



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

<b>Purpose Permit number:</b>	CPS 5623/1
<b>Permit Holder:</b>	Atlas Iron Limited
<b>Duration of Permit:</b>	14 September 2013 – 14 September 2023

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 road widening activities, geotechnical investigations, constructing lay down areas, borrow pits and water infrastructure.

**2. Land on which clearing is to be done**

Section 91 Licence: Lic00200/2013-A3227408, being

LOT 1500 ON PLAN 68275 (NULLAGINE 6758)  
LOT 19 ON PLAN 240216 (MARBLE BAR 6760)  
LOT 235 ON PLAN 92011 (MARBLE BAR 6760)  
LOT 236 ON PLAN 92012 (MARBLE BAR 6760)  
LOT 347 ON PLAN 55942 (MARBLE BAR 6760)  
LOT 350 ON PLAN 55942 (MARBLE BAR 6760)  
LOT 351 ON PLAN 55943 (MARBLE BAR 6760)  
LOT 352 ON PLAN 55943 (MARBLE BAR 6760)  
LOT 354 ON PLAN 217400 (MARBLE BAR 6760)  
LOT 355 ON PLAN 217400 (MARBLE BAR 6760)  
LOT 65 ON PLAN 48920 (MARBLE BAR 6760)  
ROAD RESERVE (PIN 11735144, 11734445, 11734446 and 11734447, MARBLE BAR 6760)  
ROAD RESERVE (PIN 11735149, NULLAGINE 6758)

**3. Area of Clearing**

The Permit Holder must not clear more than 153 hectares of native vegetation within the area hatched yellow on attached Plan 5623/1.

**4. Period in which clearing is authorised**

The permit Holder shall not clear any native vegetation after 14 September 2018.

**5. Application**

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

## 6. Type of clearing authorised

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

## 7. Compliance with Assessment Sequence and Management Procedures

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

## PART II – ASSESSMENT SEQUENCE AND MANAGEMENT PROCEDURES

### 8. Avoid, minimise etc clearing

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

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

### 9. Weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

- (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.

### 10. 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.
- (b) at an *optimal time* following completion of geotechnical investigations, constructing lay down areas and borrow pit operations, *revegetate* and *rehabilitate* the area(s) that are no longer required for the purpose for which they were cleared under this Permit by:
  - (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land;
  - (ii) ripping the pit floor and contour batters within the extraction site;
  - (iii) laying the vegetative material and topsoil retained under condition 10(a) on the cleared area(s); and
  - (iv) ensuring only *local provenance* seeds and propagating material are used to *revegetate* and *rehabilitate* the area.
- (c) within 24 months of undertaking *revegetation* and *rehabilitation* in accordance with condition 10(b) of this Permit:
  - (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
  - (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 10(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.
- (d) Where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 10(c)(ii) of this permit, the Permit Holder shall repeat condition 10(c)(i) and

10(c)(ii) within 24 months of undertaking the additional *planting* or *direct seeding* of native vegetation.

- (c) Where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in condition 10(c)(i) and (ii) of this permit, that determination shall be submitted for the CEO's consideration. If the CEO does not agree with the determination made under condition 10(c)(ii), the CEO may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 10(c)(ii).

### **PART III - RECORD KEEPING AND REPORTING**

#### **11. 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 or decimal degrees;
  - (iii) the date that the area was cleared; and
  - (iv) the size of the area cleared (in hectares).
- (b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 10 of this Permit:
  - (i) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings 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.

#### **12. 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 11 of this Permit; and
  - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.
- (c) Prior to 14 May 2023, the Permit Holder must provide to the CEO a written report of records required under condition 11 of this Permit where these records have not already been provided under condition 12(a) of this Permit.

## DEFINITIONS

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

**direct seeding** means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

**environmental specialist:** means a person who 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, or who is approved by the CEO as a suitable environmental specialist.

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

**local provenance** means native vegetation seeds and propagating material from natural sources within 20 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion 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;

**optimal time** means the period from November to December for undertaking *direct seeding*;

**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;

**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.

**weed/s** means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
- (b) published in the former Department of Environment and Conservation Regional Weed Assessments, regardless of ranking; or
- (c) not indigenous to the area concerned.



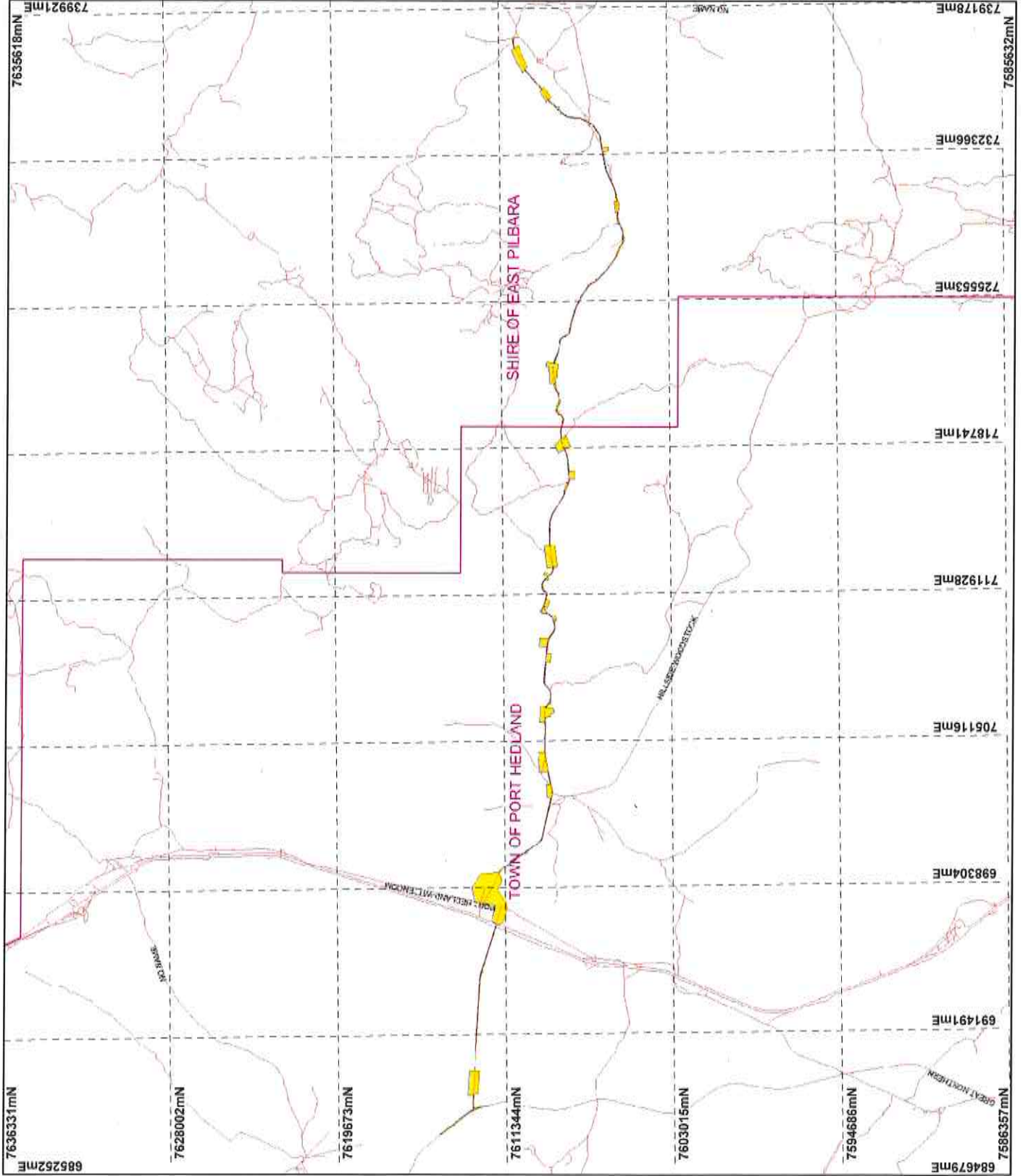
M Warnock  
MANAGER  
NATIVE VEGETATION CONSERVATION BRANCH

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

15 August 2013



# Plan 5623/1



## LEGEND

### Clearing Instruments

- Areas Approved to Clear
- Road Centrelines
- Local Government Authorities

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



0 7.5 km

Scale 1:252000

(Approximate when reproduced at 44)

Geocentric Datum Australia 1994

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

*causland* Date 15/8/13

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.



Government of Western Australia  
Department of Environment Regulation  
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# Clearing Permit Decision Report

Government of Western Australia  
Department of Environment Regulation

## 1. Application details

### 1.1. Permit application details

Permit application No.: 5623/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Atlas Iron Limited

### 1.3. Property details

Property:  
LOT 1500 ON PLAN 68275 ( NULLAGINE 6758)  
LOT 19 ON PLAN 240216 ( MARBLE BAR 6760)  
LOT 235 ON PLAN 92011 ( MARBLE BAR 6760)  
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LOT 65 ON PLAN 48920 ( MARBLE BAR 6760)  
ROAD RESERVE ( MARBLE BAR 6760)  
ROAD RESERVE ( NULLAGINE 6758)

Local Government Area: Shire of East Pilbara and Town of Port Hedland  
Colloquial name:

### 1.4. Application

Clearing Area (ha) 153  
No. Trees  
Method of Clearing Mechanical Removal  
For the purpose of: Road construction or maintenance

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 15 August 2013

## 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
Mapped Beard vegetation association 93 is described as hummock grasslands, shrub steppe; kanji over soft spinifex (Shepherd et al, 2001); and	Mount Webber Public Road Upgrade Project - Great Northern Highway, Hillside-Woodstock Road, Woodstock Marble Road reserves within the Town of Port Hedland and Shire of East Pilbara	Excellent: Vegetation structure intact; disturbance affecting individual species, weeds non-aggressive (Keighery 1994)	The application is to clear up to 153 hectares for the purpose of geotechnical investigations including constructing lay down areas, borrow pits and water infrastructure within the Great Northern Highway, Hillside-Woodstock Road, Woodstock Marble Road reserves and various adjoining land parcels, within the Town of Port Hedland and Shire of East Pilbara for road widening activities between Mt webber minesite and the Great Northern Highway.
Mapped Beard vegetation association 82 is described as hummock grasslands, low tree steppe; snappy gum over <i>Triodia wiseana</i> (Shepherd et al, 2001).		To  Completely Degraded: No longer intact; completely/almost completely without native species (Keighery 1994)	Sections of the application area have been previously impacted by road construction and associated infrastructure and are in a degraded condition. Areas of very good or better condition exhibit some impacts from human disturbance, minor weed invasion ( <i>Cenchrus ciliaris</i> and <i>Aerva javanica</i> ) and cattle grazing (Atlas, 2013a).

### 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 application in the Pilbara Region is to clear upto 153 hectares of native vegetation for the purpose of road widening activities between Mount Webber and the Great Northern Highway. This includes geotechnical investigations, constructing lay down areas, borrow pits and water infrastructure within the Great Northern Highway, Hillside-Woodstock Road, Woodstock Marble Road reserves and various adjoining land parcels. Currently these roads vary between eight to eleven metres wide with the proposed widening to standardise the width to eleven metres over a 55 kilometre distance to facilitate safer road-user conditions.

The vegetation of the Pilbara region is characterised by eucalyptus trees, acacia shrubs and *Triodia spinifex* such that shrub steppe of *Acacia inaequilatera* and *Triodia wiseana* dominate the plains and *Eucalyptus leuophloia* tree steppes dominate the ranges.

The condition of the vegetation within the application footprint ranges from degraded to excellent (Keighery, 1994), with some areas showing signs of disturbance such as grazing, weed invasion, impacts from road use and infrastructure, while other areas remain undisturbed (Atlas, 2013a).

Fauna habitat types found within the application area, which traverse a range of land systems, are consistent with habitat types known to occur elsewhere within the vicinity and wider Pilbara region. Twelve broad fauna habitats were identified within the application area, with four of these habitats considered to be of particular significance to vertebrate fauna, referred to as Acacia and Spinifex on Sandplain, Spinifex Sandplain, Drainage Line and Granite Outcrop habitat (Outback Ecology, 2012 and 2013).

Of these, habitat likely to support fauna of conservation significance are the:

- Granite Outcrop habitat type may potentially support populations of the Northern Quoll, although this is relatively unlikely owing to the limited extent of individual patches of this habitat type within the application area;
- Drainage Line habitat may act as a corridor for movement of various conservation significant species such as the Northern Quoll, Pilbara Olive Python and Pilbara Leaf-nosed Bat. Drainage Line habitat is known to host a different assemblage of fauna to other habitat types as it features semi-permanent water sources and it may play a role in linking other habitat types;
- Acacia, Spinifex on Sandplain and Spinifex Sandplain is very likely to support populations of the Greater Bilby, albeit at low densities due to the presence of introduced predators and existing disturbances (grazing, development of infrastructure such as roads and rail).

The following conservation significant fauna were identified during the 2012/2013 fauna surveys: Western Pebble-mound mouse (P4), *Ramphotyphlops ganei* (un-named blind snake) (P1), Australian Bustard (P4) and Bush Stone-curlew (P4).

Fauna habitats traversed by the application area are generally well represented, both within and outside of the application area, so impacts from the proposed clearing are not likely to be significant (Outback Ecology, 2012 and 2013).

Nine Vegetation Types (VT) occur over the 55 kilometre application area, from two vegetation 'Super-groups', based on soil types and landforms. These are: Super-group 1 is mapped on undulating plains, lower slopes and drainage features including rivers, creeklines, depressions and outwash areas, and Super-group 2 is mapped on rocky or stony undulating plains, hillslopes and ranges (Woodman, 2012 and 2013).

The diversity between the VT's is considered to be moderate, many of which are floristically similar, evident by the re-occurring and uniform nature of the landforms within the application area. The majority of the VT's are known to occur outside the application area and are likely to be regionally widespread and common (Woodman, 2012). The application area, therefore, is not considered to represent or support a high level of biodiversity. As flora habitat within the application area is generally well represented, both within and outside of the application area, impacts from the proposed clearing are not likely to be significant.

Flora surveys were undertaken within the application area and its surrounds in 2012 and 2013 (Woodman, 2012 and 2013). Three priority listed flora species, *Bulbostylis* sp. (P4), *Heliotropium* sp. (P3) and *Rothia indica* subsp. (P1) and one undescribed species (potentially a new species), *Eriachne* affin. *festucea* were identified from within the application area.

The *Rothia* species is a prostrate annual herb, occurring on sandy soils on sand hills and sandy flats. The majority of the plants are associated with either the laydown or borrow pit areas. Potentially 38 per cent (1,265 individuals) of the total number of individuals recorded (3,334) during the flora survey may be impacted by the proposed clearing. Numerous individuals have also been recorded within the immediate surrounds of the application area (2,069 individuals). The entire application area was not surveyed in detail for this species and it



is possible it could also extend elsewhere within and adjacent to the application area based on field observations (Woodman, 2013). There are herbarium collections from north of Marble Bar, Broome, east of Port Hedland (De Grey Station) and a large range extension approximately 900 kilometres east of the application area (WA Herbarium, 1998-).

The potential local and regional impacts to the remaining three species, *Heliotropium* sp. (215 individuals within application area, 648 individuals within the immediate surrounding area), *Bulbostylis* sp. (1 individual in application area, 623 individuals within the immediate surrounding area) and *Eriachne* aff. *festucacea* (undescribed; 233 individuals within application area, 2,121 individuals within the immediate surrounding area) is not considered significant with less than 25 per cent of the total number of individuals per species being possibly impacted (Woodman, 2013).

The clearing as proposed is not likely to result in the complete loss of these species from the local area, and will not significantly impact these species in terms of their broader or regional conservation significance (Woodman, 2013; DPaW, 2013).

Nine introduced (weed) taxa have been recorded in the application area, including the serious environmental weeds *Aerva javanica* (Kapok) and *Cenchrus ciliaris* (Buffel Grass). *Aerva javanica*, *Cenchrus ciliaris* and *Portulaca oleracea* occur in the application area and could potentially be spread to other disturbed and undisturbed areas during the clearing and construction activities. *Aerva javanica* and *Cenchrus ciliaris* in particular are highly invasive, and while they have the ability to spread into undisturbed native vegetation, are particularly adept at colonising recently disturbed areas. It is therefore important that a weed hygiene management programme be developed prior to ground disturbance.

Overall, the proposed clearing may be at variance to this Principle. To minimise potential environmental impacts, avoiding and minimise clearing where possible, and weed management and revegetation practices will be implemented.

**Methodology**      References:  
-Atlas (2013a)  
-DPaW (2013)  
-Outback Ecology (2012 and 2013)  
-Keighery (1994)  
- WA Herbarium (1998-)

GIS database:  
-Pre European Vegetation  
-SAC biodatasets (Accessed June 2013)

**(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 2013 vertebrate fauna survey recorded 39 mammal, 167 bird, 109 reptile, nine amphibian and five fish species which may potentially occur within the application area (Outback Ecology, 2013). A 2012 invertebrate fauna survey for short-range endemic species identified the selenoid spider (*Karaops* SEL002) occurring within approximately three hectares, of 40 hectares of granite outcrop habitat known within the application area (Outback Ecology, 2012).

Fauna habitat types found within the application area, which traverses a range of land systems, were consistent with habitat types known to occur elsewhere within the vicinity of the application area and wider Pilbara region. Twelve broad fauna habitats were identified within the application area, with four of these habitats considered to be of particular significance to vertebrate fauna, comprising *Acacia* and *Spinifex* on Sandplain, *Spinifex* Sandplain, Drainage Line and Granite Outcrop habitat (Outback Ecology, 2012).

Of these, habitats likely to support fauna of conservation significance are:

- the Granite Outcrop habitat type may potentially support populations of the Northern Quoll, although this is relatively unlikely owing to the limited extent of individual patches of this habitat type within the Study area;
- Drainage Line habitat may act as a corridor for movement of various conservation significant species such as the Northern Quoll, Pilbara Olive Python and Pilbara Leaf-nosed Bat. Drainage Line habitat is known to host a different assemblage of fauna to other habitat types as it features semi-permanent water sources and it may play a role in linking other habitat types;
- *Acacia*, *Spinifex* on Sandplain and *Spinifex* Sandplain is very likely to support populations of the Greater Bilby, albeit at low densities due to the presence of introduced predators and existing disturbances (grazing, development of infrastructure such as roads and rail).



The granite outcrop habitat is scattered across the Spinifex Sandplain as a mosaic of minor granite outcrops. The proposed clearing may impact less than one hectare of this area and is unlikely to result in any significant impact to this habitat (Outback Ecology, 2012 and 2013).

A total of 65 vertebrate fauna species were recorded comprising four mammals, 51 species of bird and seven reptile species. Of the 65 species, the following conservation significant fauna were identified : Western Pebble-mound mouse (Priority 4), Ramphotyphlops ganei (un-named blind snake) (Priority 1), Australian Bustard (Priority 4), Bush Stone-curlew (Priority 4) and the Rainbow Bee-eater (a migratory bird species (Outback Ecology, 2013).

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

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

**Methodology**    References:  
-Outback Ecology (2012 and 2013)

                         GIS database:  
-Pre European Vegetation  
-SAC biodatasets (Accessed June 2013)

**(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 rare flora were identified in the application area during a 2012 and 2013 flora and vegetation survey (Woodman Environmental, 2012 and 2013). No rare flora are recorded within the local area (25 kilometre radius).

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

**Methodology**    Reference:  
-Woodman Environmental (2012 and 2013)

                         GIS database:  
-SAC biodatasets (Accessed June 2013)

**(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) were identified in the application area during a 2012 flora and vegetation survey. Furthermore, none of the known vegetation types within the application area are representative of any known TEC (Woodman Environmental, 2012).

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

**Methodology**    Reference:  
-Woodman Environmental (2012)

                         GIS database:  
-SAC biodatasets (Accessed June 2013)

**(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 et al (2001) reports that greater than 95 percent of the pre-European vegetation remains in this bioregion.

Each of the two Beard vegetation types mapped within the application area are well represented in the Pilbara bioregion and the local area with greater than 95 percent remaining.

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

Pre-European (ha)	Current Extent (ha)	Remaining (%)
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IBRA Bioregion*	Pre-European (ha)	Current Extent (ha)	Remaining (%)
Pilbara	17,808,657	17,733,583	99
Shire			
Town of Port Hedland	1,847,403	1,818,671	98
Shire of East Pilbara	37,183,049	37,155,254	99
Beard Veg Association in Bioregion*			
82	2,563,583	2,550,898	99
93	3,042,114	3,038,471	99

\*Shepherd et al (2001)

**Methodology** References:  
 -Shepherd et al (2001)

GIS database:  
 -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 may be at variance to this Principle**

No wetlands occur in the application area and no significant watercourses will be impacted by the proposed clearing. Various drainage channels cross the application area where existing road infrastructure, such as culverts, already exist to manage surface water flows (Atlas, 2013).

Two mapped creeks, Tambina Creek and Coorong Creek, traverse the application area towards the eastern end of the application area. Any impacts to these creeks may be insignificant as they have been previously altered by existing road infrastructure. The following rivers are noted, but will not be impacted by the proposed clearing:

- Yule River, mainstream, two to three kilometres south of western end of the application area;
- Turner River, minor river, five kilometres north of middle section of the application area; and
- Shaw River, mainstream, 4 kilometres east of eastern end of the application area.

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

**Methodology** References:  
 - Atlas (2013)

GIS databases:  
 - 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 topography of the application area is relatively low. Soil types vary from hard alkaline red soils to brown loams with stony inclusions (Northcote, 1960-68). Water erosion and/or scouring of soils is possible, in the short term, as surface water sheeting develops during rainfall events. This could be more prevalent where the clearing activity involves drainage lines and watercourses and may continue until road infrastructure, such as drainage culverts, is constructed (MWH, 2012).

Groundwater salinity levels are low to moderate (500-3000 tds\_mg/L) and not expected to be influenced by the proposed clearing.

Given the above, the clearing may be at variance to this Principle. However, to mitigate these impacts, the applicant will modify drainage culverts at existing flow-crossing points where appropriate (Atlas, 2013a).

**Methodology** References  
 -Atlas (2013a)  
 -MWH (2012)

-Northcote (1960-68)

GIS databases:

- Hydrography, linear
- Groundwater Salinity, Statewide
- Soils, Statewide
- Topographic contours 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 at variance to this Principle**

No conservation estate occurs within the application area or local area (25 kilometre radius).

The proposed clearing is not 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 traverses the upper reaches of the Shaw River catchment, moves easterly into the Turner river catchment and then into the upper reaches of the Yule River catchment before it meets the Great Northern Highway. Surface water does exist throughout the year in some river beds and creeks and the water quality of the Pilbara Region is historically known for high levels of turbidity during rainfall or runoff events (Atlas, 2013a; MWH, 2012).

Disturbance to surface water flows at a local level may result in upstream ponding and downstream drainage shadows (i.e. a reduction in downstream drainage) (MWH, 2012).

During periods of surface flow and/or rain events, the proposed clearing may also lead to increased turbidity levels of nearby watercourses, for only a short period of time.

Surface water movement should be managed through the development of appropriately designed drainage control systems in areas where sheet flow is prevalent to avoid water shadowing and ponding.

Groundwater quality or recharge in the region is not expected to be impacted given the relatively small amount of clearing (153 hectares) compared to the combined, large infiltration capacity of catchment area (Atlas, 2013a).

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

To mitigate potential impacts, the applicant will modify drainage culverts at existing flow-crossing points where appropriate (Atlas, 2013a).

**Methodology** References  
-Atlas (2013a)  
-MWH (2012)

GIS database  
- Hydrographic Catchments  
- 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**

The proposed clearing is unlikely to contribute to flooding within the application area. Cyclonic events occur within the Pilbara region which leads to natural flooding (flood flows) (Atlas, 2013a). However, the long, linear nature of the proposed clearing is unlikely to cause flooding.

Disturbance to surface water flows at a local level may result in the form of upstream ponding and downstream drainage shadows (i.e. a reduction in downstream drainage) (MWH, 2012). To mitigate these impacts, the applicant will modify drainage culverts at existing flow-crossing points where appropriate (Atlas, 2013a).

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

**Methodology**    References  
 -Atlas (2013a)  
 -MWH (2012)  
 GIS database  
 - Hydrographic Catchments  
 - Hydrography, linear

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

**Comments**

The applicant has been granted a section 91 Licence pursuant to the Land Administration Act 1997 giving approval to enter the necessary land parcels and undertake the necessary clearing and road construction.

The application area occurs within the Pilbara Surface Water and Groundwater Areas proclaimed under the Rights in Water and Irrigation Act 1914. Department of Water have advised that, where the applicant needs to divert surface water, interfere with the bed or banks of a watercourse or abstract groundwater, a licence and permit will be required (DoW, 2013).

The applicant has been granted a licence to interfere with the bed or banks of a watercourse and has applied for a licence to abstract groundwater (Atlas, 2013b).

The Town of Port Hedland (TPH) has advised they have no objections to the proposed clearing and road construction (TPH, 2013).

**Methodology**    Reference  
 -DoW (2013)  
 - Atlas (2013b)  
 -TPH (2013)

**4. References**

Atlas (2013a) Atlas Iron Limited, Application for Clearing Permit and supporting documentation, CPS 5623/1 (DER Ref: A633948)  
 Atlas (2013b) Atlas Iron Limited, Department of Water supporting documentation, CPS 5623/1 (DER Ref: A657930).  
 DoW (2013) Department of Water advice for Clearing Permit Application CPS 5679/1 (DER Ref: A654363).  
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 Outback Ecology (2013) Atlas Iron Limited Public Road Upgrade Terrestrial Vertebrate Fauna Impact Assessment prepared for Atlas Iron Limited (DER Ref: A657255)  
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 Woodman Environmental (2013) Atlas Iron Limited, Public Road Upgrade Project, Flora and Vegetation Impact Assessment prepared by Woodman Environmental Consulting

**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