



1. Application details

1.1. Permit application details

Permit application No.: 2504/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Robe River Iron Ltd

1.3. Property details

Property: Special Lease for Mining Operations LGE I123396
Iron Ore (Cleveland-Cliffs) Agreement Act 1964
Local Government Area: Shire Of Roebourne
Colloquial name: Cape Lambert Geotechnical and Contaminated Site Drilling

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
12		Mechanical Removal	Mineral Exploration

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Vegetation within the application area has been mapped at a 1:250,000 scale as the following Beard vegetation association (Shepherd et al., 2001; GIS Database);

- **157:** Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana*.

The purpose permit application comprises of five separate project areas. Biota Environmental Services were commissioned by Robe River Iron Ltd to undertake a flora and vegetation assessment for the application areas. Biota Environmental Services (2008) have identified and described the vegetation types that have been identified across the five application areas.

1. Flat Coastal Plain (CP): *Acacia stellaticeps*, *A. bivenosa* open shrubland over *Scaevola spinescens*, *Rhagodia eremaea* scattered low shrubs over *Triodia epactia* hummock grassland and *Cenchrus ciliaris* tussock grassland.

2. Secondary Dunes (SDu): *Acacia coriacea* subsp. *coriacea* tall shrubland over *Crotalaria cunninghamii*, *Rhagodia eremaea*, *Scaevola sericophylla*, *S. spinescens* low open shrubland over *Triodia epactia* hummock grassland and *Cenchrus ciliaris* tussock to open tussock grassland.

3. Rocky Hills and Outcrops (RH): *Triodia wiseana* and/or *T. epactia* hummock grassland on rocky hills and outcrops.

4. Low-Lying Saline Drainage (SD): *Halosarcia halocnemoides* subsp. *tenuis*, *H. indica* subsp. *leiostachya* low samphire shrubland or open heath, with *Frankenia ambita*, *Muellerolimon salicorniaceum* low open shrubland.

5. Saline Interzone Areas between low-lying, saline drainage areas and flat coastal plain (SIZ): *Acacia ampliceps* tall shrubland, with *Sesbania cannabina* tall open herbland over *Sporobolus virginicus* tussock to closed tussock grassland.

6. Disturbed: Areas currently cleared of vegetation, or historically cleared and extensively degraded by weeds.

Clearing Description

Robe River Iron Ltd have applied to clear up to 12 hectares of native vegetation for geotechnical and contaminated site investigation drilling and access tracks. The clearing application area involves five separate project areas that occupy a total area of 86.8 hectares. All of the application areas are located on Special Lease for Mining Operations LGE I123396.

Vegetation will be cleared by a bulldozer with its blade down. All vegetative material and topsoil from cleared areas will be collected and stockpiled and used for future rehabilitation purposes (Robe River, 2008).

Vegetation Condition

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

to

Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery 1994).

Comment

The vegetation condition was assessed by Biota Environmental Services (2008) using the modified classification system of Trudgen (1988). Biota Environmental Services (2008) made the following comments in relation to the vegetation condition within each of the vegetation types.

1. Flat Coastal Plain (CP): There was a high level of disturbance within CP as a result of the infestation with *Cenchrus ciliaris*. The vegetation condition of this vegetation type was 'Good to Poor'.

2. Secondary Dunes (SDu): There was a high level of disturbance within SDu as a result of infestation with *Cenchrus ciliaris*. The vegetation condition of this vegetation type was 'Poor' or 'Good to Poor'.

3. Rocky Hills and Outcrops (RH): The soil of this vegetation type is extremely shallow, usually allowing only moderate colonisation by shallow rooted species. The summit of these areas is usually dominated by large rock piles. Areas below rock piles have been colonised by *Cenchrus ciliaris*. The vegetation condition is described as 'Good'.

4. Low-Lying Saline Drainage (SD): The soils of these areas are mostly hyper saline clays, usually colonised by various samphire species. The high saline water table makes colonisation by weed species difficult, therefore the condition of these areas is usually described as 'Excellent'.

5. Saline Interzone Areas between low-lying, saline drainage areas and flat coastal plain (SIZ): These areas are higher in the landscape than the low-lying saline drainage areas, and vegetated with species that are tolerant of mildly saline soils. The vegetation condition for this vegetation type was 'Very Good to Excellent'.

The Assessing Officer attended a site visit to the application areas on Wednesday 21 May 2008. The site visit involved driving to the application areas and traversing portions of the application areas on foot in order to assess the landforms, vegetation communities and the surrounding environment. The Assessing Officer concurs with the vegetation and landform assessment provided by Biota Environmental Services (2008).

3. Assessment of application against clearing principles

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

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

The application area is located within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region which encompasses an area of 17,804,164 hectares (GIS database). The vegetation within the application area consists of Beard vegetation association 157: Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana*, which is common and widespread throughout this region, with approximately 99.9% of the pre-European vegetation remaining (Shepherd et al. 2001).

The dominant vegetation of the Pilbara region comprises of *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, and *Eucalyptus leucophloia* over *Triodia wiseana* on ranges (Kendrick and McKenzie, 2001). The Pilbara region is characterised by a diverse range of landforms that includes plains, ranges, hills, plateaux and gorges that provide suitable habitat for a diverse range of flora and fauna species, many of which are endemic to the Pilbara region (Van Vreeswyk et al., 2004; Kendrick and McKenzie, 2001).

The clearing application areas are located within the Robe River Iron Ltd Cape Lambert Port Operations project area (Robe River, 2008). It was observed during a site visit by the Assessing Officer that the Cape Lambert project area has been subject to a considerable degree of disturbance as a result of activities associated with the port operations. Types of disturbances observed within the Cape Lambert project area included a quarry, numerous access tracks, railway and a laydown area. The Clearing Permit System indicates that clearing for a gas pipeline diversion will intercept three of the northern-most application areas. A Clearing Permit for the gas pipeline diversion activities was issued by the Department of Industry and Resources on 3 July 2008 for a total of 28.7 hectares. The clearing under this proposal, as well as the clearing for the gas pipeline diversion is likely to increase the level of disturbance within the application areas and wider Cape Lambert project area.

Biota Environmental Services (2008) have surveyed the area under application and identified a total of six vegetation types. The vegetation types that have been identified within the application areas appear to be relatively common and widespread throughout the Cape Lambert project area and Chichester subregion. None of the vegetation types that have been identified within the application areas or Cape Lambert project areas have been noted to be of particular local or regional significance (Biota Environmental Services, 2008).

A total of 159 native flora species, from 89 genera and belonging to 43 families were identified within the Cape Lambert project area (Biota Environmental Services, 2008). Biota Environmental Services (2008) have stated that the total number of flora species recorded for the Cape Lambert project area is considered relatively low for a number of reasons including (Biota Environmental Services, 2008):

- Very few ephemeral flora species were recorded due to a lack of significant rainfall in the six to seven months prior to the survey;
- The general paucity of the flora of coastal environments in the wider Pilbara bioregion; and
- The high level of disturbance and vegetation degradation in the survey area due to previous vegetation clearing activities and infestation of areas with Buffel Grass (Biota Environmental Services, 2008).

The Assessing Officer notes that although Biota Environmental Services (2008) have stated that the total

number of species recorded for the Cape Lambert project area is considered relatively low, the total number of species recorded for the Cape Lambert project area represents a moderate degree of diversity for the Pilbara region.

A total of six introduced (weed) species were recorded within the wider Cape Lambert application area and these were Kapok (*Aerva javanica*), Buffel Grass (*Cenchrus ciliaris*), Date Palm (*Phoenix datylyfera*), Beach Vitex (*Vitex trifolia* var. *subtrisepta*), Purpletop Chloris (*Chloris barbata*) and Athel Tree (*Tamarix aphylla*) (Biota Environmental Services, 2008). Buffel Grass was recorded within all but 3 of the 28 survey quadrants during the flora and vegetation survey, and Kapok Bush was recorded within the central and second most northern of the clearing application areas (Biota Environmental Services, 2008). No information was provided in relation to the distribution of the remaining weed species that were identified within the Cape Lambert project area.

It was evident during a site visit to the application area by the Assessing Officer that Buffel Grass was widespread throughout the application areas and wider Cape Lambert area. It is likely that the presence of weed species has adversely impacted on the biodiversity of the application area. The proposed disturbance of soil is likely to promote weed growth, and there is a risk that the movement of soil and clearing equipment throughout and between the project areas may result in the spread of weed species. The Assessing Officer recommends that should the permit be granted, conditions be imposed on the permit for the purpose of weed management.

The vegetation and landforms that have been described for the application area appear to be common within the Cape Lambert area (Biota Environmental Services, 2008), and are likely to be common and widespread throughout coastal environments within the Pilbara region (GIS Database). The widespread infestation of Buffel Grass and the previous disturbances associated with the port operation activities are likely to have impacted on the biodiversity of the area. Due to the level disturbance that has occurred, the vegetation within the application areas is unlikely to be considered as an area of outstanding biodiversity.

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

Methodology Biota Environmental Services (2008)
Kendrick and McKenzie (2001)
Robe River (2008)
Shepherd et al. (2001)
Van Vreeswyk et al. (2004)
GIS Database:
- Interim Biogeographic Regionalisation of Australia
- Pre-European Vegetation

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

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

A fauna habitat assessment of the application areas was undertaken in conjunction with the flora and vegetation survey by Biota Environmental Services (Biota Environmental Services, 2008). In order to identify species habitat that may potentially occur within the application area, Biota Environmental Services carried out a search of the Western Australian Museum and Department of Environment and Conservation databases to identify Schedule and Priority listed fauna that may occur within a 50 kilometre radius from Cape Lambert. A search of the *Environmental Protection and Biodiversity Conservation Act 1999* database was also conducted (Biota Environmental Services, 2008).

Biota Environmental Services (2008) identified three habitat types that exist within application areas. These were:

1. **Secondary Dune:** *Acacia coriacea* over Buffel Grass.
2. **Flat Coastal Plain:** Buffel Grass tussock grassland; and
3. **Rocky Hill and Outcrop:** *Triodia wiseana* and *T. epactia* hummock grassland.

The vegetation and habitat types that have been identified and described for the application areas appear typical of the Cape Lambert coastal area (Biota Environmental Services, 2008). Vegetation mapping confirms that all the habitat types that have been identified within the application areas are well represented and distributed throughout the Cape Lambert project area (Biota Environmental Services, 2008).

It was observed during a site visit to the application areas by the Assessing Officer that the diversity of landforms within the application areas is low in terms of ranges, ridges, outcrops or caves suitable to provide habitat for fauna. Biota Environmental Services (2008) have indicated that the application areas as well as the surrounding areas have been significantly disturbed as a result of the port operation activities as well from the infestation of Buffel Grass (*Cenchrus ciliaris*), and it is likely that these disturbances has adversely impacted on the presence of native flora species and the habitat value for the area.

Approximately 20 specimens of the skink, *Lerista neviniae*, were recorded from the Primary Dune and Secondary Dune vegetation types in the Cape Lambert area (Biota Environmental Services, 2008). The skink,

although not being listed as having any special conservation status at either State or Federal level, currently has only been recorded from the coastal dune habitats of the Cape Lambert area (Biota Environmental Services, 2008). As a result, the Primary Dune and Secondary Dune vegetation types that have been identified by Biota Environmental Services (2008) are likely to represent significant habitat for *Lerista neviniae*.

Biota Environmental Services (2008) has assessed and mapped the vegetation types of the application area and surrounding Cape Lambert project area. A total of 55.7 hectares and 91.6 hectares of the Primary Dune and Secondary Dune vegetation type has been recorded within the Cape Lambert project area respectively (Biota Environmental Services, 2008).

Biota Environmental Services (2008) have indicated that the proposed clearing for the geotechnical and contaminated site drilling activities will have a maximum impact of approximately 8.67 hectares on the Secondary Dune vegetation type that has been identified within the Cape Lambert project area. It is likely that the level of disturbance would not be considered significant, as the proposed clearing activities will be undertaken throughout the 86.8 hectare application area, and not concentrated within one particular area or vegetation type (Biota Environmental Services, 2008). Vegetation mapping indicates that the proposed clearing activities will have no impact on the Primary Dune habitat type that has been identified within the Cape Lambert project area (Biota Environmental Services, 2008).

The vegetation and habitat types that have been identified and described for the application areas are typical of the Cape Lambert project area (Biota Environmental Services, 2008). Given that the proposed clearing for the geotechnical and contaminated site drilling activities will impact on a maximum of approximately 5.9% of the Primary and Secondary Dune habitat type that has been identified for the Cape Lambert project area (Biota Environmental Services, 2008), the 12 hectares of vegetation proposed to be cleared under this proposal is not likely necessary for the maintenance of significant habitat for *Lerista neviniae*.

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

Methodology Biota Environmental Services (2008)

(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**

According to available datasets there are no known records of Declared Rare Flora (DRF) or Priority flora species within the clearing application areas (GIS database).

A flora and vegetation survey of the application areas was undertaken by botanists from Biota Environmental Services during October 2007 and March 2008. Prior to conducting the field surveys, Biota Environmental Services (2008) carried out a search of the Department of Environment and Conservation Threatened Flora Database for the proposed clearing areas which included a search within a buffer area of 50 kilometres from the application areas.

There are no DRF or Priority flora species records for the application areas (Biota Environmental Services, 2008).

No DRF or Priority Flora species were recorded within the application areas during the field survey (Biota Environmental Services, 2008). As a result, the proposed clearing is unlikely to impact on any DRF or Priority flora species.

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

Methodology Biota Environmental Services (2008)
GIS Database:
- Declared Rare and Priority Flora List

(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 Threatened Ecological Communities (TEC's) within the application area (GIS database; Biota Environmental Services, 2008). The nearest known TEC is located approximately 107 kilometres south of the application area (GIS database). Given the distance between the proposal and the nearest known TEC, the proposed clearing is not likely to impact on the conservation of that TEC.

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

Methodology Biota Environmental Services (2008)
GIS Database:
- Threatened Ecological Communities

(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 at variance to this Principle

The clearing application area falls within the Pilbara Interim Biogeographic Regionalisation for Australia (IBRA) region in which approximately 99.9% of the pre-European vegetation remains (GIS database; Shepherd et al., 2001) (see table).

The vegetation of the clearing application area has been mapped as Beard vegetation association 157: Hummock grasslands, grass steppe; hard spinifex, *Triodia wiseana* (GIS Database, Shepherd et al., 2001). According to Shepherd et al., (2001) approximately 100% of Beard vegetation association 157 remains at both the state and regional level.

According to the Bioregional Conservation Status of Ecological Vegetation Classes the conservation status for the Pilbara Bioregion and Beard vegetation associations 157 is of "Least Concern" (Department of Natural Resources and Environment, 2002).

While a small percentage of the vegetation types within the Pilbara bioregion are protected within conservation reserves, the bioregion remains largely uncleared. As a result, the conservation of the vegetation associations within the bioregion is not likely to be impacted on by this proposal.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-european % in IUCN Class I-IV Reserves
IBRA Bioregion – Pilbara	17,804,164	17,794,651	~99.9	Least Concern	6.3
Beard veg assoc. – State					
157	502,737	501,522	~99.8	Least Concern	17.2
Beard veg assoc. – Bioregion					
157	198,636	198,522	~99.9	Least Concern	5.7

* Shepherd et al. (2001)

** Department of Natural Resources and Environment (2002)

The Assessing Officer observed during a site visit to the Cape Lambert project area that the vegetation communities on Special Lease LGE I123396 have been subject to a considerable degree of disturbance as a result of activities associated with the port operations. Although there has not been widespread clearing across the Cape Lambert project area, the types of disturbances observed during the site visit were small and localised and included a quarry, numerous access tracks, railway and a laydown area.

The Clearing Permit System indicates that Robe River Iron Ltd were issued with Clearing Permit CPS 2485/1 on 3 July 2008 for a total of 28.5 hectares, and also that Robe River Iron Ltd has submitted an additional clearing permit application (CPS 2502/1) for 16 hectares on Special Lease I123396. The total area covered by this application, as well as Clearing Permit CPS 2485/1 and clearing permit application CPS 2502/1 equates to a total of 56.7 hectares (GIS Database). Biota Environmental Services (2008) have mapped a total of 506.7 hectares for the Cape Lambert area, of which 111.5 hectares has been mapped as "Disturbed" (see vegetation description). As a result, approximately 395.3 hectares of native vegetation remains within the Cape Lambert project area. The Assessing Officer notes that all clearing activities are associated with the upgrade to the Cape Lambert port facilities.

The Assessing Officer has reviewed Shepherd et al. (2001) vegetation statistics for the Pilbara region and for Beard vegetation association 157, and it appears that the vegetation under application is not a remnant of vegetation in an area that has been extensively cleared. Furthermore, the vegetation communities that have been identified within the application areas have been recorded throughout the wider Cape Lambert project area, and Beard vegetation mapping suggests that similar vegetation communities would be located in coastal environments throughout the Pilbara region (GIS Database; Shepherd et al. 2001).

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

Methodology Department of Natural Resources and Environment (2002)
 Shepherd et al. (2001)
 GIS Database:
 - Interim Biogeographic Regionalisation of Australia
 - Pre-European Vegetation - DA 01/01
 - Clearing Instruments

(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

There are no permanently inundated wetlands or watercourses within the application area (GIS Database; Biota Environmental Services, 2008; GIS Database).

Three of the five application areas partly include the following vegetation units which have been identified described by Biota Environmental Services (2008):

1. **Low-Lying Saline Drainage (SD):** *Halosarcia halocnemoides* subsp. *tenuis*, *H. indica* subsp. *leiostachya* low samphire shrubland or open heath, with *Frankenia ambita*, *Muellerolimon salicorniaceum* low open shrubland; and
2. **Saline Interzone Areas (SIZ):** Areas between low-lying, saline drainage areas and flat coastal plain (SIZ): *Acacia ampliceps* tall shrubland, with *Sesbania cannabina* tall open herbland over *Sporobolus virginicus* tussock to closed tussock grassland.

A total of 52.9 hectares and 51 hectares of Low-Lying Saline Drainage and Saline Interzone Areas have been mapped within the wider Cape Lambert project area respectively (Biota Environmental Services, 2008). Both of these abovementioned saline drainage areas occupy lower positions in the landscape and are seasonally damp areas due to tidal movements and cyclonic rainfall events (Biota Environmental Services, 2008).

Vegetation mapping indicates that a cumulative total of 15.6 hectares of Low-Lying Drainage and Saline Interzone Areas occur within the 86.8 hectare clearing application area (Biota Environmental Services, 2008). Given that Robe River Iron Ltd has applied to clear up to 12 hectares of native vegetation throughout the entire 86.8 hectare application area, it is likely that the proposed clearing activities for the geotechnical and contaminated site drilling activities would be undertaken across the six vegetation types that have been identified within the application areas and not concentrated to these saline drainage vegetation units. The proposed clearing is likely to result in small, but localised disturbance within the Low-Lying Drainage and Saline Interzone Areas.

The saline drainage areas that have been identified by Biota Environmental Services (2008) appear relatively common and widespread throughout the Cape Lambert project area. Biota Environmental Services (2008) has not listed these saline drainage areas as significant wetland communities, and in addition the areas are not listed on the Directory of Important Wetland in Australia (Environment Australia, 2001).

As the vegetation is growing in association with a wetland environment, the proposal is at variance to this Principle.

Methodology Biota Environmental Services (2008)
Environment Australia (2001)
GIS Database:
- Hydrography, linear
- Clearing Regulations - Environmentally Sensitive Areas

(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

According to the Department of Agriculture in Technical Bulletin No 92 "An inventory and condition survey of the rangelands of the Pilbara Region, Western Australia", the application areas are characterised by the Littoral, Ruth and Rocklea Land System (Van Vreeswyk et al., 2004; GIS Database). Van Vreeswyk et al. (2004) describe the landform units that have been identified within the application areas.

- The Littoral Land System consists of depositional surfaces; saline coastal flats, estuarine and littoral surfaces with extensive bare saline tidal flats subject to infrequent inundation, slightly higher samphire flats and alluvial plains, minor coastal dunes and sandy plains and beaches (Van Vreeswyk et al., 2004). The Littoral Land System covers approximately 10.4 hectares of the application area and includes majority of the most northern of the application areas, and small portions of the second and third most northern application areas (Biota Environmental Services, 2008). Van Vreeswyk et al. (2004) state that coastal dunes are highly susceptible to wind erosion if plant cover is lost by disturbance.
- The Ruth Land System consists of hills and ridges of volcanic and other rocks supporting hard spinifex (and occasionally soft spinifex) grasslands (Van Vreeswyk et al., 2004). The Ruth Land System covers approximately 60.6 hectares of the application area and occurs in each of the five application areas (Biota Environmental Services, 2008). Aerial imagery and vegetation mapping indicates that the application areas are most likely located within the 'Lower slopes and stony plains' and 'Sandplains' land units (Biota Environmental Services, 2008; Van Vreeswyk et al., 2004). Van Vreeswyk et al. (2004) state that the Ruth Land System is not susceptible to erosion, and this is likely due to surface

mantles that comprise mainly of pebbles and cobbles interspersed with sandy earths (Van Vreeswyk et al., 2004).

- The Rocklea Land System consists of basalt hills, plateaux, lower slopes and minor stony plains supporting hard spinifex (and occasionally soft spinifex) grasslands (Van Vreeswyk et al., 2004). The Rocklea Land System covers approximately 15.8 hectares of the application area and occurs in the second, fourth and fifth most northern of the application areas (Biota Environmental Service, 2008). Aerial imagery and vegetation mapping indicates that the application area is most likely located within 'Hills, ridges, plateaux and upper slopes', 'Lower slopes' and 'Stony plains and interfluves' land units (Biota Environmental Services, 2008; Van Vreeswyk et al., 2004). Each of the landform units comprise of surface mantles that comprise of abundant to very abundant cobbles and pebbles (Van Vreeswyk et al., 2004). The Rocklea Land System has very low erosion hazard (Van Vreeswyk et al., 2004).

Biota Environmental Services (2008) have identified 6 vegetation units within the clearing application areas. These are;

1. **Flat Coastal Plain (CP);** *Acacia stellaticeps*, *A. bivenosa* open shrubland over *Scaevola spinescens*, *Rhagodia eremaea* scattered low shrubs over *Triodia epactia* hummock grassland and *Cenchrus ciliaris* tussock grassland.
2. **Secondary Dunes (SDu):** *Acacia coriacea* subsp. *coriacea* tall shrubland over *Crotalaria cunninghamii*, *Rhagodia eremaea*, *Scaevola sericophylla*, *S. spinescens* low open shrubland over *Triodia epactia* hummock grassland and *Cenchrus ciliaris* tussock to open tussock grassland.
3. **Rocky Hills and Outcrops (RH):** *Triodia wiseana* and/or *T. epactia* hummock grassland on rocky hills and outcrops.
4. **Low-Lying Saline Drainage (SD):** *Halosarcia halocnemoides* subsp. *tenuis*, *H. indica* subsp. *leiostachya* low samphire shrubland or open heath, with *Frankenia ambita*, *Muellerolimon salicorniaceum* low open shrubland.
5. **Saline Interzone Areas between low-lying, saline drainage areas and flat coastal plain (SIZ):** *Acacia ampliceps* tall shrubland, with *Sesbania cannabina* tall open herbland over *Sporobolus virginicus* tussock to closed tussock grassland; and
6. **Disturbed:** Areas currently cleared of vegetation, or historically cleared and extensively degraded by weeds.

Van Vreeswyk et al. (2004) land system information indicates that the Flat Coastal Plain, Rocky Hills and Outcrops and Disturbed areas are likely to have a low erosion risk due to the stony nature of the surface and sub-surface materials. These vegetation units described by Biota Environmental Services (2008) account for approximately 62.5 hectares of the 86.8 hectare application area. During a site visit to the application area by the Assessing Officer the only signs of disturbance that was observed within these vegetation types were existing tracks and workings associated with the Cape Lambert port operations. The Assessing Officer notes that there appeared to be no significant land degradation issues such as wind or water erosion associated with the current land use activities within these vegetation types.

The remaining vegetation units; Secondary Dunes, Low-Lying Saline Drainage and Saline Interzone Areas represent approximately 24.3 hectares of the 86.8 hectare application area. Biota Environmental Services (2008) have recorded small portions of these vegetation types throughout each of the five application areas. These vegetation units are likely to be characterised by soils that comprise of finer grained sand and clay materials (Van Vreeswyk et al., 2004). Due to the coastal locality of the application areas in the Pilbara, these vegetation units are likely to be subject to strong winds as well as inundation from cyclonic rainfall events and tidal movements (Biota Environmental Services, 2008). Land system information indicates that these vegetation units are likely to have a moderate risk of erosion if vegetative material is lost by disturbance (Van Vreeswyk et al. 2004). During the site visit to the application area, the Assessing Officer observed several tracks and workings within these vegetation units. However, the Assessing Officer notes that there appeared to be no significant land degradation issues such as wind or water erosion associated with these current land use activities within these vegetation types.

Robe River Iron Ltd has applied to clear up to 12 hectares of native vegetation within an application area of 86.8 hectares for geotechnical and contaminated site drilling activities (Robe River, 2008). Portions of the vegetation within the application areas will be cleared in order to establish tracks, drill pads and tests pits (Biota Environmental Services, 2008). As the clearing activities will be undertaken throughout each of the five application areas, it is likely that there would only be minor disturbance occurring within each of the vegetation units that have been described by Biota Environmental Services (2008). As a result, the clearing activities are unlikely to cause any significant land degradation issues. However, given that three of the vegetation units are likely to have a moderate risk of erosion, the Assessing Officer recommends that should the permit be granted, conditions be imposed on the permit for the purpose of rehabilitation.

For the Secondary Dunes, Low-Lying Saline Drainage and Saline Interzone Areas vegetation types which are subject to inundation during tidal movements and seasonal cyclonic rainfall events, the minor clearing activities area unlikely to increase the risk of water-logging occurring within or adjacent to these areas.

The saline drainage areas within the application areas are subject to inundation by tidal movements and cyclonic rainfall events. The vegetation communities and landform descriptions that have been provided by Biota Environmental Services (2008) indicates that these areas would already be considered saline (Biota Environmental Services, 2008). It was confirmed during the site visit to the application areas that these areas

were low-lying areas which were located in a coastal environment. Biota Environmental Services (2008) have mapped a total of 15.4 hectares for the Low-Lying Saline Drainage and Saline Interzone Areas within the application areas. The proposed clearing for geotechnical and contaminated site drilling activities are unlikely to increase land salinisation either on or off-site.

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

Methodology Biota Environmental Services (2008)
Robe River (2008)
Van Vreeswyk et al. (2004)
GIS Database:
- Rangeland Land System Mapping
- Groundwater Salinity, 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 application area is not located within a Department of Environment and Conservation managed conservation area (GIS Database). The nearest conservation area is the 'B' Class Dolphin Island Nature Reserve which is situated approximately 30 kilometres north-west of the application area (GIS database; Biota Environmental Services, 2008). Based on the distance between the proposal and the nearest conservation area, the proposed clearing is not likely to impact on the conservation values of Dolphin Island Nature Reserve.

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

Methodology Biota Environmental Services (2008)
GIS Database:
- CALM Managed Lands and Waters

(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

There are no permanently inundated wetlands or watercourses within the application area (GIS Database; Biota Environmental Services, 2008; GIS Database). Three of the five application areas partly include the vegetation units which have been identified described by Biota Environmental Services (2008) as Low-Lying Saline Drainage (SD) and Saline Interzone Areas (SIZ). These areas occupy lower positions in the landscape and are seasonally damp areas due to tidal movements and cyclonic rainfall events (Biota Environmental Services, 2008). The soils generally comprise mostly hyper-saline clays, usually colonised by various samphire species (Biota Environmental Services, 2008; Van Vreeswyk et al., 2004). Due to the coastal location, the soils of these saline drainage areas are also likely to contain sediments of sand, salt and quaternary mudflat deposits (Van Vreeswyk et al., 2004). These saline drainage areas are likely to be inundated by surface water for a short period of time (following cyclonic rainfall events or during significant tidal movements), as any surface water will quickly evaporate, drain or infiltrate from the saline drainage areas.

Biota Environmental Services (2008) vegetation mapping indicates that a cumulative total of approximately 15.6 hectares of Low-Lying Drainage and Saline Interzone Areas occur within the 86.8 hectare application area (Biota Environmental Services, 2008). Given that Robe River Iron Ltd have applied to clear up to 12 hectares of native vegetation throughout the 86.8 hectare application area, it is unlikely that the proposed clearing activities would be concentrated to the saline drainage areas, rather clearing is likely to be undertaken throughout the six vegetation types that have been identified within the application areas.

The proposed clearing activities are unlikely to result in any significant erosion or sedimentation occurring within the saline drainage areas identified by Biota Environmental Services (2008). Although, the saline drainage areas are likely to only be seasonally inundated for short periods of time, the proposed clearing for the geotechnical and contaminated site drilling activities is unlikely to cause deterioration in the quality of surface water within these areas.

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is the Roebourne Water Reserve which is located approximately 15 kilometres south, south-east from the application area (GIS Database). Given the distance separating the application area and the nearest water supply area, the proposed clearing is unlikely to impact on the quality of the Roebourne Water Reserve.

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

Methodology Biota Environmental Services (2008)
Van Vreeswyk et al. (2004)

- GIS Database:
- Hydrography, linear
 - Groundwater Salinity, Statewide
 - Public Drinking Water Source Areas (PDWSAs)

(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 average annual rainfall for Cossack which is situated approximately 6 kilometres south-east of the application area is 316.3 millimetres (BoM, 2008). BoM (2008) indicates that the Cossack and surrounding locality receives majority of the rainfall between December and March. As a result, local flooding can be expected to occur seasonally in the Pilbara region as a result of heavy rainfall triggered by cyclonic activity and sporadic thunderstorms.

There are no permanently inundated wetlands or watercourses within the application area (GIS Database; Biota Environmental Services, 2008; GIS Database). Three of the five application areas partly intercept the vegetation units described by Biota Environmental Services (2008) as Low-Lying Saline Drainage (SD) and Saline Interzone Areas (SIZ). These saline drainage areas are likely to be inundated by surface water for only short periods of time following cyclonic rainfall events or during significant tidal movements, and as a result any surface water will quickly evaporate, drain or infiltrate from these areas.

Biota Environmental Services (2008) vegetation mapping indicates that a cumulative total of approximately 15.6 hectares of Low-Lying Drainage and Saline Interzone Areas occur within the 86.8 hectare clearing application area (Biota Environmental Services, 2008). Given that Robe River Iron Ltd have applied to clear up to 12 hectares of native vegetation throughout the 86.8 hectare application area, it is unlikely that the proposed clearing activities would be concentrated to the saline drainage areas, rather clearing is likely to be undertaken throughout the six vegetation types that have been identified within the application areas. The proposed clearing is not likely to form a catchment area that will significantly increase surface water runoff, nor will the proposed clearing significantly alter drainage patterns in the Cape Lambert locality.

The proposed clearing of native vegetation for the geotechnical and contaminated site drilling is unlikely to cause or increase the incidence of flooding or result in an increase in peak flood height.

- Methodology** Biota Environmental Services (2008)
BoM (2008)
GIS Database:
- Hydrography, linear

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

Comments

There is one native title claim over the area under application; (WC99/014) (GIS Database). This claim has been registered with the National Native Title Tribunal on behalf of the claimant group (GIS Database). However, the tenement has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore, the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There are seven registered Sites of Aboriginal Significance (Site ID: 8015, 8017, 6246, 8950, 10052, 10053 and 22112) that occur within the areas applied to clear (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Sites of Aboriginal Significance are damaged through the clearing process. Robe River Iron Ltd has confirmed that the areas have been subject to a heritage survey, and that any Sites of Aboriginal Significance will be avoided during the clearing activities (Robe River, 2008).

One direct interest submission was received in relation to the protection of Sites of Aboriginal Significance and consideration towards the cumulative impact of clearing applications of Special Lease LGE 1123396. The issues raised within the submission have been addressed under Principle (e) and under the section titled 'Planning instrument, Native Title, Previous EPA decision or other matter'.

It is the proponent's responsibility to liaise with the DEC and the DoW to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licence or approvals are required for the proposed works.

- Methodology** Robe River (2008)
GIS Database
- Native Title Claims
- Sites of Aboriginal Significance DIA

4. Assessor's comments

Comment

The proposal has been assessed against the Clearing Principles and is at variance to Principle (f), may be at variance to Principle (g), is not likely to be at variance to Principles (a), (b), (c), (d), (h), (i) and (j), is not at variance to Principle (e).

It is recommended that should a permit be granted, conditions be endorsed on the permit with regards to weed management, rehabilitation, recording areas cleared and rehabilitated and reporting against the permit conditions.

5. References

- Biota Environmental Services (2008). Cape Lambert Contaminated Site and Geotechnical Investigations: Native Vegetation Clearing Permit Report, Prepared for Robe River Iron Associates, Prepared by Biota Environmental Sciences, May 2008.
- BoM (2008). Climate Statistics for Australian Locations. A Search for Climate Statistics for Cossack, Australian Government Bureau of Meteorology, viewed 14 July 2008. < http://www.bom.gov.au/climate/averages/tables/cw_004054.shtml>
- Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.
- Environment Australia (2001). A Directory of Important Wetlands in Australia, Third Edition. Environment Australia, Canberra.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Kendrick, P. and McKenzie, N. (2001). Pilbara 1 (PIL1 - Chichester Subregion). In a Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Department of Conservation and Land Management, pp 547-558.
- Payne A. L., Mitchell A. A., Holman W. F. (1988). Technical Bulletin - An inventory and condition survey of rangelands in the Ashburton River Catchment, Western Australia, No 92, Department of Agriculture, Government of Western Australia, Perth, Western Australia.
- Robe River (2008). Documentation Accompanying Clearing Permit Application for CPS 2504/1, Prepared by Robe River Ltd, May 2008.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Van Vreeswyk A.M.E., Payne A.L., Leighton K.A. and Hennig P. (2004). Technical Bulletin - An inventory and condition survey of rangelands in Pilbara Region, Western Australia, No 92, Department of Agriculture, Government of Western Australia, Perth, Western Australia.

6. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government.
CALM	Department of Conservation and Land Management, Western Australia.
DAFWA	Department of Agriculture and Food, Western Australia.
DA	Department of Agriculture, Western Australia.
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DoE), Western Australia.
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia.
DoE	Department of Environment, Western Australia.
DoIR	Department of Industry and Resources, Western Australia.
DOLA	Department of Land Administration, Western Australia.
DoW	Department of Water
EP Act	Environment Protection Act 1986, Western Australia.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Federal Act)
GIS	Geographical Information System.
IBRA	Interim Biogeographic Regionalisation for Australia.
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
RIWI	Rights in Water and Irrigation Act 1914, Western Australia.
s.17	Section 17 of the Environment Protection Act 1986, Western Australia.
TECs	Threatened Ecological Communities.

Definitions:

{Atkins, K (2005). *Declared rare and priority flora list for Western Australia, 22 February 2005. Department of Conservation and Land Management, Como, Western Australia*} :-

- P1 Priority One - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P2 Priority Two - Poorly Known taxa:** taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.
- P3 Priority Three - Poorly Known taxa:** taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.
- P4 Priority Four – Rare taxa:** taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.
- R Declared Rare Flora – Extant taxa (= Threatened Flora = Endangered + Vulnerable):** taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.
- X Declared Rare Flora - Presumed Extinct taxa:** taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

{Wildlife Conservation (Specially Protected Fauna) Notice 2005} [Wildlife Conservation Act 1950] :-

- Schedule 1 Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.
- Schedule 2 Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.
- Schedule 3 Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.
- Schedule 4 Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

{CALM (2005). *Priority Codes for Fauna. Department of Conservation and Land Management, Como, Western Australia*} :-

- P1 Priority One: Taxa with few, poorly known populations on threatened lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P2 Priority Two: Taxa with few, poorly known populations on conservation lands:** Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P3 Priority Three: Taxa with several, poorly known populations, some on conservation lands:** Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.
- P4 Priority Four: Taxa in need of monitoring:** Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.
- P5 Priority Five: Taxa in need of monitoring:** Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

Categories of threatened species (Environment Protection and Biodiversity Conservation Act 1999)

- EX Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W) Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past

range; or

(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

CR **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.

EN **Endangered:** A native species which:

(a) is not critically endangered; and

(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU **Vulnerable:** A native species which:

(a) is not critically endangered or endangered; and

(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

CD **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.