



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 4421/1
Permit Holder:	Department of Water
Duration of Permit:	27 February 2012 – 27 February 2022

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 Fortescue Marsh hydrogeological drilling investigations including drill pads and access tracks.

2. Land on which clearing is to be done

Lots 87, 104 and 197 on Deposited Plan 30401 (NEWMAN 6753)

Lots 103 and 198 on Deposited Plan 220270 (NEWMAN 6753)

Lot 1501 on Deposited Plan 68276 (NULLAGINE 6758)

Lots 115 and 218 on Deposited Plan 220376 (MULGA DOWNS 6751)

Lot 22 on Deposited Plan 220355 (NEWMAN 6753)

3. Area of Clearing

The Permit Holder must not clear more than 45 hectares of native vegetation within the area cross hatched yellow on attached Plan 4421/1.

4. Period in which clearing is authorised

The Permit Holder shall not clear any native vegetation after 27 February 2017.

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

(a) 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.

(b) 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 monitoring bores

(ii) maintenance of existing access tracks

(iii) construction of up to 5m wide access tracks

(iv) construction of up to 40m by 40m drill pads

(v) *rehabilitation* of cleared areas and rework of *rehabilitated* areas

(vi) construction of fences around heritage sites and other areas to be protected

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. Environmental management plan

The Permit Holder must implement and adhere to the *EMP* commitments as outlined in “Rio Tinto Iron Ore’s Environmental Management Plan for Fortescue Marsh Hydrological Drilling Investigations, January 2012, Version 5” and including but not limited to:

- (a) The submission of a *Revegetation Plan* for the areas no longer required for the purpose for which they were cleared under this Permit to the CEO within 6 months of commencing clearing approved under this permit.
- (b) The *Revegetation Plan* must be approved by the CEO prior to commencing *revegetation* works.

PART III - RECORD KEEPING AND REPORTING

10. 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 the environmental management plan pursuant to condition 9, a description of the environmental management plan activities undertaken, in accordance with that environmental management plan.

11. Reporting

- (a) The Permit Holder must provide to the CEO on or before 27 May of each year, a written report:
 - (i) of records required under condition 10 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 27 February and 26 February of the preceding year.
- (b) Prior to 27 November 2016 the Permit Holder must provide to the CEO a written report of records required under condition 10 of this Permit where these records have not already been provided under condition 11(a) of this Permit.

DEFINITIONS

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

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

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;

EMP means environmental management plan;

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;

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

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;

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;

revegetation plan means a plan developed by the Permit Holder for the *revegetation* and *rehabilitation* of a site in accordance with condition 9 of this Permit.



Kelly Faulkner
MANAGER
NATIVE VEGETATION CONSERVATION BRANCH

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

2 February 2012

Plan 4421/1



LEGEND

- Local Government Authorities
- Western Australia LandSat Mosaic 25m - AGO 2006
- Cadastre
- Clearing Instruments
- Areas Approved to Clear



0 ————— 37.5 km

Scale 1:1364260
(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

K Faulkner
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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1. Application details

1.1. Permit application details

Permit application No.: 4421/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Department of Water

1.3. Property details

Property: LOT 22 ON PLAN 220355 (NEWMAN 6753)
LOT 104 ON PLAN 30401 (NEWMAN 6753)
LOT 87 ON PLAN 30401 (NEWMAN 6753)
LOT 197 ON PLAN 30401 (NEWMAN 6753)
LOT 103 ON PLAN 220270 (NEWMAN 6753)
LOT 198 ON PLAN 220270 (NEWMAN 6753)
LOT 1501 ON PLAN 68276 (NULLAGINE 6758)
LOT 218 ON PLAN 220376 (Lot No. 218 GREAT NORTHERN MULGA DOWNS 6751)
LOT 115 ON PLAN 220376 (Lot No. 115 GREAT NORTHERN MULGA DOWNS 6751)
LOT 103 ON PLAN 220270 (NEWMAN 6753)

Local Government Area: Shire of East Pilbara and Shire of Ashburton

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 2 February 2012

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
The following four Beard vegetation associations were mapped within the applied footprint area:	The amended proposed clearing of up to 45ha of native vegetation is for the purpose of hydrogeological drilling investigations, including the construction of 31 drill pads and up to 5m wide access tracks, within the Fortescue Marsh wetland system. The clearing application area covers five pastoral leases on both Crown land and unallocated Crown land; Mulga Downs Station, Roy Hill Station, Ethel Creek Station, Ethel Creek Station stock route, Hillside Station and Marillana Station, in the Shire of Ashburton and Shire of East Pilbara.	Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994)	The condition and description of the vegetation was determined from nearby applications and aerial photography (Roy Hill Orthomosaic- Landgate 2004, Murrumunda 1.4m Orthomosaic- Landgate 2003, Ethel Creek 50cm Orthomosaic- Landgate 2004, Weeli Woolli 50cm Orthomosaic- Landgate 2004, Mount Marsh 50cm Orthomosaic- Landgate 2008, Mount George 50cm Orthomosaic- Landgate 2004, and Munjina 50cm Orthomosaic- Landgate 2004).
29- Sparse low woodland; mulga, discontinuous in scattered groups		To	
166- Low woodland; mulga & Acacia victoriae		Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994)	
175- Short bunch grassland - savanna/grass plain (Pilbara)			
676- Succulent steppe; samphire (Shepherd, 2009)	Up to 40m by 40m drill pad sites will be cleared at each of the 31 monitoring bores. Native vegetation, in particular large trees and bushes will be worked around and left undisturbed if a clear area is nearby- the open nature of the vegetation complexes in the area should allow for this at most of the proposed 31 bore sites (DoW, 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

The amended proposed clearing of up to 45ha of native vegetation is for the purpose of hydrogeological drilling investigations, including the construction of thirty one 40m by 40m drill pads and up to 5m wide access tracks, within the Fortescue Marsh wetland system, which spans approximately 250 kilometres and forms part of the Upper Fortescue River in the Pilbara region. The clearing application area covers five pastoral leases on both Crown land and unallocated Crown land; Mulga Downs Station, Roy Hill Station, Ethel Creek Station and Ethel Creek Station stock route, Hillside Station and Marillana Station, in the Shires of Ashburton and East Pilbara.

The Department of Water (DoW) has partnered with Rio Tinto Iron Ore (RTIO) to implement the proposed hydrogeological drilling program (RTIO, 2012). The thirty one 40m by 40m monitoring bores will be installed in transects (east-west along the length and north-south across the width) across the Fortescue Valley (DoW, 2011). The bore data obtained as a result will be compiled into a hydrogeological study by the DoW which will form the basis of a Fortescue Marsh groundwater model to enable DoW and the Office of the Environmental Protection Authority (OEPA) to better understand and regulate impacts of multiple mining projects on the Marsh (DoW, 2011). This activity is part of a wider project involving the University of Western Australia, which will examine sediment records and vegetation growth records to assess the scale, extent and frequency of recharge events over the past hundreds of years (RTIO, 2012).

The Fortescue Marsh (the Marsh) is classified as an environmentally sensitive area (ESA), a Nationally Important Wetland, and a priority 1 Priority Ecological Community (PEC). The majority of the vegetation is in a degraded to good (Keighery, 1994) condition primarily due to feral animals (pigs, cattle, horses, camels and donkeys) and grazing pressure (Environment Australia, 2011). It contains significant vegetation communities, including undescribed samphire species and mulga vegetation that is at the northern limits of the species' geographical range.

Three Priority 1 flora species (*Eremophila spongiorcarpa*, *Nicotiana heterantha* and *Peplidium sp. fortescue marsh*), one Priority 3 flora species (*Amaranthus centralis*) and one Priority 4 flora species (*Goodenia nuda*) have been recorded in the local area. RTIO have committed in their Environmental Management Plan (EMP) to survey for priority flora prior to ground disturbance to mitigate potential impacts on these species.

The Fortescue Marsh is on the Fortescue River, east of Mulga Downs Pastoral Station, on Marillana and Roy Hill Stations (DEC, 2010). The threats facing the Marsh include but are not limited to; grazing pressure, feral animals and changes in hydrology (Environment Australia, 2011). Given the above threats, DEC identified several years ago that the lands comprising and surrounding the Fortescue Marsh PEC should be protected in the formal conservation reserve system. The Department of Environment and Conservation (DEC) is proposing the exclusion of a portion of Hillside, Mulga Downs, Marillana and Roy Hill Stations that contains the Marsh from the pastoral lease through the 2015 pastoral lease exclusion process, for future protection as a conservation reserve. The application area forms part of the 2015 pastoral lease exclusion boundary.

The Fortescue Marsh also provides significant habitat for a range of waterbirds, including protected migratory species such as *Egretta alba* (Great Egret), *Haliaeetus leucogaster* (White-bellied Sea-Eagle) and *Tringa glareola* (Wood Sandpiper) (Commonwealth of Australia, 1995).

The Marsh is also a major breeding area for the Australian Pelican (*Pelecanus conspicillatus*) and Black Swan (*Cygnus atratus*) (DEC, 2009). The Marsh is the only pelican breeding area in the Pilbara bioregion and is isolated by large distances from other pelican breeding areas (Environment Australia, 2001).

Given the sensitive nature of this nationally significant wetland environment, any disturbance needs to be managed appropriately in order to ensure that risks to biodiversity values are minimised. In a letter dated 25 August 2011 DEC requested an EMP be developed in consultation with DEC, prior to a decision being made. This was initially provided to DEC's Native Vegetation Branch on 28 December 2011 and version 5 was approved on 25 January 2012. The EMP states a variety of commitments to manage potential environmental impacts. These include, but are not limited to:

- Prior to ground disturbance, a Level 1 flora, fauna and vegetation survey will be undertaken including a targeted survey for conservation significant vegetation communities and conservation significant flora
- Vehicle movements will be controlled during the drilling phase
- Vehicle hygiene measures and weed assessments at each drill pad
- Access during dry conditions only
- Site rehabilitation plan to be developed in consultation with DEC
- Site specific staff inductions prior to site entry by a RTIO hydrogeologist (RTIO, 2012).

In addition, the requirement to avoid or minimise clearing will assist to mitigate the potential impacts to biodiversity values.

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

Methodology References:
Commonwealth of Australia (1995)
DEC (2007-)
DoW (2011)
Environment Australia (2011)
RTIO (2012)

GIS Databases:
- Clearing Regulations- Environmentally Sensitive Areas
- ANCA, Wetlands
- SAC BioDatasets (Accessed 2/8/2011)

(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**

The Fortescue Marsh (the Marsh) has been designated as a wetland of national importance. One of the defining criteria is "it is a wetland that is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail" (CALM, 2002; Environment Australia, 2001).

No fauna species of conservation significance have been recorded within the applied areas, however the application area may potentially contain suitable habitat for numerous conservation significant fauna that have been recorded in the local area (70kms) including the Mulgara (*Dasycercus blythi*), Greater Bilby (*Macrotis lagotis*), Night Parrot (*Pezoporus occidentalis*) and Northern Quoll (*Dasyurus hallucatus*). The Greater Bilby, Night Parrot and Northern Quoll are listed as Rare or Likely to Become Extinct under the *Wildlife Conservation Act 1950* and are also protected under the *Commonwealth's Environment Protection and Biodiversity Conservation Act 1999*.

The Marsh also provides significant habitat for a range of waterbirds, including protected migratory species such as Great Egret (*Egretta alba*), White-bellied Sea-Eagle (*Haliaeetus leucogaster*) and Wood Sandpiper (*Tringa glareola*) (Commonwealth of Australia, 1995).

The Marsh is also a major breeding area for the Australian Pelican (*Pelecanus conspicillatus*) and Black Swan (*Cygnus atratus*) (DEC, 2009). The Fortescue Marsh is the only pelican breeding area in the Pilbara bioregion and is isolated by large distances from other pelican breeding areas (Environment Australia, 2001).

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

However, given the large amount of suitable habitat remaining in the local area, the vegetation under application is not likely to represent significant habitat for local fauna.

RTIO's Environmental Management Plan outlines a commitment to conduct a reconnaissance fauna survey prior to ground disturbance which will assist in mitigating the loss of fauna habitat (RTIO, 2012).

Methodology References:
CALM (2002)
Commonwealth of Australia (1995)
DEC (2009)
Environment Australia (2001)
RTIO (2012)

(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**

No Declared Rare Flora (DRF) species are known to occur within the area in which clearing is proposed.

The closest known record of a DRF species is *Lepidium catapycnon* which has been recorded 40km south east of the application area. *Lepidium catapycnon* is an open woody perennial shrub largely restricted to skeletal soils and hillsides (Western Australian Herbarium, 1998-). The required habitat for *Lepidium catapycnon* is not known to occur within the application area therefore it is unlikely that this species occurs within the application area.

As no flora survey has been undertaken, RTIO's Environmental Management Plan outlines a commitment to conduct a Level 1 flora survey to determine the presence of rare flora prior to ground disturbance (RTIO, 2012). Identified DRF or habitat will be avoided to mitigate impacts on these species (RTIO, 2012).

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

Methodology References:
RTIO (2012)
Western Australian Herbarium (1998-)

GIS Databases:
-SAC Biodatasets (Accessed 29/7/2011)

(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

No Threatened Ecological Communities (TEC's) are known to occur within the area in which clearing is proposed. The closest TEC is the Ethel Gorge Aquifer Stygobiont Community located 36km southeast of the application area.

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

Methodology GIS Databases:
- SAC Biodatasets (Accessed 29/7/2011)

(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 application falls within the Pilbara Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. Shepherd (2009) reports that approximately 99.9% of the pre-European vegetation remains in this bioregion.

All four of the Beard vegetation types mapped within the areas under application are well represented in the bioregion and locally with 99.6% to 100% remaining.

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

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DEC Managed Lands (%)
IBRA Bioregion*				
Pilbara	17,804,193	17,785,000	99.9	8.3
Shire*				
Shire of Ashburton	10,086,658	10,050,099	99.6	15.5
Shire of East Pilbara	37,183,293	37,182,808	100.0	4.0
Beard Veg Association in Bioregion*				
Association 29	1,133,219	1,133,219	100.00	2.0
Association 166	25,541	25,541	100.00	0.0
Association 175	507,035	507,006	100.0	4.8
Association 676	92,363	92,299	99.9	0.0

*(Shepherd 2009)

Methodology References:
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 application area occurs within the Fortescue Marsh, which is described as an extensive, episodically inundated samphire marsh, approximately 100 kilometres long and 10 kilometres wide (CALM, 2002).

The Fortescue Marsh is a proposed RAMSAR wetland and is currently listed as a Wetland of National Significance as it meets the following required inclusion criteria (Environment Australia, 2001):

- It is a good example of a wetland type occurring within a biogeographic region in Australia;
- It is a wetland which plays an important ecological or hydrological role in the natural functioning of a major wetland system/complex;

- It is a wetland which is important as the habitat for animal taxa at a vulnerable stage in their life cycles, or provides a refuge when adverse conditions such as drought prevail; and
- The wetland is of outstanding historical or cultural significance.

The Fortescue River, Gooddarrie Swamp and other minor watercourses lie within the area in which clearing is proposed. Mulga communities (Beard Associations 29 and 166) (Shepherd, 2009), particularly those fringing the Fortescue River and Marsh are considered to be regionally significant (DEC, 2011). Sheet flow resulting from land clearing may impact on the surrounding sensitive Mulga communities within this area. Therefore there may be some disturbance to vegetation associated with watercourses and wetlands. RTIO have committed in their draft Environmental Management Plan (EMP) to undertake vegetation surveys prior to clearing and avoid all identified conservation significant communities which will mitigate the impact to the conservation values of the Mulga communities in the area.

The Fortescue Marsh is known to contain habitat that is significant for endemic *Eremophila* species, as well as several near endemic and new to sciences samphires (DEC, 2010). Several specific vegetation types have also been recorded from Mulga Downs Station as occurring only around the marsh, as well as an unusual system occurring downstream (DEC, 2010).

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

RTIO's EMP outlines a commitment to ensure that all marked access tracks are followed at all times (RTIO, 2012). In regards to riparian ecosystems the EMP states "no significant impacts are anticipated" (RTIO, 2012).

Methodology References;
CALM (2002)
DEC (2010)
DEC (2011)
DoW (2010)
Environment Australia (2001)
RTIO (2012)
Shepherd (2009)

(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 Department of Water (DoW) proposes to clear up to 45 hectares for 31 drill pads, each 40 metres by 40 metres, and no more than 31 access tracks up to 5 metres wide (DoW, 2011). Given the relatively small and localised clearing for each drill pad, the clearing is not likely to lead to appreciable land degradation on a broader scale although localised erosion may occur.

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

The Environmental Management Plan outlines a commitment to manage weeds which will minimise and mitigate the risk of introduction of invasive species into the surrounding vegetation whilst the requirement to rehabilitate the areas disturbed under this proposed clearing will mitigate potential land degradation impacts. Potential land degradation impacts as a result of the proposed clearing will be minimised by the implementation of a rehabilitation plan (DEC, 2012).

Methodology References;
DoW (2011)
RTIO (2012)

(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 proposed clearing is not located within a conservation reserve. The nearest known conservation reserve is Karijini National Park, located approximately 41 kilometres west.

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

Methodology GIS Databases:
- 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 may be at variance to this Principle

The application area occurs within the Fortescue Marsh, which is described as an extensive, episodically inundated samphire marsh, approximately 100 kilometres long and 10 kilometres wide, located on the floor of the Fortescue Valley (CALM, 2002).

The Fortescue Valley is subjected to localised thunderstorm and cyclonic rainfall events which can produce very large runoff events. Following a significant rainfall event, runoff from the Upper Fortescue River Catchment drains to the marshes. For the smaller runoff events, isolated pools form on the marshes opposite the main drainage inlets, whereas for the larger events the whole marsh area may flood.

Surface water runoff to the marshes is of low salinity and turbidity, though the runoff turbidity typically increases significantly during peak periods of flooding.

According to available GIS databases, the groundwater salinity of the application area is greater than 35,000 milligrams/Litre.

The application area is located within the proclaimed Pilbara groundwater area and surfacewater area.

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

Methodology References:
CALM (2002)

GIS Databases:
- Groundwater Salinity, Statewide
- RIWI Groundwater Areas
- RIWI Surfacewater Areas

(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 of up to 45ha of native vegetation for hydrogeological drilling investigations, including the construction of thirty one 40m by 40m drill pads and up to 5m wide access tracks, within the Fortescue Marsh wetland system will involve some soil disturbance.

The application area is located within the Fortescue Marsh which is a samphire marsh episodically inundated covering an area of approximately 100,000 hectares (Environment Australia, 2001; CALM, 2002). The application area experiences rainfall mainly during the summer months as cyclonic events (CALM, 2002). The Fortescue Marsh receives drainage from the Upper Fortescue River catchment which covers a total area of approximately 2,975,192 hectares.

Given the relatively small and localised clearing area for each drill pad, it is unlikely that the clearing under this proposal will impact on drainage patterns for the Fortescue Marshes. The proposed clearing is therefore unlikely to cause or increase the incidence of flooding.

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

Methodology References;
CALM (2002)
Environment Australia (2001)

GIS Databases:
- ANCA Wetlands
- Hydrographic Catchments

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

Comments

The Fortescue Marsh (the Marsh) is a proposed RAMSAR site and a sensitive ecosystem requiring any disturbance, such as hydrogeological drilling, to be managed appropriately to ensure risks to biodiversity values are minimised. DEC recommends the following access controls to the Marsh:

- Selection of access track alignments to DEC requirements
- Authorised access by DEC's Pilbara Regional Manager
- Ongoing involvement with DEC's Pilbara Regional staff during all drilling activities

- Access by foot the preferred option. Quad bikes are preferred over 4WD vehicles.
- Reporting requirements on DoW's long term access to the marsh
- development of a consolidated Environmental Management Plan (EMP) addressing all of the above issues
- compliance with the 2015 Fortescue Marsh Conservation Area: Draft DEC Guidance for Ground Disturbing Activities, prepared for DoW in March 2011

It is noted no flora/fauna/vegetation surveys have yet been conducted by DoW however an Environmental Management Plan (EMP) has been produced by RTIO and was initially provided to DEC on 28 December 2011 for review. The final version was submitted to DEC on 25 January 2012 and has been approved by the CEO.

It is noted that DoW has been consulting with DEC's Pilbara region and the Office of the Environment Protection Authority (OEPA) on developing an agreed management direction for mining development and activities within the Marsh Management Area (DoW, 2011). DoW defines the Fortescue Marsh Management Area as the area of sediments between the Hamersley and Chichester Ranges from the Goodarrie Hills in the west to Ethel Gorge in the east.

DoW has approval for land access, subject to conditions, from the Department of Regional Development and Lands (DRDL), Pastoral Land Unit (DRDL, 2011).

The area under application is within the Pilbara Groundwater Area and Surface Water Area as proclaimed under the *Rights in Water and Irrigation Act 1914*, however no groundwater abstraction is being conducted (the bores are only for monitoring purposes) therefore the applicant is exempt from requiring a DoW license.

The EMP currently outlines a commitment to time the access to the Marsh during dry conditions only and manage waste/discharge, including collection of any discharge, will be disposed of at an appropriate mine site disposal point as per the RTIO Hydrocarbon Spill Response procedures- RTIO-HSE-0010867 (RTIO, 2012).

The Shire of Ashburton has no comments on the proposed clearing.

Numerous Aboriginal Sites of Significance are mapped within the area under assessment. The proponent will be advised of their obligations under the *Aboriginal Heritage Act 1972*.

Methodology

References:

DRDL (2011)
DoW (2011)
RTIO (2012)
Shire of Ashburton (2011)

GIS Databases:

-Aboriginal Sites of Significance
-RIWI Act, Groundwater Areas
-RIWI Act, Surfacewater Areas
-Town Planning Scheme Zones

4. References

- Australian Treaty Series (1981) No 6 Department of Foreign Affairs, Canberra Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment, Tokyo, Japan.
- Australian Treaty Series (1988) No 22 Department Of Foreign Affairs And Trade, Canberra Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment, Canberra, Australia.
- Australian Treaty Series (2007) Agreement Between The Government of Australia and the Government of The Republic of Korea on The Protection of Migratory Birds and Exchange of Notes Canberra, Australia.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Pilbara 2 (PIL2 - Fortescue Plains subregion) Department of Conservation and Land Management, Western Australia.
- DEC (2007 -) NatureMap: Mapping Western Australia's Biodiversity. Department of Environment and Conservation. URL: <http://naturemap.dec.wa.gov.au/>. Accessed 1/08/2011
- DEC (2009) Resource Condition report for Significant Western Australian Wetland: Fortescue Marshes. Department of Environment and Conservation. Perth, Australia.
- DEC (2010) Priority Ecological Communities for Western Australia. Species and Communities Branch, Department of Environment and Conservation.
www.dec.wa.gov.au/index2.php?option=com_docman&task=doc_view&gid=2835&Itemid=99999999 (Accessed 9 September 2010).
- DEC (2011) 2015 Fortescue Marsh Conservation Area: Draft DEC Guidance for Ground Disturbing Activities. Department of Environment and Conservation, Pilbara Region, Western Australia.
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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)