



**PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT AND
ENVIRONMENTAL MANAGEMENT PLAN**

**Atlas Mt Dove DSO Project – Great Northern Highway
Intersection Works**

October 2012

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Revision	Prepared by	Date	Reviewed by	Date
Draft A	Alison Kriegel Senior Environmental Advisor		Julie Mahony Senior Environmental Advisor	
Rev 0	Alison Kriegel Senior Environmental Advisor		Julie Mahony Senior Environmental Advisor	31 October 2012

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SUMMARY

Atlas Iron Limited (Atlas) has federal and state approval to construct the Mt Dove Direct Shipping Ore (DSO) Project located 68 km south of Port Hedland in the Shire of East Pilbara. The mine site is linked by road to Port Hedland via the Great Northern Highway (GNH).

To enhance the safe merging and turning of mine site traffic on/off the GNH, Atlas proposes to construct an intersection of the Mt Dove access road and the GNH (proposed intersection), which is located at approximate SLK 1544 m including:

- construction of a dedicated slip lane and acceleration lane for all northbound traffic exiting the mine site
- construction of a dedicated southbound turning lane and local widening of the junction to accommodate the turning vehicles
- dedicated deceleration lane for northbound traffic turning into the mine
- enhancement of the approach signage on the GNH
- provision of solar lighting at the junction.

This PEIA captures the disturbance activities (1.5 ha) for the intersection works under Main Roads WA (MR) existing clearing permit CPS818/6. The design of the intersection has been approved by MR through the complex works application process. Improvement works for this approval will be contained within the MR road reserve.

The wider Mt Dove project area has been the subject of several environmental surveys as part of Atlas' environmental impact assessments for the Mt Dove DSO Project. Impact assessments most applicable to this report include:

- Mt Dove Direct Shipping Ore Project: Flora and Vegetation Studies (Woodman 2011)
- Mt Dove DSO Project – Vertebrate Fauna Assessment (Outback Ecology 2011).

Previous approvals for the Mt Dove DSO project include:

- *Environmental Protection and Biodiversity Conservation Act* approval (EPBC 2011/5848) was granted on 13 January 2012.
- Mt Dove DSO Project Mining Proposal (Reg ID 34031) was approved on 15 June 2012.
- Native Vegetation Clearing Permit (4861/1) was approved on 17 May 2012.

The clearing described in this PEIA is consistent with the ten clearing principles.

Environmental management of the intersection works will be undertaken in accordance with the Environmental Management Plan identified in Appendix M.

PRELIMINARY ENVIRONMENTAL IMPACT ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN

MT DOVE GREAT NORTHERN HIGHWAY INTERSECTION WORKS

1. BACKGROUND

Atlas Iron Limited (Atlas) has federal and state approval to construct the Mt Dove Direct Shipping Ore (DSO) Project located 68 km south of Port Hedland in the Shire of East Pilbara (Figure 1). The mine site is linked by road to Port Hedland via the Great Northern Highway (GNH).

Atlas proposes to construct an intersection of the Mt Dove minesite access road with the Great Northern Highway (GNH), at approximate SLK 1544 m (Figure 2). The proposed intersection is required to allow minesite access while minimising hazards for traffic entering and exiting the GNH from the mine. The intersection will provide a dedicated slip lane and an acceleration lane for northbound GNH traffic and a dedicated southbound turning lane into the minesite. All works assessed in this report will be conducted within the MR road reserve.

Partial approval for the GNH intersection has been obtained through state and federal environmental approvals. Federal approval under the *Environmental Protection and Biodiversity Conservation Act* was granted on 13 January 2012. The Mt Dove DSO Project Mining Proposal (Coffey 2012) was approved on 15 June 2012. Clearing required for the intersection consists of approximately 1.5 ha located within Atlas' Miscellaneous Lease L45/248. Under Regulation 5, Item 20 Exemptions for Clearing resulting from low impact or other mineral or petroleum activities, Clause 2 (2) of Schedule 1 allows clearing of up to 10 ha per financial year for clearing authorised under the *Mining Act 1978* in an authority area (tenement).

This PEIA relates only to disturbance works (1.5 ha) that fall outside of Atlas' tenure L45/248, required under MR's Clearing Permit CPS818/6 for the upgrade works (Figure 2). The design has been approved by MR through the complex works application process on 09 October 2012.

Following Main Roads' corporate Environmental Assessment and Approval process, an initial 'Low Impact Environmental Screening Checklist' was completed for the proposal (Appendix A). The checklist determined the project required further environmental assessment as the project requires a new road, clearing of native vegetation outside of the maintenance zone and clearing of native vegetation that is older than 10 years within the maintenance zone. Therefore the preparation of a project specific Preliminary Environmental Impact Assessment (PEIA) and Environmental Management Plan (EMP) are required.

This PEIA will involve a desktop analysis of environmental aspects and impacts, a site investigation, an assessment of native vegetation clearing, stakeholder consultation and consideration of necessary environmental management. The preliminary assessment will determine whether an Environmental Impact Assessment (EIA) is necessary and if referral to State and/or Commonwealth authorities is required.

2. DESCRIPTION OF THE PROJECT

Atlas proposes the following works for the intersection of Mt Dove access road and GNH:

- construction of a dedicated slip lane and acceleration lane for all northbound traffic exiting the mine site
- construction of a dedicated southbound turning lane and local widening of the junction to accommodate the turning vehicles
- dedicated deceleration lane for northbound traffic turning into the mine
- enhancement of the approach signage on the GNH
- provision of solar lighting at the junction.

In order to construct the intersection to the approved design, clearing will be required. The clearing required is summarised in Table 1.

Table 1. Vegetation clearing required within MRWA road reserve for the Mt Dove GNH intersection.

Item of works	Total area (ha)
Acceleration lane	1.376 ha
Slip lane at junction	0.098 ha
Total	1.5 ha

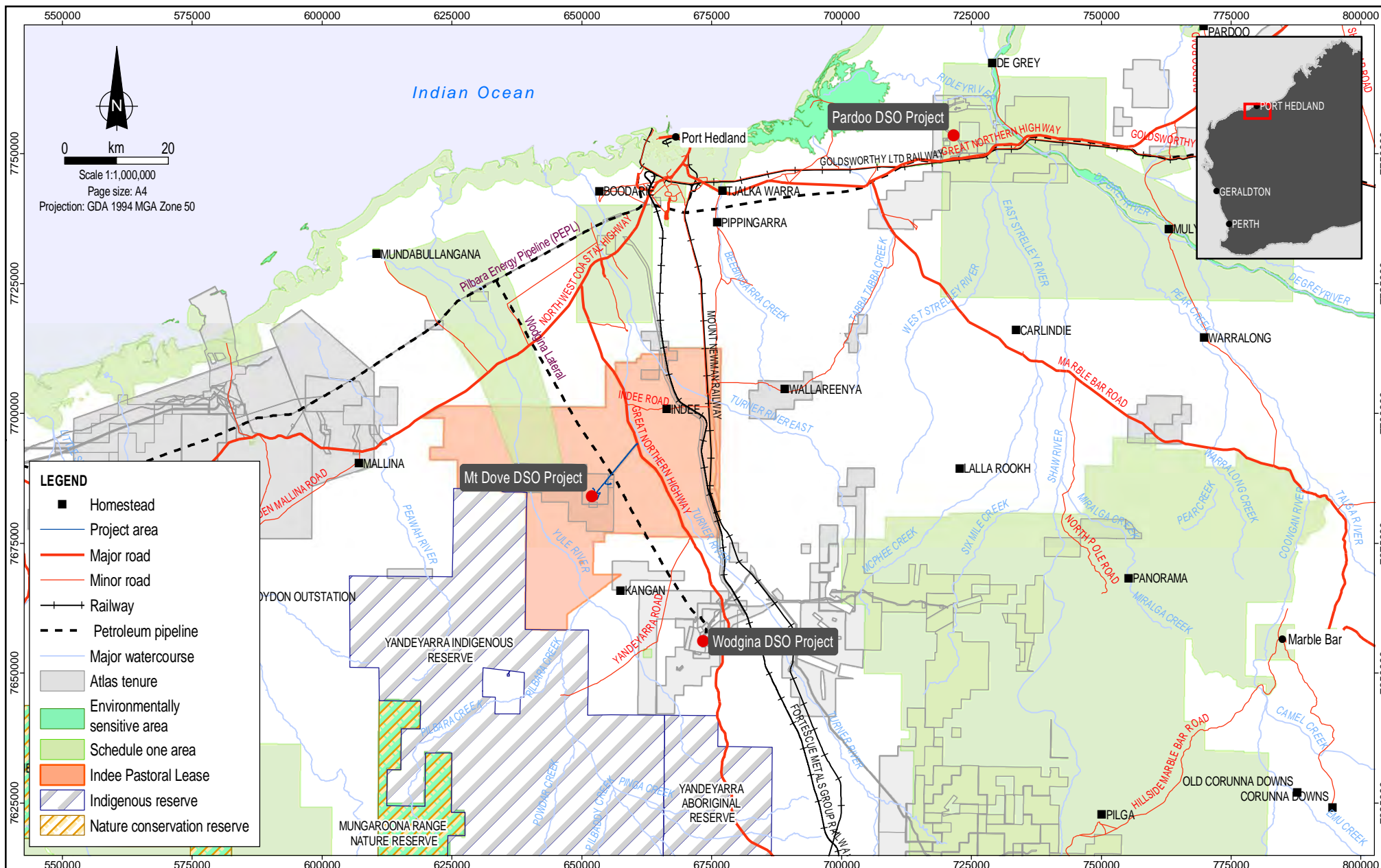
The resulting intersection will enable traffic from the mine site, particularly road trains, to achieve an appropriate speed before merging with northbound traffic on the GNH. In addition, a dedicated southbound turning lane will enable GNH southbound traffic to flow continuously around traffic stopped to enter the Mt Dove mine site.

2.1 Project Location

The proposed intersection is located adjacent to the GNH at approximate SLK 1544 m. The regional location of the Project is shown in Figure 1. The proposed intersection is located within Indee Pastoral Lease 3114/1197, which is grazed with cattle.

The layout for the intersection is included in Figure 2. The proposed road design is identified in black and proposed clearing requested in this PEIA outlined in orange.

The intersection is located on flat open alluvial plains supporting low shrublands (*Acacia* spp., *Grevillea* spp.) and spinifex (*Triodia* spp.) grasslands.



Source:
Place names, roads, rail and drainage from
GEO DATA TOPO 250K. Petroleum pipelines
from SLIP: Indee Pastoral Station from
Landgate. Atlas tenure from Atlas Iron Limited.
ESA and Schedule 1 areas from DEC.

Notes:
Environmentally sensitive areas are declared under the Environmental Protection Act 1986 and in Environmental
Protection (Clearing of Native Vegetation) Regulations 2004 and Environmental Protection (Environmentally
Sensitive Areas) Notice 2005.
Schedule 1 areas are those that require a permit for clearing resulting from low impact mineral or petroleum
activities as declared in Environmental Protection (Clearing of Native Vegetation) Regulations 2004 - Schedule 1.

coffey
environments

Date:
19.10.2011
MXT:
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File Name:
2067_01_ES01_GIS

Atlas Iron Limited

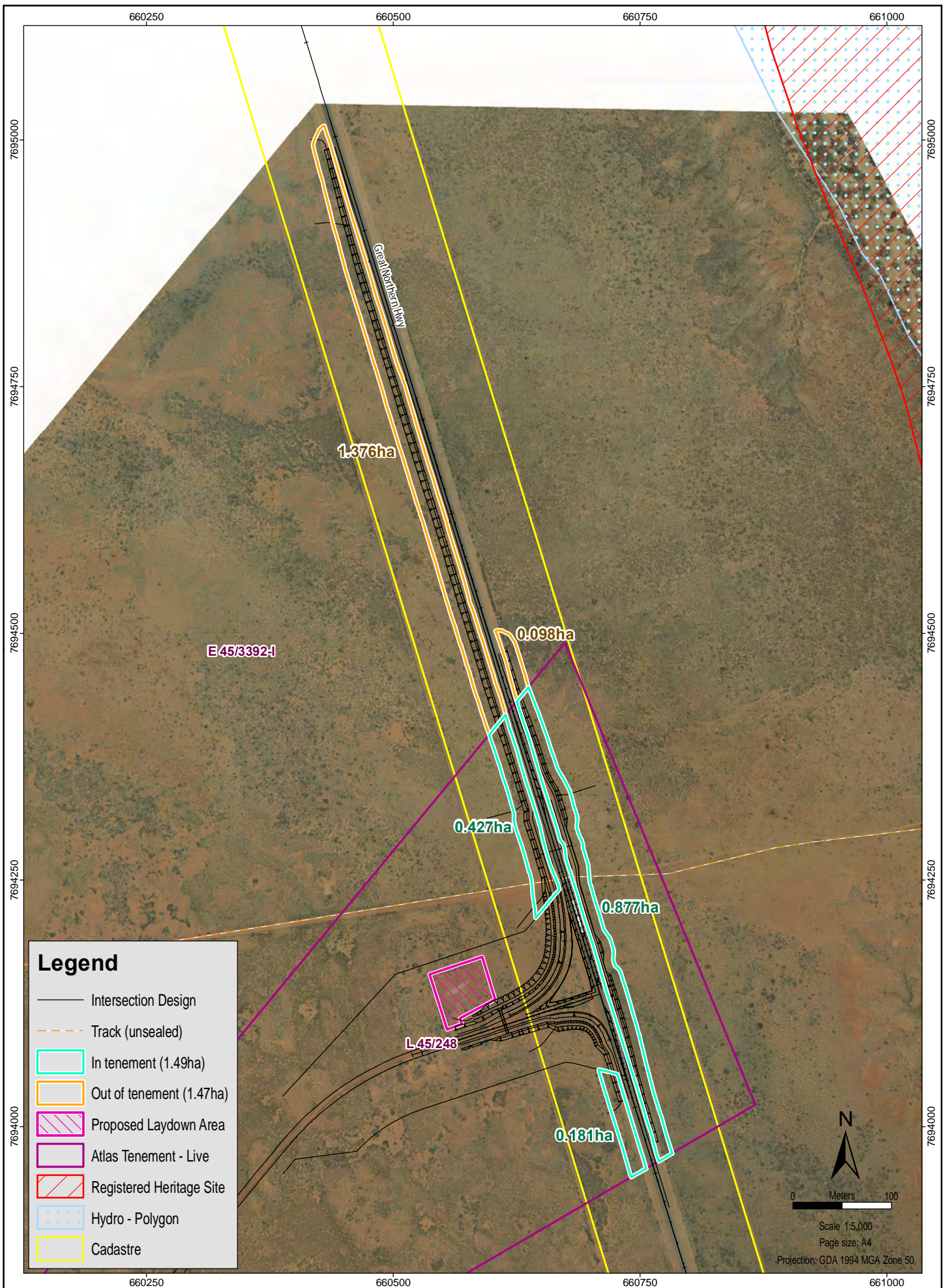
Mt Dove DSO Project



Locality plan and regional setting

Figure No:

1



File Name: TEN_F735.mxd
Date: 29/10/2012
Author: drew.smith

Source & Notes
Rev: 1

*Mt Dove Intersection -
Preliminary Environmental Impact Assessment*

Figure No:

2

3. METHODOLOGY

3.1 Preliminary Desktop Study

The proposed intersection area has been surveyed previously as part of the Atlas environmental impact assessments. The study area for these surveys, referred to as the Mt Dove project area, includes the Mt Dove pit, accommodation camp, run-of-mine, waste rock dump and access road. As the proposed intersection is located within and/or immediately adjacent to the Mt Dove Study Area, findings from these surveys are applicable to this PEIA.

3.1.1 Threatened Flora, Fauna & Communities, Conservation Reserves and ESAs

A total of approximately 1.5 ha of vegetation is expected to be cleared as a result of this approval. The vegetation to be cleared is located in a long narrow string adjacent to the existing road.

Flora

Atlas commissioned Woodman Environmental Consulting (Woodman 2011 – Appendix B) to conduct a flora and vegetation survey and impact assessment of the Mt Dove project area. Woodman identified the vegetation surrounding the intersection as floristic community type 1 (FCT 1) described as mid open to sparse shrubland of mixed *Acacia* species including *A. inaequilatera*, *A. colei* var. *colei* and *A. ancistrocarpa* over low open shrubland dominated by *Acacia stellaticeps* over low hummock grassland dominated by *Triodia epactia* and/or *T. lanigera* on red sandy loams on lower slopes, flats and plains (Figure 3).

FCT 1 is considered conservation insignificant as it was locally widespread and no conservation significant flora taxa were recorded (Woodman 2011). The described communities are not listed as threatened ecological communities (TECs) or priority ecological communities (PECs).

Based on a desktop review of the DEC's Threatened and Priority Flora database and the Commonwealth's Threatened Flora database, 16 priority listed flora species are listed as potentially occurring within the overall Mt Dove study area or in the immediate vicinity. None of these species have previously been recorded within the overall study area based on the species information available from the DEC. No threatened flora were recorded within the area of the proposed intersection during field investigations (Woodman 2011).

Fauna

Atlas commissioned Outback Ecology to undertake a terrestrial vertebrate fauna assessment of the wider Mt Dove project area (Outback Ecology, 2011 – Appendix C). A total of four broad habitat types were identified over the wider project area: *Acacia*, Spinifex on Sandplain; *Acacia* Shrubland on Foothills, Rocky Ridge and Stony Rise.

A total of 92 vertebrate species, including five species of conservation significance were recorded during the 2010 surveys in the overall Mt Dove project area:

- Northern Quoll (*Dasyurus hallucatus*), listed as Endangered under the EPBC Act and Schedule 1 of the WC Act
- Pilbara Leaf-nosed Bat (*Rhinonictis aurantia* (Pilbara form)), listed as Vulnerable under the EPBC Act and Schedule 1 of the WC Act
- Ghost Bat (*Macroderma gigas*), listed as a Priority 4 species under the DEC Priority Species List
- Australian Bustard (*Ardeotis australis*), listed as a Priority 4 species under the DEC Priority Species List
- Rainbow Bee-eater (*Merops ornatus*), listed under the EPBC Act as a migratory species.

The proposed intersection is located within the broad fauna habitat of 'Acacia, Spinifex on Sandplain'. Much of this habitat type across the wider Mt Dove area was recently burnt (<5 years) and has been grazed by cattle. The habitat is widely represented throughout the Pilbara region.

Only two conservation significant species were trapped within this habitat type:

- Australian Bustard (*Ardeotis australis*)
- Rainbow Bee-eater (*Merops ornatus*)

It is possible that other conservation significant fauna would be present within this habitat, including:

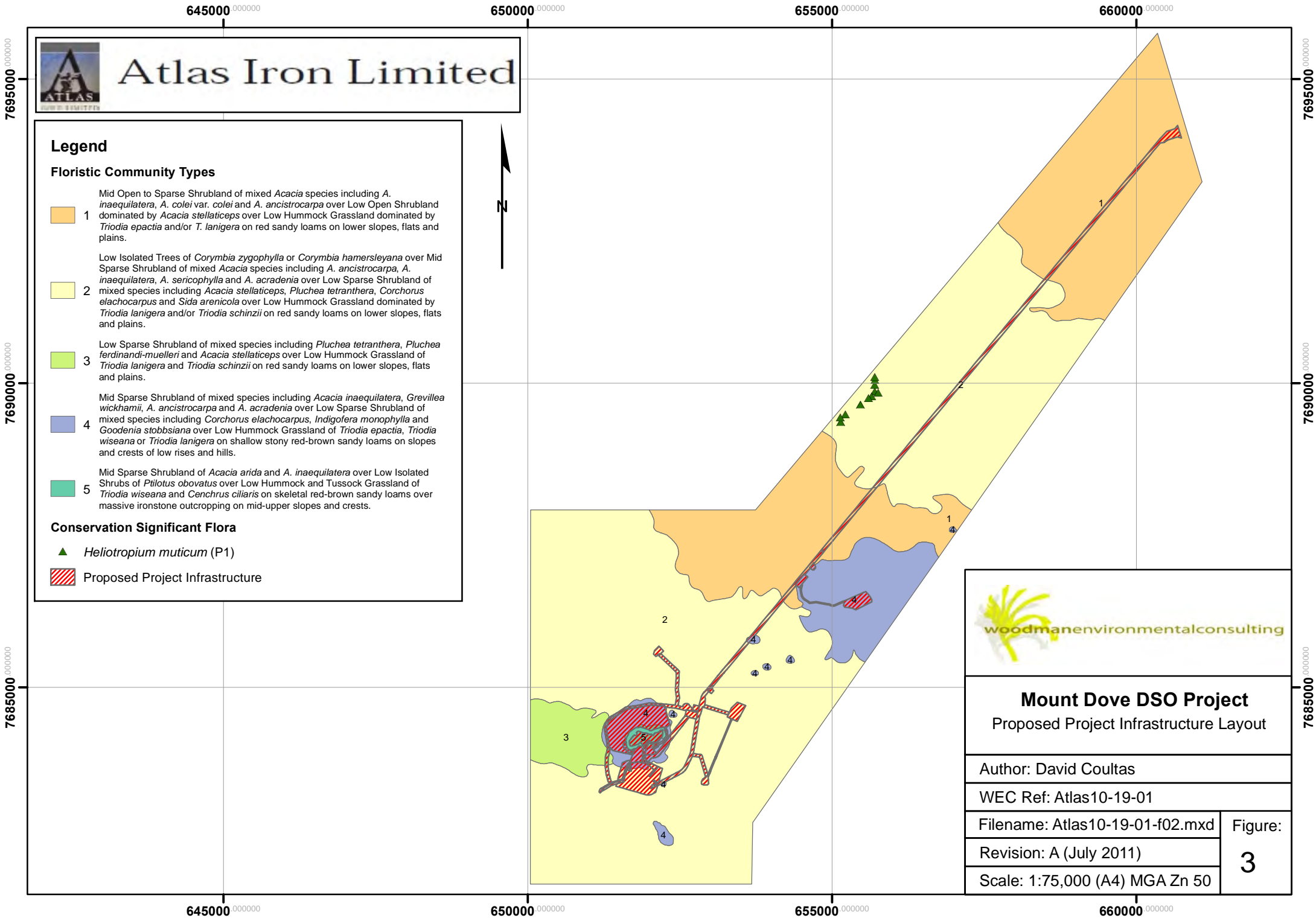
- Bush Stone-curlew (*Burhinus grallarius*) – likely
- Brush-tailed Mulgara (*Dasycercus blythi*) – potentially

Neither of these two species (Australian Bustard, Rainbow Bee-eater) were recorded in the immediate vicinity of the proposed intersection.

Introduced species recorded in the Acacia, Spinifex on Sandplain habitat included European cattle, camel, dog/dingo and feral cats.

Conservation reserves and ESAs

No conservation areas or environmentally sensitive areas are located within the intersection works.



3.1.2 Heritage

Non-indigenous heritage was examined utilising the Australian Heritage Places Inventory and the Heritage Council of Western Australia Places Database. A review of the Shire of East Pilbara's Municipal Heritage Inventory was undertaken. There are no registered non-Indigenous heritage sites within or surrounding the intersection works area. Refer to Appendix D.

3.1.3 Aboriginal Heritage

A search of the Department of Indigenous Affairs' (DIA's) (<http://dia.wa.gov.au/AHIS/>) database was undertaken to determine whether the project area contains any sites of Aboriginal Heritage, refer to Appendix E.

No registered Aboriginal sites were identified within the Project area.

3.1.4 Sensitive Water Resources

A search of the Department of Water's (DoW's) database was undertaken on 29 October 2012. The Project area is not within a Public Drinking Water Source Area or adjacent to any significant lakes, rivers, wetlands or proclaimed areas, refer to Appendix F. The Mt Dove project lies approximately 6 km south of the southern boundary of the Yule River Water Reserve (No. 31427). The southern boundary of the Turner River Water Reserve (PWD 42085) is located approximately 70 km north of the project.

3.1.5 Wetlands

The locations of any wetlands within the project area was determined using the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) mapping tool and the Department of Environment and Conservation (DEC) "Native Vegetation Map Viewer" mapping tool. Refer to Appendix G and Appendix H. No wetlands are located within the vicinity of the proposed intersection works.

3.1.6 Weeds

The Department of Agriculture and Food maintains a list of declared plants that indicates a number of declared plants within the East Pilbara region. Refer to Appendix I.

A flora and vegetation study undertaken by Woodman (2011) recorded two introduced (weed) taxa in the wider Mt Dove project area: *Aerva javanica* (Kapok Bush) and *Cenchrus ciliaris* (Buffel Grass). Neither of these species were identified within the proposed intersection.

3.1.7 Dieback

As the project receives <400 mm of rain dieback is considered not to be an issue. Average annual rainfall at Marble Bar is 362 mm and Port Hedland is 314 mm and the Project is located above the 26° parallel.

3.1.8 Contaminated Sites

A search of the DEC's contaminated sites database was undertaken on 29 October 2012. The Project does not contain nor is adjacent to any contaminated sites, refer Appendix J.

3.1.9 Acid Sulfate Soils

The DEC's acid sulfate soils maps were reviewed on the Shared Land Information Platform on 30 October 2012. Acid sulfate soils will not be a risk to the Project. Refer to Appendix K.

3.1.10 Air Quality

The proposed works will result in the clearing of approximately 1.5 ha (3 ha in total) and is likely to result in a localised short term increase in the amount of airborne particulate matter. However, the overall impacts to the nearest non-Project sensitive receiver (Indee homestead, approximately 30 km from the Project) is likely to be negligible because of the minor scope of works, the distance to those receivers, and the temporary nature of the works. Dust impacts will be managed during construction with a water cart utilised for conditioning road base materials.

3.2 Commonwealth Referral

The decision whether to refer the project to the Commonwealth DSEWPC was based upon whether the project would impact Commonwealth land, or may have a significant impact upon matters of national significance, which are protected under the EPBC Act. These are; World Heritage properties, National Heritage places, wetlands of international importance (listed under the Ramsar convention), Commonwealth Marine Areas, migratory species protected under international agreements, nuclear actions, nationally threatened species and ecological communities.

The Mt Dove DSO Project has been referred to the Commonwealth (the Department of Sustainability, Environment, Water, Populations and Communities (SEWPAC)) for assessment under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to the presence of EPBC Act listed species. The Project was deemed a controlled action on 25 March 2011 and the level of assessment was set as assessment on preliminary documentation. Atlas submitted the preliminary documentation to SEWPAC on 27 September 2011. Approval of the Project as a controlled action was granted on 13 January 2012.

3.3 State Referral

The Mt Dove DSO Project was referred to the Environmental Protection Authority (EPA) for assessment under Part IV of the *Environmental Protection Act 1986* (WA). On 07 December 2011, the EPA advised an assessment status of 'not assessed – public advice given', and it provided its public advice on 19 January 2012.

4. EXISTING ENVIRONMENT

4.1 Description

The proposed intersection is situated within the Chichester subregion (Pilbara 1 subregion) of the Pilbara Biogeographic Zone under the Interim Biogeographical Regionalisation for Australia (IBRA) classification system (Kendrick and McKenzie, 2001). The Chichester subregion is characterised by undulating granite and basalt plains with significant areas of basaltic ranges. The plains support a shrub steppe characterised by *Acacia inaequilatera* over *Triodia wiseana* (spinifex) hummock grasslands and the ranges support *Eucalyptus leucophloia* tree steppes.

The proposed intersection is located on flat open alluvial plains supporting low shrublands and spinifex grasslands. The vegetation is considered to be consistent with the wider regional area.

No permanent water bodies or ephemeral drainage lines exist in the vicinity of the proposed intersection works. Turner River is located approximately 1 km to the east and Yule River is approximately 25 km west of the intersection.

Mt Dove is located in the Turner River catchment and is a predominant landscape feature in the area, with an elevation of approximately 75 m above sea level.

The proposed intersection is located within Indee Pastoral Lease 3114/1197, which is leased by Colin and Betty Brierly. The lease covers 1,000,000 ha dominated by savannah scrubland and is used as a Brahman cattle station. The station is operated as a free-run station and its infrastructure is limited to assets such as fences.

A total of approximately 1.5 ha of vegetation is expected to be cleared as a result of this approval within the MR's Clearing Permit CPS818/6.

4.2 Site Investigation

A site visit was carried out by Atlas personnel, Jon Scarth and MR representative Fiona van Rijnsdoud on 01 March 2012 to examine the general features of the area. Observations included vegetation, topography, drainage and existing disturbance. Site photos were obtained at a later date. Refer to Appendix L.

5. CLEARING OF NATIVE VEGETATION

Native vegetation describes all indigenous aquatic and terrestrial vegetation (living or dead). The term does not include vegetation that was intentionally sown, planted or propagated unless it was required under a statutory condition.

Apart from activities that are exempt under the clearing regulation (Section 5 – Prescribed Clearing), typically all Main Roads clearing will be undertaken using a permit.

It is proposed that clearing of native vegetation for the Project will be undertaken using MR's Clearing Permit (CPS818/6) for approximately 1.5 ha of vegetation.

5.1 Details of Vegetation Associations to be Cleared

In order to assess the significance of the vegetation proposed to be cleared for Atlas Mt Dove Great Northern Highway intersection improvement works the vegetation type, condition and percent of pre-European Extent remaining has been identified. Table 2 describes the location and condition of vegetation associations within the project area and at road building material extraction sites while Table 3 provides further information regarding each vegetation association's representativeness.

Table 2: Vegetation Description, Condition and Percent Remaining

No.	Description	Start & End SLK	Side of Road (L- left, R - right, RBM -road building materials)	Condition (Keighery 1994)*	Pre-European Extent Remaining (%) **	Area (ha)
93	Hummock grasslands; shrub steppe; kanji over soft Spinifex	1544-1545	Both sides	Excellent	99.88	1.5
Total Area (ha)						1.5

Table 3: Vegetation Percent Remaining

Pre-European Extent Remaining: Vegetation Association No. 93		
Regional Context	Location	Pre-European Extent Remaining (%)
State-wide	N/A	
Bioregional (IBRA Region)	Pilbara	99.88
Bioregional (IBRA Sub-Region)	Chichester (PIL1)	99.88
LGA	Shire of East Pilbara	99.84

5.2 Assessment Against Clearing Principles

In assessing whether the project is likely to have a significant impact on the environment, the project was assessed against the ten clearing principles (*Environmental Protection Act 1986* Schedule 5).

The project is not likely to be at variance with the 10 clearing principles as outlined below.

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	
ASSESSMENT	<p>The proposed intersection occurs within the Chichester subregion of the Pilbara Biogeographic Zone under the IBRA classification system.</p> <p>A Level 2 flora and vegetation survey was undertaken over the Mt Dove area, including the proposed intersection area in June 2010 by Woodman. A total of 88 discrete native vascular plant taxa were recorded during the survey. The intersection is located within Floristic Community Type 1 (FCT1). FCT 1 is not considered rare or restricted to the Mt Dove area. No Priority flora species were identified within FCT1.</p> <p>No threatened flora, threatened ecological communities (TECs) or priority ecological communities (PECs) were recorded during the flora and vegetation survey or have previously been recorded in the area. One Priority 1 Flora species, <i>Heliotropium muticum</i>, was recorded during the survey but was recorded outside of the proposed intersection area (Woodman, 2011).</p> <p>A Level 2 fauna survey was undertaken by Outback Ecology (2011) and recorded 92</p>

	<p>vertebrate fauna species within the wider Mt Dove project area. The intersection is located within the broad fauna habitat of Acacia, Spinifex on Sandplain. The habitat type is well represented throughout the Pilbara region.</p> <p>Two conservation significant species were recorded within the habitat type, Australian Bustard and Rainbow Bee-eater. Both species were recorded several times across the Mt Dove project site and in previous surveys nearby and in the wider region.</p> <p>Based on the widespread representation of the flora and fauna identified in the location of the intersection, the proposed intersection is not considered to be at variance with this principle.</p>
METHODOLOGY & REFERENCES	<p>Woodman 2011</p> <p>Outback Ecology 2011</p> <p>Native Vegetation Clearing Permit Application for Mt Dove DSO Project (Coffee 2012b)</p>
Proposal is not likely at variance to this Principle.	

(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.

ASSESSMENT	<p>A Level 2 fauna survey was undertaken by Outback Ecology (2011). The proposed intersection is located within the broad habitat type – Acacia, spinifex on sandplain, which is well represented in the Pilbara region.</p> <p>Five conservation significant fauna species were recorded within the Mt Dove project area including:</p> <ul style="list-style-type: none"> - Northern Quoll (<i>Dasyurus hallucatus</i>) - Pilbara Leaf-nosed Bat (<i>Rhinioncteris aurantial</i>) - Ghost Bat (<i>Macroderma gigas</i>) - Australian Bustard (<i>Ardeotis australis</i>) - Rainbow Bee-eater (<i>Merops ornatus</i>). <p>The Mt Dove DSO Project was referred to SEWPAC under the EPBC Act due to the presence of EPBC Act listed species. The Project was deemed a controlled action with the level of assessment set as preliminary documentation. Approval of Mt Dove DSO project was given on 13 January 2012, subject to 12 conditions.</p> <p>The overall Mt Dove DSO project will result in the clearing of 64% of the significant 'rocky ridge' habitat occurring at Mt Dove. This broad habitat type supports four conservation significant fauna species: Northern Quoll, Pilbara Leaf-nosed Bat, Ghost Bat and Rainbow Bee-eater.</p> <p>Only the Australian Bustard and Rainbow Bee-eater were recorded within the Acacia, spinifex on sandplain habitat that characterises the intersection, and no species were located near the proposed intersection. The Australian Bustard was located at several sites across the Mt Dove project area. The potential habitat loss from the proposed clearing is expected to be negligible. The Rainbow Bee-eater is a widespread species that occupies a variety of habitats and the impact on the species is expected to be negligible.</p> <p>The proposed works are not expected to impact on the Northern Quoll, Pilbara Leaf-nosed Bat or the Ghost Bat, as none of these rely on the Acacia, spinifex on sandplain habitat that will be cleared as a result of these works. The Bush Stone-curlew is likely to occur in the Acacia, spinifex on sandplain habitat, however, was not recorded during surveys. Impact on the species is minimal as the potential habitat loss is limited. Brush-tailed Mulgara potentially exists in the Acacia, spinifex on sandplain habitat, however, the species was not recorded during the surveys. The quality of the available habitat, however, is not 'pure' unburnt stands of old spinifex, as preferred by Mulgara (Outback Ecology 2011).</p> <p>The EPBC Act Protected Matters Report prepared for the proposed intersection also identified the Greater Bilby as likely to occur in the project area. Acacia, spinifex on sandplain is a suitable habitat, however, it is of marginal quality due to burning and cattle grazing. A limited amount of habitat will be removed as part of these intersection works, therefore impacts to the species are minimal.</p> <p>Subsequent to the implementation of the management actions identified within the Mining Proposal, the impacts of the intersection works on conservation significant species at a regional scale are likely to be negligible to minimal.</p>
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METHODOLOGY & REFERENCES	Outback Ecology, 2011
Proposal is not likely at variance to this Principle.	

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

ASSESSMENT	The native vegetation in the area of the intersection neither comprises nor is necessary for the continued existence of any declared rare flora (DRF). No DRF or threatened flora were identified within the Mt Dove project area, and based on the vegetation community data available on the habitats within the Mt Dove area, it is unlikely that any will occur within the project area.
METHODOLOGY & REFERENCES	Woodman 2011 Native Vegetation Clearing Permit Application for Mt Dove DSO Project (Coffee 2012b)
Proposal is not likely at variance to this Principle.	

(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.

ASSESSMENT	The vegetation present within the Project area does not comprise the whole or part of, or is necessary for the maintenance of, a threatened ecological community (TEC). None of the vegetation communities mapped and described are listed as TECs.
METHODOLOGY & REFERENCES	Woodman 2011
Proposal is not likely at variance to this Principle.	

(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.

ASSESSMENT	<p>The vegetation in the wider project area has not been historically cleared, except small-scale clearing for cattle grazing, access and the GNH. The Project is located within the Chichester Subregion (PIL1), of which 100% of the pre-European extent is remaining.</p> <p>The intersection is within the 'Abydos Plain 93' vegetation (Woodman 2011), of which 99.88% of the pre-European extent is extant.</p> <p>No TECs, PECs or threatened flora species are present within the proposed Project area. Additionally none of the vegetation communities identified are classified as rare or restricted to the Project area.</p> <p>The Project is not a remnant of vegetation in an area that has been extensively cleared.</p>
METHODOLOGY & REFERENCES	Woodman 2011 2011 Statewide Vegetation Statistics
Proposal is not likely at variance to this Principle.	

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

ASSESSMENT	There are no permanent or defined watercourses or wetlands within the application area. The nearest defined watercourse is the Turner River, located approximately 1 km east of the intersection.
METHODOLOGY & REFERENCES	Woodman 2011 GIS
Proposal is not likely at variance to this Principle.	

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

ASSESSMENT	The Project is located within the Mallina Land System, which is characterised by sandy surfaced alluvial plains supporting soft spinifex (and occasionally hard spinifex) grasslands. This land system's soils are a rich mosaic of red sandy earths, deep red sandy duplex soils,
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	calcareous shallow loams, self-mulching cracking clays and red/brown non-cracking clays. The limited amount of clearing required for the intersection works and the generally flat nature of the site, it is unlikely that clearing will cause appreciable land degradation.
METHODOLOGY & REFERENCES	Coffey 2012a Woodman 2011
Proposal is not likely at variance to this Principle.	

(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.

ASSESSMENT	The proposed intersection is located within the central portion of Indee Station, which is a privately leased and operated pastoral station. The nearest conservation area to the Mt Dove project is Mungaroona Nature Reserve, approximately 50 km southwest of Mt Dove. Millstream-Chichester National Park is located approximately 110 km to the west southwest of Mt Dove.
METHODOLOGY & REFERENCES	Outback Ecology, 2011 Woodman, 2011 GIS
Proposal is not likely at variance to this Principle.	

(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.

ASSESSMENT	<p>There are no permanent or defined watercourses or wetlands within the intersection works area. The nearest defined watercourse is the Turner River, located approximately 1k m east of the Project. The area is relatively flat, sloping in a north and north easterly direction towards the Turner River.</p> <p>No dewatering is expected as a result of this project.</p> <p>Water falling in the Mt Dove project area is likely to be lost to infiltration due to the high permeability of sandy soils. Light rainfall events will produce small volumes of runoff with low velocity and minor sediment load. Higher intensity rainfall events may produce higher velocity flow with naturally higher sediment load.</p> <p>The intersection is not located within a Public Drinking Water Source Area.</p> <p>Groundwater in the region is moderately fresh to brackish. The watertable in the shallow alluvial aquifer in the Mt Dove region lies approximately 6 to 12 metres below ground level (mbgl) (Coffey, 2012a).</p> <p>No change to surface or groundwater is expected as a result of this project.</p>
METHODOLOGY & REFERENCES	Coffey, 2012a Woodman 2011
Proposal is not likely at variance to this Principle.	

(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

ASSESSMENT	<p>The proposed intersection area is located on the broad sandy plains of the mid to lower Turner River catchment (480,000 ha).</p> <p>The high permeability of sandy soils over the majority of the Project area that already result in a significant amount of the incident rainfall in the area to be lost through infiltration.</p> <p>Due to the size of the area to be cleared (1.5 ha) in comparison to the size of the catchment area, the proposed clearing is not likely to increase the potential for flooding on a local or catchment scale.</p>
METHODOLOGY & REFERENCES	Coffey, 2012a
Proposal is not likely at variance to this Principle.	

5.3 Summary of Management Actions

Main Roads attempts to avoid clearing vegetation if possible, where clearing cannot be avoided then this clearing is kept to a minimum. The following actions are proposed to manage and minimise vegetation clearing for the Atlas Mt Dove intersection works.

Environmental management methods include:

- avoid significant vegetation, where possible
- vegetation stockpiles separately for use in rehabilitation
- use of liners and drip trays to minimise hydrocarbon spillage
- use of appropriate machinery to minimise impacts
- vehicle maintained to minimise spread of plant pathogens
- any stockpiled vegetation from clearing works shall not be burned.

A minor amount of rehabilitation (<0.5 ha) will be required as a result of this approval. Rehabilitation practices will include:

- excavations backfilled and respread with topsoil and vegetation
- all rubbish removed from site (including any hydrocarbon spills).

The following table summarises what further assessment and management is required in accordance with MRWA State-wide vegetation Clearing Permit (CPS 818).

Table 4: Summary of Additional Management Actions

Impact of Clearing	Yes/No or NA	Further Action Required
1. Does the assessment indicate that the clearing may be at variance or is at variance with one or more of the principles for clearing?	N	No further action required.
2. Does the assessment indicate that the clearing is at variance with one or more of the principles for clearing?	N/A	
3. Does the assessment indicate that the clearing is at variance with clearing principle (g) land degradation, (i) surface or underground water quality or (j) the incidence of flooding?	N/A	
4. Will the project involve clearing for purposes considered temporary in nature under Condition 13 of CPS818?	Y	Less than 0.5 ha of cleared land is expected to require rehabilitation. This will be limited to areas outside of the work area that will be used as access/side tracks. The Project area is not within an Environmentally Sensitive Area and the proposed clearing is not at variance with any of the clearing principles.

6. ASSESSMENT OF ASPECTS AND IMPACTS

Table 5: Aspects and Impacts – Atlas Mt Dove Great Northern Highway Intersection Improvement Works

Aspect	Evaluation of Potential Impacts
Vegetation – clearing	<p>A total of 1.5 ha of native vegetation is proposed to be cleared within the MR road reserve as a result of this Project. The vegetation is described as Abydos Plain 93, defined as Hummock grasslands; shrub steppe; kanji over soft Spinifex. This Vegetation Association has 99.88% of pre-clearing extent of vegetation remaining.</p> <p>The native vegetation proposed to be cleared is well represented regionally as it possesses more than 30% of its pre-European extent.</p> <p>According to Keighery, (1994) the condition of the native vegetation to be cleared is described as excellent. The condition of the majority of the vegetation across the Mt Dove area was ranked 'Excellent' or 'Very Good' (Woodman, 2011).</p> <p>Of the 1.5 ha of native vegetation proposed to be cleared <0.5 ha may be temporary clearing required for access/side tracks.</p> <p>The project will involve a minimal amount (<0.5 ha) of temporary clearing that will require revegetation. The Project is not located within an ESA.</p>
Vegetation – TECs/DRF	<p>No TEC's/DRF species are present within or adjacent to the project area. No significant vegetation types or threatened flora have been recorded within the road reserve.</p> <p>No Matters of National Environmental Significance as protected under EPBC Act (1999) will be impacted (see Table 5).</p>
Vegetation – weeds	<p>A flora and vegetation study and survey were undertaken by Woodman (2011) where two introduced weed taxa were identified within the wider Mt Dove project area: <i>Aerva javanica</i> (Kapok Bush) and <i>Cenchrus ciliaris</i> (Buffel Grass).</p> <p>These species are likely to be widespread within the reserve and general area.</p>
Vegetation – dieback	<p>Dieback is not considered as an environmental issue given the project area receives less than 400 mm of average annual rainfall or is located above the 26° parallel.</p>
Fauna	<p>Five species of significant fauna were identified in the wider Mt Dove project area by Outback Ecology (2011). Only two of these, the Australian Bustard and Rainbow Bee-eater were identified in broad fauna habitat in which the proposed intersection is located, and no sightings were made in the immediate vicinity of the intersection. Both species are widespread in the Mt Dove project area and wider.</p> <p>Potential habitat loss for the Australian Bustard is expected to be negligible and the Rainbow Bee-eater occupies a variety of habitats. The impact on this species is also expected to be negligible.</p> <p>The Rainbow Bee-eater is a widespread species that occupies a variety of habitats and the impact on the species is expected to be negligible.</p> <p>In addition, with the generally degraded and exposed nature of the works areas, no significant impacts would be expected on native fauna generally as a result of the proposed works.</p> <p>No Matters of National Environmental Significance as protected under the EPBC Act (1999) will be impacted (see Table 5).</p>

Table 5: Aspects and Impacts – Atlas Mt Dove Great Northern Highway Intersection Improvement Works

Aspect	Evaluation of Potential Impacts
Heritage (non-indigenous)	A search of the Australian Heritage Places Inventory, Heritage Council of Western Australia and the Shire of East Pilbara databases has indicated that there are no known site(s) of heritage significance within the vicinity of the project area. No Matters of National Environmental Significance as protected under EPBC Act (1999) will be impacted (see Table 5).
Aboriginal heritage	A search of the DIA's database/Heritage survey identified no known sites of Aboriginal heritage significance within the vicinity of the project area.
Wetlands	No wetlands are located within the vicinity of the project area (DEC Native Vegetation Map Viewer accessed on 30 October 2012 – Appendix G). No Matters of National Environmental Significance as protected under EPBC Act (1999) will be impacted (see Table 5).
Surface water/drainage	A search of the DoW's database has confirmed that the proposed works will not disturb or interrupt any natural drainage and surface run-off patterns.
Groundwater	No dewatering nor drainage modifications are required, hence no change to groundwater level or quality.
Reserves / Conservation areas	There are no conservation areas or reserves adjacent to the project area.
Air quality	Not relevant to the proposed works. Local air quality assessment is not required for the project since residential and other sensitive receptors are not within 200 meters of the road centre.
Dust	Likely to be a minor issue during earthworks. No major sensitive receivers adjacent to the proposed works, but excessive dust could impact vegetation. This will be easily managed by standard construction dust management techniques.
Noise and vibration	No major sensitive local receivers. Construction works is not expected to significantly contribute to noise levels at the nearest sensitive receivers, provided works are limited to normal working hours. The requirements of the Shire of East Pilbara must be met in respect of noise management and construction working hours.
Visual amenity	The proposed works will result in minor and short-term visual impacts during construction.
Public safety and risk	Provided traffic management and signage to Main Roads standards is employed, none of the proposed works present any significant hazards to public safety. The proposed works will serve to enhance public safety by improving local road conditions.
Hazardous substances	If required, materials will be used and stored in accordance with manufactures instructions and product MSDS.
Contamination	The works are within the road reserve and no known previous land use activities on or adjacent to the project area have had the potential to create contamination, e.g. petrol station. A search of the DEC's contaminated sites database indicates there are no identified contaminated sites within the project area.

Table 5: Aspects and Impacts – Atlas Mt Dove Great Northern Highway Intersection Improvement Works

Aspect	Evaluation of Potential Impacts
Salinity	There were no visual signs of salinity observed in the project area. Given the nature and scale of the project the impact is considered not relevant.
Acid Sulfate Soils	The SLIP database indicates that the acid sulfate soils will not be a risk to the Project, as there is no dewatering or excavation below the water table planned no further investigations are required.
Statutory Land Use Planning	As the works proposed in this MR PEIA are entirely within the existing road reserve no planning scheme amendments are required.

Table 6: Commonwealth Aspects and Impacts – Atlas Mt Dove Great Northern Highway Intersection Improvement Works

Aspect	Evaluation of Potential Impacts
World Heritage properties	The project will not impact any World Heritage properties.
National Heritage places	A search of the Australian Heritage Places Inventory Database located no sites within the vicinity of the project.
Wetlands of international importance (Ramsar)	A search of the Department of Sustainability, Environment, Water, Population and Communities Protected Matters Search Tool located no Ramsar Wetland(s) within the vicinity of the project.
Nationally threatened species or ecological communities	<p>A search of the Department of Sustainability, Environment, Water, Population and Communities Protected Matters Search Tool located no threatened ecological communities, 4 threatened species and 8 listed marine species within the vicinity of the project. The project activities are unlikely to have a significant impact on these species and the marine species are listed as “over fly” with the vegetation present unlikely to be habitat for these species.</p> <p>Of the threatened species identified by the search tool, the Northern Quoll and Pilbara Leaf-nosed Bat were identified during surveys of the wider Mt Dove project area undertaken by Outback Ecology (2011). These species were not, however, recorded in the broad fauna habitat in which the proposed intersection is located. The Mulgara has the potential to exist within the Acacia, spinifex on sandplain habitat, however the ‘pure’ unburnt stands of old spinifex, as preferred by Mulgara, do not exist in the proposed Mt Dove project area (Woodman 2011).</p>
Migratory species protected under international agreements	<p>A search of the Department of Sustainability, Environment, Water, Population and Communities Protected Matters Search Tool located 10 migratory species within the vicinity of the project. The project activities are unlikely to have a significant impact on these species as the vegetation present is unlikely to be habitat for these species.</p> <p>Of the species identified in the search, only the Rainbow Bee-eater was identified by Outback Ecology (2011) during a Level 2 fauna survey of the area. The Rainbow Bee-eater is a widespread species that occupies a variety of habitats and the impact on the species is expected to be negligible.</p>
Commonwealth marine areas	The project will not impact any Commonwealth marine area or marine protected area.
Commonwealth lands	The project is not located on and will not impact any Commonwealth lands.
Nuclear Actions	Not relevant to the proposed works.

7. DECISION TO REFER

7.1 Referral to the Department of Sustainability, Environment, Water, Population and Communities

The preliminary impact assessment determined the project will not have a significant impact on Matters of National Environmental Significance or impact Commonwealth land as outlined in Table 6 of the report. For this reason the project does not require referral to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities.

7.2 Referral to the Environmental Protection Authority

Due to the small scale of the project, the low significance of its impacts to the surrounding environment and that it is unlikely the project will generate significant public interest, the project does not require referral to the WA Environmental Protection Authority.

8. STAKEHOLDER CONSULTATION

Table 6: Project Consultation

Name	Agency	Date	Comments
Fiona van Rijnswood	Main Roads	11/10/2012, 29/10/2012	Approval to use MR's Clearing Permit CPS818/6, Sign off of Low Impact Screening Checklist

9. OTHER APPROVALS/PERMITS/LICENCES

EPBC Act approval (EPBC 2011/5848) was granted on 13 January 2012.

The Mt Dove DSO Project Mining Proposal (Reg ID 34031) was approved by the Department of Mines and Petroleum on 15 June 2012.

A Native Vegetation Clearing Permit (4861/1) was approved on 17 May 2012.

10. REFERENCES

- Beeston, G.R., Hopkins, A.J.M. and Shepherd, D.P. (2002). Land-use and vegetation in Western Australia. Department of Agriculture, Western Australia, Resource Management Technical Report 250.
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- Government of Western Australia 2011. *Statewide Vegetation Statistics incorporating the CAR Reserve Analysis*. Accessed on 30 October 2012. WA Department of Environment and Conservation, Perth.
- 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 and McKenzie. 2001. A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002 – Pilbara 1 (PIL1-Chichester Subregion). Published by the Department of Conservation and Land Management, November 2001.
- Outback Ecology 2011. Mt Dove DSO Project – Vertebrate Fauna Assessment. Report prepared for Atlas Iron Limited, Perth Western Australia.
- Woodman Environmental Consulting (Woodman) 2011. Mount Dove Direct Shipping Ore Project: Flora and Vegetation Studies. Report prepared for Atlas Iron Limited, Perth Western Australia.