



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 4436/1
Permit Holder:	Oakajee Port and Rail Pty Ltd
Duration of Permit:	26 September 2011 –26 September 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 35 on Plan 238323, East Murchison
Lot 36 on Plan 238366, Meekatharra

3. Area of Clearing

The Permit Holder must not clear more than 100 hectares of native vegetation within the area crosshatched yellow on attached Plan 4436/1.

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) *Macrotis lagotis* (Greater Bilby)
- (iii) *Ardeotis australis* (Australian Bustard)
- (iv) *Pseudomys chapmani* (Western Pebble-Mound Mouse)
- (v) *Idiosoma nigrum* (Shield-backed Trapdoor Spider)

(b) Where *Egernia stokesii subsp. Badia* (Western Spiny-tailed Skink) habitat is identified in relation to condition 9(a)(i) 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 *Ardeotis australis* (Australian Bustard) nests, *Pseudomys chapmani* (Western Pebble-Mound Mouse) mounds and/or *Macrotis lagotis* (Greater Bilby) burrows are identified in relation to condition 9(a) (ii), (iii) and (iv) of this Permit, the Permit Holder shall ensure that no clearing occurs within 50 metres of the identified *Ardeotis australis* (Australian Bustard) nests, *Pseudomys chapmani* (Western Pebble-Mound Mouse) mounds or *Macrotis lagotis* (Greater Bilby) burrows, unless approved by the CEO.

(d) Where *Idiosoma nigrum* (Shield-backed Trapdoor Spider) burrows are identified in relation to condition 9(a)(v) of this Permit, the Permit Holder shall ensure that no clearing occurs within 10 meters of the identified burrows.

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. Priority ecological community management

- (a) Prior to undertaking any clearing authorised under this Permit, the area(s) shall be inspected by an *environmental specialist* who shall identify Jack Hills Vegetation Complex (banded ironstone formation).
- (b) Where Jack Hills Vegetation Complex (banded ironstone formation) is identified in relation to condition 11(a) the Permit Holder shall ensure that no clearing occurs with 50m of identified Jack Hills Vegetation Complex (banded ironstone formation), unless approved by the CEO.

12. 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 12(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 12(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 12(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *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 12(c)(ii) of this permit, the Permit Holder shall repeat condition 12(c)(i) and 12(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 12(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 12(c)(ii).

PART IV – RECORD KEEPING AND REPORTING

13. 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 Jack Hills Vegetation Complex (banded ironstone formation) management pursuant to condition 11 of this Permit:
 - (i) the location of the Jack Hills Vegetation Complex (banded ironstone formation) 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; and
 - (ii) the species composition, structure and density of each Jack Hills Vegetation Complex (banded ironstone formation) identified.

- (e) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 12 of this Permit:
 - (i) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings 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.

14. 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 13 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.

- (c) Prior to 29 June 2016, the Permit Holder must provide to the CEO a written report of records required under condition 13 of this Permit where these records have not already been provided under condition 14(a) of this Permit.

DEFINITIONS

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

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.

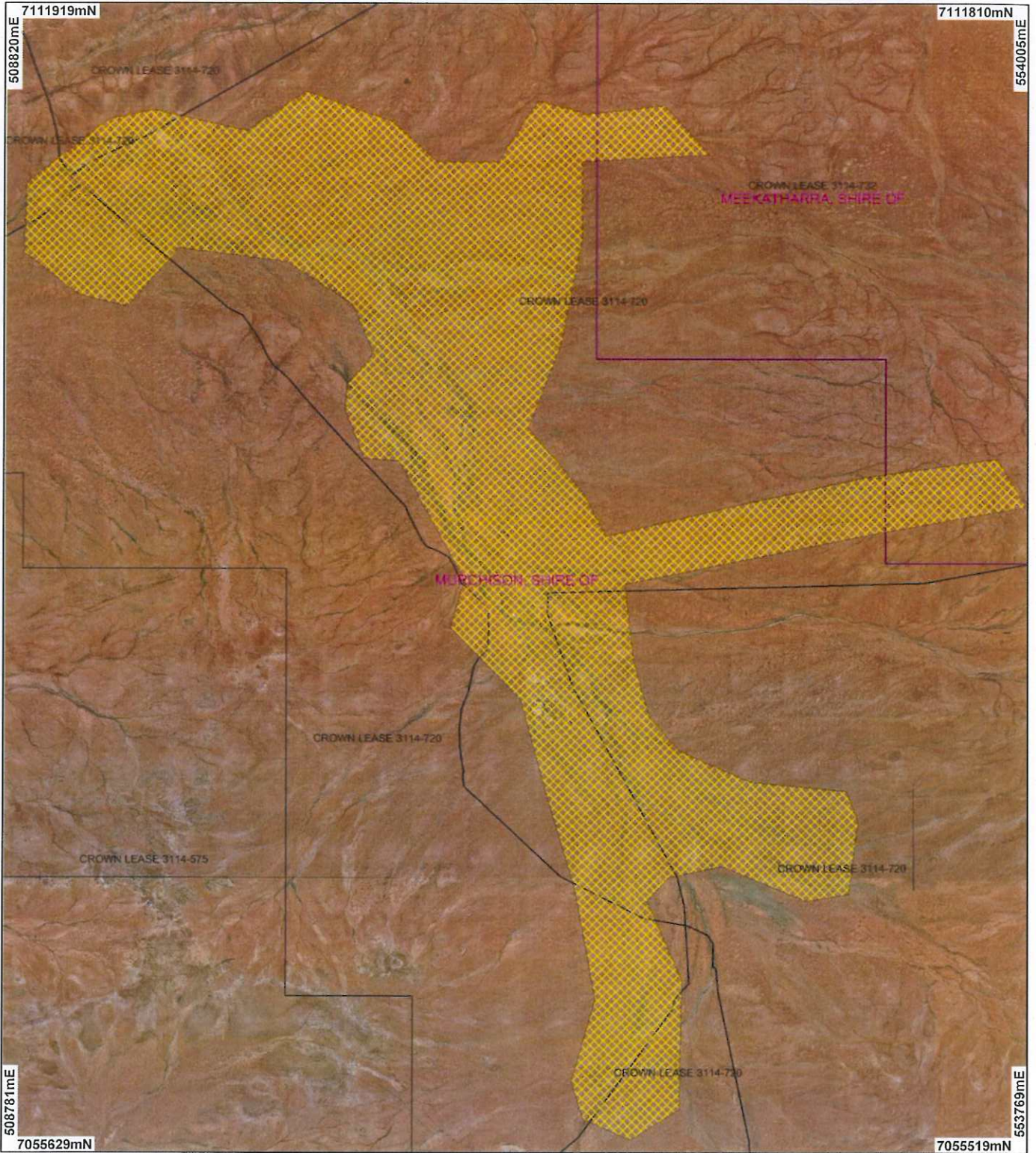


M Warnock
A/MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

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

1 September 2011

Plan 4436/1



LEGEND

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

Mileura 50cm Orthomosaic - Landgate 2005
 Kalli 50cm Orthomosaic - Landgate 2005
 Koonmarra 50cm Orthomosaic - Landgate 2005

Madoonga 50cm Orthomosaic - Landgate 2005



0 7.5 km

Scale 1:255000

(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 or measurement inaccuracies

Date 1/9/11
 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

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* 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.: 4436/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Oakajee Port and Rail Pty Ltd

1.3. Property details

Property: LOT 36 ON PLAN 238366 (MEEKATHARRA 6642)
LOT 35 ON PLAN 238323 (EAST MURCHISON 6640)
Local Government Area: Shire of Murchison and Shire of Meekatharra

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 1 September

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 100 hectares of native vegetation within a footprint area totalling 53, 442ha within the Shires of Murchison and Meekatharra. The purpose is for hydrological investigations within the Pindabarn Creek paleochannel to locate a sustainable water source for the construction phase of the Rail proposal (OPR, 2011). This application also includes, but is not limited to, the construction of 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).	Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	The description and 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)			
29- Sparse low woodland; mulga, discontinuous in scattered groups			
204- Succulent steppe with open scrub; scattered mulga & Acacia sclerosperma over saltbush & bluebush			
2081- Shrublands; bowgada and associated spp. scrub (Shepherd, 2009)	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 isolated shrubs of Acacia aneura bounded by A. aneura open shrubland over mixed Eremophila spp. (Astron, 2011). The majority of the Pindabarn creek bed is comprised of chenopod shrub community (Astron, 2011). The riparian vegetation of the Murchison River tributaries is mapped as succulent steppe, characterised by A. aneura and other Acacia spp with a chenopod understorey such as Atriplex spp. and Maireanna spp. (Astron, 2011).		

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 is to clear up to 100 hectares of native vegetation within a footprint area totalling 53, 442 hectares within the Shires of Murchison and Meekatharra. The purpose of the clearing is for hydrological investigations within the Pindabarn Creek paleochannel to locate a sustainable water source for the construction phase of the Oakajee Rail Development (the Rail Proposal) (OPR, 2011).

The application area consists of a 60.2km section of the Pindabarn Creek (a tributary of the Murchison River) and its tributaries Ero and Twelve Mile Creeks that drain from the Yilgarn Plateau to the Indian Ocean (Astron, 2011).

This application also includes, but is not limited to, clearing for the construction of 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).

OPR provided the Oakajee Port and Rail Pindabarn Creek Paleochannel Level 1 Vegetation, Flora and Fauna Desktop Assessment June 2011 report (Astron, 2011).

Four Beard vegetation associations have been mapped within the application area, all of which have 100% of pre- European vegetation remaining in the Murchison bioregion (Shepherd, 2009).

31 known priority flora species have been recorded within the local area (40km radius), seven of which are listed as Priority 1 species. Two Priority 3 species have been recorded within the application area; on the grounds of Mileura Station; *Eremophila obliquisejala* and *Eremophila muelleriana*, in 1986 and 1995 respectively. Given the date of the last known recordings, a targeted survey would be required to determine their exact location and the extent of the population (DEC, 2011).

The majority of the 31 priority species recorded within the local area have been recorded on the same soil (hard alkaline and neutral red soils and shallow acid red earths) and vegetation types (Beard 18 and 29) as the area under application and has the potential to occur within the application areas. Requirements to undertake flora surveys prior to clearing and avoid clearing within 20m of identified priority flora species will mitigate the impact to the conservation values of priority flora in the area.

Twelve conservation significant fauna species were identified by Astron (2011) as likely to occur within the application area, including three that are protected under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). These species are the endangered *Egernia stokesii* subsp. *Badia* (Western Spiny-tailed Skink), vulnerable *Macrotis lagotis* (Bilby) and vulnerable *Acanthiza iredalei* subsp. *iredalei* (Slender-billed Thornbill, western species).

Idiosoma nigrum (Shield-backed trapdoor Spider), listed as Rare or Likely to Become Extinct under the Wildlife Conservation Act 1950, and *Pseudomys chapmani* (Western Pebble-Mound Mouse), Priority 4, are also likely to occur in the application area. Astron recommend the distinctive mounds of the mouse be avoided (Astron, 2011).

In addition, DEC records show a further four species listed as Rare or Likely to Become Extinct under the Wildlife Conservation Act 1950 and protected under the Commonwealth's EPBC Act that have been recorded within a 40km radius (DEC 2007-);

- *Leporillus conditor* (Greater Stick-nest Rat)
- *Petrogale lateralis* subsp. *lateralis* (Black-flanked Rock-wallaby)
- *Pseudomys fieldi* (Shark Bay Mouse)
- *Dasyercus cristicauda* (Crest-tailed Mulgara)

Requirements to survey for known threatened, priority and specially protected fauna and avoid identified habitat will mitigate impacts on these species.

Approximately 95% of the application area occurs within the buffer of the Priority 1 Jack Hills vegetation complex (banded ironstone formation), with the boundary of this priority ecological community (PEC) recorded approximately 1km north. Given the close proximity of the proposed clearing to this Priority 1 PEC there may be impacts to the Jack Hills vegetation complex (banded ironstone formation).

A further three Priority 1 PECs (all banded ironstone formations) have been recorded in the vicinity of the application area; Weld Range vegetation complex (banded ironstone formation), Mount Dugel/ Mount Nairn vegetation complex (banded ironstone formation) and Mount Gould vegetation complex (Banded ironstone formation). Potential impacts to these Priority 1 PECs appear unlikely as the communities are recorded approximately 19km south, 11km west and 35km northeast respectively of the overall 53,441ha project area, (DEC, 2011).

It is noted that OPR will ensure that areas of native vegetation in the vicinity of the known locations of priority

flora species *Eremophila muelleriana* and *Eremophila obliquisejala*, and the Priority 1 PEC Jack Hills vegetation complex (banded ironstone formation) will be avoided and an Environmental Advisor will inspect the sites prior to clearing for the purposes of site demarcation.

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
DEC, 2007-
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

Thirteen conservation significant fauna species are likely to occur within the application area, including seven that are protected under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999.

These species are:

- *Egernia stokesii* subsp. *Badia* (Western Spiny-tailed Skink)- Endangered
- *Macrotis lagotis* (Greater Bilby)- Vulnerable
- *Acanthiza iredalei* subsp. *Iredalei* (Slender-billed Thornbill, western species)- Vulnerable
- *Petrogale lateralis* subsp. *Lateralis* (Black-flanked Rock Wallaby)- Vulnerable
- *Macrotis lagotis* (Greater Bilby), *Leporillus conditor* (Greater Stick-nest Rat)- Vulnerable
- *Pseudomys fieldi* (Shark Bay Mouse)- Endangered
- *Dasyercus cristicauda* (Crest-tailed Mulgara)- Vulnerable

Other species of conservation significance that are likely to occur within the application area include:

- Idiosoma nigrum* (Shield-backed trapdoor Spider)- Rare or Likely to Become Extinct under the Wildlife Conservation Act 1950)
- Pseudomys chapmani* (Western Pebble-Mound Mouse)- Priority 4
- Sminthopsis longicaudata* (Long-tailed dunnart)- Priority 4
- Oreoica gutturalis* subsp. *Gutturalis* (Crested Bellbird- southern)- Priority 4
- Ardeotis australis* (Australian Bustard)- Priority 4
- Burhinus grallarius* (Bush Stone-curlew)- Priority 4

Egernia stokesii subsp. *Badia* (Western Spiny-tailed Skink) 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). Previous surveys undertaken by Ecologia in 2010 for OPR's rail corridor within the same area recorded these species in granites with boulders or crevices and hollow logs (Astron, 2011). It is noted that similar habitat will be avoided (OPR, 2011). Therefore the proposed clearing may have an impact on this species.

Ardeotis australis (Australian Bustard) is listed as a priority 4 species under the Wildlife Conservation Act 1950. It 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 Pindabarn Creek and its watercourses. Bustards are known to readily desert nests in response to disturbance by humans, sheep or cattle (Burbidge, 2004) and nests should be avoided. Therefore the proposed clearing may have an impact on this species.

Pseudomys chapmani (Western Pebble-Mound Mouse) is listed as a priority 4 species under the Wildlife Conservation Act 1950 and considered a conservation significant species due to insignificant knowledge of the species (Astron, 2011). It is well known for the characteristic pebble-mounds which it constructs over underground burrow systems, most common on spurs and lower slopes of rocky hills (DEC, 2007). Western Pebble-Mound Mouse mounds should be avoided to protect the underground burrow systems. Therefore the proposed clearing may have an impact on this species.

Macrotis lagotis (Greater Bilby) is listed as vulnerable and is protected under both the state Wildlife Conservation Act 1950 and Commonwealth Environment Protection and Biodiversity Conservation Act 1999. The bilby is a nocturnal marsupial that lives in burrows during the day up to three metres long and has suffered

a large decline and contraction in distribution (DEC, 2007). The burrow entrance is often against a termite mound, spinifex tussock or small shrub and is left open. The movement of vehicles in Greater Bilby habitat may damage the soils where burrows are located. Therefore the proposed clearing may have an impact on this species.

Idiosoma nigrum (Shield-backed Trapdoor Spider) is in decline and is a long-lived species that is very sensitive to disturbance (DEC, 2007). This Trapdoor Spider is only known from a short endemic range and much of their habitat has been modified or destroyed through land clearing. This spider is vulnerable to disturbance as they are sedentary creatures with poor dispersal ability (Wheatbelt NRM, 2011). Astron (2011) report this species is likely to occur within the application area. The movement of vehicles in Trapdoor Spider habitat is likely to destroy spider burrows therefore the proposed clearing may have an impact on this species.

The area under application may also provide habitat for the other conservation significant fauna species listed above however these species are more mobile than the Shield-backed Trapdoor Spider and occur in habitats less vulnerable to disturbance than the Western Spiny-tailed Skink, Australian Bustard, Western Pebble-Mound Mouse and Greater Bilby and will be able to disperse more easily into adjacent remnants. Therefore, it is unlikely that the areas under application will be significant habitat for these species.

Astron's Level 1 Vegetation, Flora and Fauna Desktop Assessment also identified the following three bird species listed as Migratory under the Commonwealth's EPBC Act 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 engage a suitably qualified ecologist to conduct a thorough search of the disturbance areas for conservation significant fauna prior to any disturbance and modify works to avoid the fauna and any related habitat (OPR 2011).

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 conservation significant fauna and avoid identified habitat, nests, mounds and burrows will mitigate the impact of clearing potentially significant fauna habitat.

Methodology DEC, 2007
DEC 2007-
OPR, 2011
Wheatbelt NRM (2011)

(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 declared rare flora (DRF) within a 40km radius.

The closest known record of DRF is *Eremophila rostrata* subsp. *Rostrata* located approximately 100kms southeast of the 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. This species occurs in different vegetation and soil types as the application area hence is unlikely occur within the application area.

Given the distance of the closest DRF species from the proposed clearing, the clearing as proposed is not likely to be at variance to this principle.

It is noted that OPR will conduct pre-clearance targeted inspections for DRF by a qualified botanist and a buffer of at least 20m will be implemented should such species be identified (OPR, 2011).

Methodology OPR, 2011
Western Australian herbarium, 1998-

GIS Databases:
- SAC Biodatasets (Accessed 10 August 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 or within a 40km radius with the closest occurrence being the Depot Springs stygofauna community, located over 300kms southeast 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 10 August 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 (Shepherd, 2009).

Given that the vegetation is well represented locally and regionally, the vegetation under application 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	28,120,586	100.0	7.7
Shire*				
Shire of Murchison	67,698	32,088	47.4	50.7
Shire of Meekatharra	4,504,590	4,503,952	100.0	7.6
Beard Vegetation Associations in Bioregion*				
18	12,403,172	12,403,172	100.0	4.9
29	2,956,382	2,956,382	100.0	3.2
204	185,601	185,601	100.0	7.3
2081	390,399	390,399	100.0	21.0

*(Shepherd, 2009)

Methodology Shepherd (2009)

GIS Databases:
-Kalli 50cm Orthomosaic- Landgate 2005
-Koonmarra 50cm Orthomosaic- Landgate 2005
-Madoonga 50cm Orthomosaic- Landgate 2005
-Mileura 50cm Orthomosaic- Landgate 2005
-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

The application area is entirely within the Murchison River Basin and consists of a 60.2km section of the Pindabarn Creek (a tributary of the Murchison River) and its tributaries Ero and Twelve Mile Creeks, that drain from the Yilgarn Plateau to the Indian Ocean (Astron, 2011).

Pindabarn Creek is a minor, non perennial watercourse which is a tributary of the Murchison River. Along the Pindabarn Creek paleochannel are the sites of the hydrogeological investigations to find a sustainable groundwater source (OPR, 2011).

The riparian vegetation of the tributaries and watercourses is rated poor to fair and is mapped as succulent steppe, characterised by Acacia aneura and other 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. 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 may be at variance to this Principle

The landscape can be generally described as colluvial and alluvial plains overlain by granite and gneiss terrain, interspersed by hills and ranges derived predominantly from the greenstone geological belt (Astron, 2011). Approximately half of the application area can be generally described as alluvial flats that are frequently saline and flank river courses with the other half can be generally described as extensive flat plains with a scatter of surface gravels and small sand ridges (Northcote et al, 1960-68).

Soils are typically mapped as hard alkaline, neutral and acidic red earths with some extensive areas of saline red earths (Northcote, 1960-68).

The 53, 442ha footprint area under application falls on unallocated Crown land which is leased to two pastoral stations; Mileura and Judal Pastoral Stations. The land is predominantly pastoral dominated by grazing with some mining activities (OPR, 2011) and associated with 1000-3000mg/L 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).

15 weed species have been identified within or close to the application areas including the highly invasive environmental weeds *Cenchrus ciliaris* (buffel grass), *Polypogon monspeliensis* (Annual Beardgrass) and *Portulaca oleracea* (Purslane) (Astron, 2011). It is noted that OPR will implement strict weed control measures, including vehicle maintenance and hygiene, to prevent the spread of known weed species and the introduction of new weeds to the application area (OPR, 2011).

Given the above this application may be at variance to this Principle.

It is noted that OPR will implement the following management strategies to reduce land degradation:

- not disturb or destabilise the river banks to reduce the risk of soil bank erosion and increased sediment load in the river system
- implement a rehabilitation program to ensure there is no increased erosion
- 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.
- retain a buffer of at least 50m between the drill pads and any defined drainage line
- use existing track crossings of defined creek or drainage lines to minimise disturbance to the paleochannel as much as possible
- access tracks will be a maximum width of 8m and will be aligned to avoid vegetation clearing as much as practicable

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.

Methodology Astron, 2011
Northcote et al., 1960- 68

GIS Databases:

- Kalli 50cm Orthomisaic- Landgate 2005
- Koonmarra 50cm Orthomisaic- Landgate 2005
- Madoonga 50cm Orthomisaic- Landgate 2005

- Mileura 50cm Orthomosaic- Landgate 2005
- 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 area proposed to be cleared is not located within or adjacent to any conservation areas. The closest conservation area is 95km south of the area under application, a 15,000 ha former leasehold land proposed for conservation.

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

- Methodology** GIS Databases:
- Kalli 50cm Orthomosaic- Landgate 2005
 - Koonmarra 50cm Orthomosaic- Landgate 2005
 - Madoonga 50cm Orthomosaic- Landgate 2005
 - Mileura 50cm Orthomosaic- Landgate 2005
 - 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 Pindabarn Creek, 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
- 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 (Lake Annean) located 80 kilometres southeast of application area.

Approximately half of the application area is mapped as alluvial flats that are frequently saline and flank river courses with the other half mapped as extensive flat plains with a scatter of surface gravels and small sand ridges (Northcote, 1960-68).

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

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

Four 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 submit an application to the DIA to disturb a registered heritage site, as required under Section 18 of the Aboriginal Heritage Act 1972. It is noted OPR intend to avoid Aboriginal Heritage sites that are identified during pre-construction inspections wherever possible (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 RIWI Act 1914, valid from 21 July 2011 to 1 August 2012.

No public submissions have been received in relation to this application.

The proposed hydrological investigations outside the Rail proposal area which is currently subject to EPA assessment (OPR, 2011).

Methodology

OPR, 2011

GIS Databases:

- Western Australian Landsat Mosaic 25m- AGO 2006
- Cadastre- Landgate 2008
- RIWI Act, groundwater
- Aboriginal Sites of Significance
- Native Title Claims- Registered with the NNTT

4. References

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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)