Astron (2011) Oakajee Port and Rail Sanford River Paleochannel Level 1 Vegetation, Flora and Fauna Desktop Assessment May 2011, Astron Environmental Services, Perth, Western Australia.
- Burbidge, A. (2004) Threatened Animals of Western Australia, Department of Conservation and Land Management, Perth, Western Australia.
- DEC (2007 -) NatureMap: Mapping Western Australia's Biodiversity. Department of Environment and Conservation. URL: <http://naturemap.dec.wa.gov.au/>. Accessed 21/7/2011.
- DEC (2007) DEC Fauna Habitat Notes.xls. February 2007. Department of Environment and Conservation, Western Australia.
- DoW (2011) Clearing permit application CPS 4392/1 - Direct Interest Response. Department of Water, Western Australia. Received 22/07/2011. DEC Ref: A415444
- 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.
- OPR (2011) OPR Terrestrial Rail- Native Vegetation Clearing Permit Supporting Report, Perth, Western Australia.
- 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.
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Environment and Conservation. <http://florabase.dec.wa.gov.au/> (Accessed 21/7/2011).

5. Glossary

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