



Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5877/2
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: Atlas Operations Pty Ltd

1.3. Property details

Property: Mining Lease 45/1179
Mining Lease 45/1241
Local Government Area: Shire of East Pilbara
Colloquial name: Abydos DSO Stage 2 Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 22 October 2015

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description Beard vegetation associations have been mapped for the whole of Western Australia. One Beard vegetation association is located within the amendment area (GIS Database):

82: Hummock grasslands, low tree steppe; snappy gum over *Triodia wiseana*.

A Level 2 flora survey was conducted by Woodman Environmental Consulting (Woodman) across the larger Abydos area during several visits in 2008, 2010 and 2011 (Woodman, 2013). A targeted survey for the Priority 1 flora *Pityrodia* sp. Marble Bar (G. Woodman & D. Coultas GWDC Opp 4) was also undertaken on 28 May – 4 June 2013. Five floristic community types (FCTs) were recorded within the wider project area (Woodman, 2013), two of which occur within the amendment area (Coffey, 2015):

FCT 2a: Tall open shrubland of mixed species dominated by *Grevillea wickhamii* subsp. *hispidula*, *Acacia tumida* var. *pilbarensis* and *Acacia orthocarpa* over low sparse shrubland of mixed species including *Dampiera candidans*, *Goodenia stobbsiana* and *Corchorus laniflorus* over low hummock grassland dominated by *Triodia epactia* or *Triodia bitextura* on red-brown silty loams over ironstone on hill crest and slopes;

FCT 10: Mid woodland of *Eucalyptus camaldulensis* subsp. *obtusa*, *Eucalyptus victrix* and *Melaleuca argentea* over tall shrubland of mixed species including *Acacia ampliceps*, *Acacia trachycarpa*, *Acacia pyrifolia* var. *pyrifolia*, *Acacia tumida* var. *pilbarensis*, *Atalaya hemiglauca*, *Melaleuca glomerata* and *Melaleuca linopylla* over low open grassland and sedgeland of mixed species including *Triodia epactia*, *Triodia longiceps*, *Cenchrus ciliaris* and *Cyperus vaginatus* on red and brown sands, loams and silts in river and major creek channels and gorges.

The condition of the vegetation was determined via flora and vegetation assessments of the wider project area conducted by Woodman during 2013 and via the use of aerial imagery.

Clearing Description Abydos DSO Stage 2 Project - Cove Deposit
Atlas Operations Pty Ltd (Atlas) has applied to clear 167 hectares of native vegetation within a total boundary of approximately 203 hectares, for the purpose of mineral production. The application area is located approximately 65 kilometres west of Marble Bar, in the Shire of East Pilbara.

Vegetation Condition Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).
To:

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

Comment Clearing permit CPS 5877/1 was originally submitted on 4 November 2013 where a total of 156 hectares within a clearing permit boundary of 222 hectares was applied to be cleared. Following extensive consultation with the proponent, the clearing of 134 hectares within an application area of approximately 164 hectares was approved to be cleared. CPS 5877/1 allowed for the development of three additional open pits, five waste rock dumps, topsoil stockpiles, access tracks, drainage structures and ramps.

An application for an amendment to clearing permit 5877/1 was received on 19 August 2015 to allow for the development of two

open pits, a waste rock dump, topsoil stockpiles, drainage structures, haul road, access tracks and ramps. The amendment proposes to increase the amount of clearing from 134 hectares to 167 (increase of 33 hectares) and increase the clearing permit boundary to approximately 203 hectares.

Woodman conducted an additional flora and vegetation assessment for the project area (which included the Cove Deposit area). This assessment was based on existing information and was supported by a targeted search for conservation significant flora species and an additional targeted search for the Priority 1 taxon *Pityrodia* sp. Marble Bar (G. Woodman and D. Coultas GWDC Opp4) in the wider project area (Woodman, 2015; Coffey, 2015).

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 is located within the Pilbara (PIL) Interim Biogeographic Regionalisation of Australia (IBRA) region and the Chichester (PIL1) subregion (GIS Database). The Pilbara region represents a transitional zone between semi-arid and tropical climates (CALM, 2002). The Chichester IBRA subregion consists of undulating granite and basalt plains, which support both a shrub steppe dominated by *Acacia inaequilatera* over *Triodia wiseana* hummock grasslands, and a tree steppe within ranges dominated by *Eucalyptus leucophloia* (CALM, 2002). The vegetation within the application area is mapped as belonging to Beard association 82 (GIS Database).

Two of the five Floristic Community Types (FCTs) mapped within the wider project area, were recorded within the amendment area; FCT 2a and FCT 10 (Woodman, 2015). Impacts to FCT 2a are not likely to be significant, as FCT 2a is considered locally common and widespread (Woodman, 2015). FCT 10 has been identified as uncommon and/or restricted. However, the proposed clearing within the amendment area will impact an estimated 0.6 hectares of this community and the total cumulative impacts from the entire project will result in approximately 2% of FCT 10 being cleared from the local area (Woodman, 2015).

The two vegetation communities mapped within the amendment area were not identified as being a Threatened or Priority Ecological Community (Woodman, 2013; Woodman, 2015).

A total of 263 floristic taxa from 112 genera and 40 families have been recorded within the wider project area, which includes the amendment area (Coffey, 2015; Woodman, 2015). The Priority 1 flora *Pityrodia* sp. Marble Bar (G. Woodman and D. Coultas GWDC Opp4) is known across the wider project area (Coffey, 2013; Woodman, 2013) and six individuals have been identified within the amendment area (Coffey, 2015). A total of 421 individuals occur locally and 2,877 individuals are known from the region (Coffey, 2015). Approval to clear 35 individuals was requested and obtained under CPS 5877/1. At the time of approval, this resulted in approximately 1.8% of the known population being impacted.

The additional six *Pityrodia* sp. Marble Bar to be impacted by the proposed clearing as a result of this amendment will increase the total number of individual plants impacted by the entire project to 41. The *Pityrodia* sp. Marble Bar populations present within the wider project area form a linkage corridor from the south-west to north-east extents of this species' distribution (DPaW, 2014; OEPA, 2014). It has been advised that the removal of large portions of *Pityrodia* sp. Marble Bar habitat may inhibit insect dispersal throughout the landscape, causing fragmentation and producing a barrier to gene flow between populations (DPaW, 2014).

DPaW (2015) have advised that further targeted flora surveys have occurred in the region since the approval of CPS 5877/1 and that current available information shows the cumulative impact on the local population of *Pityrodia* sp. Marble Bar to be approximately 10.5%. The proposed clearing of a further six individuals would increase this to 10.7%, which is considered unlikely to result in significant additional cumulative impacts to the conservation of the species (DPaW, 2015a). It must be noted that another 32 individuals of *Pityrodia* sp. Marble Bar remain within the clearing permit boundary. These individual plants are to be avoided during clearing activities. Potential impacts to Priority flora species as a result of the proposed clearing may be minimised by the implementation of the existing flora management condition.

There have been many fauna surveys conducted over the wider project area (MWH, 2015a). Based on these surveys and the habitats present within the amendment area, a total of 149 vertebrate fauna species were identified as potentially occurring (Coffey, 2015; MWH, 2015a). The majority of these species form assemblages that occur across a variety of the habitats present within and surrounding the wider project area. In terms of vertebrate fauna assemblages, the wider project area (and amendment area) was not determined to be an area of exceptionally high biodiversity from a regional perspective (Coffey, 2015).

No weed species have been recorded within the application area, however one weed species; Buffel Grass (*Cenchrus ciliaris*), is known nearby (Woodman, 2013). Given the proficiency of this species in invading recently disturbed areas, the proposed clearing may facilitate the occurrence of this weed. Weeds have the potential to significantly change the dynamics of a natural ecosystem and lower the biodiversity of an area (DEC, 2011). Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

The proposed clearing of an additional 33 hectares within the amendment area of approximately 39 hectares is unlikely to result in additional impacts above those already identified within the assessment for CPS 5877/1.

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

Methodology CALM (2002)
Coffey (2015)
DEC (2011)
DPaW (2014)
DPaW (2015a)
MHW (2015a)
OEPA (2014)
Woodman (2013)
Woodman (2015)
GIS Database:
- IBRA WA (Regions - Sub Regions)
- Pre-European vegetation
- Threatened Ecological Sites Buffered

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

Comments Proposal may be at variance to this Principle

MWH (2015a) undertook a terrestrial fauna impact assessment for the proposed clearing and subsequent development of the Cove Deposit. The assessment was based on data obtained from previous surveys conducted between 2009 and 2014. A total of 149 vertebrate fauna species were identified as potentially occurring within the wider project area and/or amendment area. When an assessment of the habitat types present within the amendment area was conducted, seven species of conservation significance were identified as likely to occur (MWH, 2015a).

Three broad fauna habitat types will be impacted by the proposed clearing within the approximately 39 hectare amendment area (MWH, 2015a):

- Ironstone and sandstone gorges (0.6 hectares)
- Ironstone ridges (35.65 hectares); and
- Sandstone ridges (2.11 hectares)

Species of conservation significance listed as either threatened under the *Environment Protection and Biodiversity Conservation Act (EPBC) 1999* or protected under Western Australian legislation (*Wildlife Conservation Act 1950 (WC)*), that are known from the wider project area and are likely to occur within the amendment area include:

- Pilbara Leaf-nosed Bat (*Rhinionicteris aurantia* – EPBC Act Vulnerable);
- Northern Quoll (*Dasyurus hallucatus* – EPBC Act Vulnerable, WC Act Endangered);
- Pilbara Olive Python (*Liasis olivaceus barroni* – EPBC Act and WC Act Vulnerable);
- Rainbow Bee-eater (*Merops ornatus* – EPBC Act, Migratory); and
- Fork-tailed Swift (*Apus pacificus* – EPBC Act Migratory)

Given their wide-ranging nature, the two migratory species are not expected to be adversely affected by the proposed clearing.

In addition to the species mentioned above, the Ghost Bat (*Macroderma gigas* – P4), Western Pebble-mound Mouse (*Pseudomys chapmani* – P4) and a Blind Snake (*Ramphotyphlops ganeii* – P1), are also likely to occur within the amendment area (Coffey, 2015). These species are recognised by the Department of Parks and Wildlife as being of conservation significance.

Of the habitats that occur within the amendment area, ironstone and sandstone gorge habitat is the most likely to support fauna of conservation significance. No caves have been recorded within the amendment area and while the ironstone and sandstone gorges habitat may be utilised as foraging habitat, the majority lacks suitable microhabitats (e.g. boulder piles, crevices, semi-permanent water pools and riparian vegetation) for the Pilbara Leaf-nosed Bat, Ghost Bat, Northern Quoll and Pilbara Olive Python (MWH, 2015a). The amendment area provides Northern Quoll foraging habitat (DPaW, 2015a). Areas that may be denning habitat (ridges, caves) have been avoided (DPaW, 2015a). The proposed clearing is likely to reduce the foraging habitat available to quolls in the local area, but is unlikely to directly impact important quoll habitat (DPaW, 2015a). The application area does not appear to be suitable habitat for the Pilbara olive python (DPaW, 2015a).

Short Range Endemic (SRE) species likely to occur within the amendment area also prefer the ironstone and sandstone gorges habitat and the scorpion *Aops 'pilbara 2'* has been collected from this habitat type within the wider project area (MWH, 2015a). The previously approved clearing permit (CPS 5877/1) allowed for the clearing of 3.04 hectares of the ironstone and sandstone gorges habitat type. The proposed amendment will result in an additional 0.6 hectares of ironstone and sandstone gorges habitat being impacted. The combined impact area of 3.10 hectares is not likely to represent a significant impact to this habitat type on a local or regional scale.

The ironstone ridge habitat is considered to be of higher habitat value than the sandstone ridge habitat, as records of conservation significant fauna (Northern Quoll, Pilbara Leaf-nosed Bat, Ghost Bat, Western Pebble-

mound Mouse and Rainbow Bee-eater) are more prevalent within ironstone ridges (Outback Ecology, 2013). The ridge tops of both habitat types have been previously disturbed by exploration activity, which is likely to have impacted on fauna assemblages (Outback Ecology, 2013) and these habitat types are considered to be widely represented throughout the Pilbara region (MHW, 2015a). The ironstone ridges and sandstone ridges were not considered to be important refuge sites for fauna of conservation significance, local fauna or fauna assemblages (MWH, 2015a).

The proponent has developed a Significant Species Management Plan (SSMP) which received Commonwealth approval under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). Presently, this SSMP does not include areas the subject of this amendment. It is considered that the suggested management measures (provided by the proponent in supporting information) are appropriate in minimising potential impacts to all fauna species likely to occur within the amendment area (DPaW, 2015a). These management measures are consistent with management measures within the approved SSMP. The proponent has advised that the SSMP will be updated to include the amendment area (Cove deposit). Potential impacts to fauna species of conservation significance as a result of the proposed clearing may be minimised by the implementation of existing fauna management conditions.

A total of 217 troglofauna specimens representing 16 species from six higher level taxonomic orders have been collected within the wider project area from both the eastern and western deposits (Coffey, 2015). No sampling has occurred within the proposed Cove deposit, however it is expected that the more commonly collected species are likely to occur, given the continuous habitat of the area (Coffey, 2015). While pit development will result in adverse impacts to prospective troglofauna habitat, the proposed clearing of 33 hectares of native vegetation is unlikely to result in significant impacts. The Cove development is not considered likely to pose a long term conservation risk to any troglofauna species (MWH, 2015b).

Given the relatively small increase in the proposed clearing (33 hectares) and that management measures will be implemented by the proponent to minimise impacts to local fauna species, including species of conservation significance, the proposed clearing is unlikely to result in additional significant impacts above those already identified within the assessment for CPS 5877/1.

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

Methodology Coffey (2015)
DPaW (2015a)
MWH (2015a)
MWH (2015b)
Outback (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

According to available databases, there are no species of Threatened flora known to occur within a 20 kilometre radius of the application area (GIS Database; DPaW, 2015b). Flora and vegetation surveys have been conducted over the application area and surrounding area and no Threatened flora have been recorded (Coffey, 2015; Woodman, 2013; 2015).

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

Methodology Coffey (2015)
DPaW (2015b)
Woodman (2013)
Woodman (2015)
GIS Database
- Threatened 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 at variance to this Principle

According to available datasets, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). None of the vegetation types identified within the application area correspond to any ecosystems listed as TECs (Woodman, 2015).

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

Methodology Woodman (2015)
GIS Database:
- Threatened Ecological Sites Buffered
- Threatened and Priority Ecological Communities Buffers
- Threatened and Priority Ecological Communities Boundaries

(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 application area falls within the Pilbara Interim Biogeographic Regionalisation of Australia bioregion, in which approximately 99.6% of the pre-European vegetation remains (see table) (Government of Western Australia, 2014; GIS Database).

The vegetation within the amendment area has been mapped as Beard vegetation association 82 (GIS Database). Over 99% of this Beard vegetation association remains at both a state and bioregional level (see Table; Government of Western Australia, 2014). Therefore, the area proposed to be cleared does not represent a significant remnant of native vegetation within an area that has been extensively cleared. Based on satellite imagery, the vegetation within the amendment area is neither a remnant itself nor does it form part of any remnants within the local area.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in DEC Managed Lands
IBRA Bioregion – Pilbara	17,808,657	17,733,584	~99.6	Least Concern	8.4
Beard veg assoc. – State					
82	2,565,901	2,553,217	~99.5	Least Concern	10.52
Beard veg assoc. – Bioregion					
82	2,563,583	2,550,899	~99.5	Least Concern	10.53

* Government of Western Australia (2013)

** Department of Natural Resources and Environment (2002)

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

Methodology Department of Natural Resources and Environment (2002)
Government of Western Australia (2014)
GIS Database:
- IBRA WA (Regions – Sub Regions)
- Pre-European Vegetation

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

Comments Proposal is at variance to this Principle

Several watercourses occur in the amendment area, the majority of which are minor drainage lines (Woodman, 2015). Floristic Community Type 10 was recorded to occur in association with river and major creek channels and gorges (Coffey, 2013). This FCT is dominated by *Eucalyptus camaldulensis* and *Melaleuca argentea*, which are both known to rely on the availability of permanent groundwater (DoW, 2010). Approximately 8.39 hectares of this FCT lies within the already approved area for CPS 5877/1. The amendment area will result in an additional 0.6 hectares being impacted. This represents 2.03% of the total area covered by FCT 10 in the larger Abydos area (Coffey, 2015). Therefore, the proposed clearing is not likely to represent a significant impact to this riparian vegetation type on a local or regional scale.

The upper reaches of a large gorge containing a spring lies within the amendment area. This gorge contains a spring that appears to be permanent, and supports the tree species *Melaleuca argentea* and *Eucalyptus camaldulensis*, both of which generally rely on access to permanent groundwater in watercourses to survive (Woodman, 2015). The amendment area is located well upstream of the spring and associated vegetation, therefore any impacts to this and other watercourses are not likely to be significant, provided appropriate management measures are in place to preserve natural surface water flows (Woodman, 2015). Potential impacts to watercourses as a result of the proposed clearing may be minimised by the implementation of a vegetation management condition.

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

Methodology Coffey (2013)
Coffey (2015)
DoW (2010)
Woodman (2015)
GIS Database:

- Hydrography, linear

(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 amendment area falls within the Capricorn land system, which consists of hills and ridges of sandstone and dolomite (GIS Database). This land system is considered to have a low risk of erosion (Van Vreeswyk *et al.* 2004). Given that clearing may occur on steep slopes, significant erosion has the potential to occur. Potential land degradation from erosion may be minimised by the implementation of a staged clearing condition.

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

Methodology Van Vreeswyk *et al.* (2004)

GIS Database:

- IBRA WA (Regions – Sub Regions)
- Soils, statewide

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

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

The amendment area does not lie within any conservation areas or DPaW managed lands (GIS Database). The nearest conservation area is the Mungaroon Range Nature Reserve, vested in the Conservation Commission of WA, which is located approximately 75 kilometres south west of the application area (GIS Database). At this distance the proposed clearing is not likely to have any impacts on the environmental values of the Nature Reserve.

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

Methodology GIS Database:

- DPaW 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 amendment area is located within the upper reaches of the Strelley River Catchment within the De Grey River Basin (MWH, 2013; GIS Database). The proposed clearing does not occur within a Public Drinking Water Source Area (PDWSA), however it is located within the proclaimed Pilbara groundwater area under the *Rights in Water and Irrigation Act 1914* (GIS Database). Any groundwater extraction and/or taking or diversion of surface water for purposes other than domestic and/or stock watering is subject to licence by the Department of Water.

The groundwater over the Abydos area ranges from near potable along areas of higher elevation, to brackish within low lying areas (MWH, 2009; Coffey, 2013). These lower areas also contain the highest Total Dissolved Solids (TDS) (MWH, 2009). Alteration to existing salinity levels within the application area is not expected to occur, nor is the proposed clearing likely to cause a deterioration in the quality of groundwater.

There is a potential for indirect impacts to occur to flora and vegetation adjacent to the amendment area as a result of altered surface hydrological regimes, which may cause drainage shadow, ponding, and increased sediment run-off (Woodman, 2015). The area most likely to be impacted by increased sediment run-off is the riparian vegetation to the north of the amendment area; this area corresponds to Floristic Community Type 10. The proponent will implement a number of surface water drainage control devices to reduce disturbances to natural flow regimes (Woodman, 2015). Potential impacts to surface water as a result of the proposed clearing may be minimised by the implementation of a vegetation management condition.

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

Methodology Coffey (2013)

MWH (2009)

MWH (2013)

Woodman (2015)

GIS Database:

- Groundwater Salinity, Satewide
- Hydrography, linear
- Public Drinking Water Source Areas (PDWSAs)
- RIWI Act, Groundwater Areas

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

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

The Pilbara region has an arid climate, with rainfall events occurring throughout the summer months (Dec – April) and cyclonic rains are common (BoM, 2015). The removal of vegetation may increase the quantity and flow rate of runoff in some areas, especially following major rainfall events. However, whilst large rainfall events may result in localised flooding, the proposed clearing is not likely to lead to a significant increase in the incidence or intensity of flooding within the wider region.

Given that the proposed clearing occurs on hill tops and the proponent will implement surface water management measures (Coffey, 2013; 2015), clearing is unlikely to result in an increased risk of flooding.

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

Methodology BoM (2015)
Coffey (2013)
Coffey (2015)
GIS Database:
- Hydrographic Catchments – Catchments

Planning instrument, Native Title, RIWI Act Licence, EP Act Licence, Works Approval, Previous EPA decision or other matter.

Comments

There is one native title claim over the application area (WC1999/008) (GIS Database; DAA, 2015). However, the mining tenure 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 no Sites of Aboriginal Significance located in the area applied to clear (GIS Database; DAA, 2015). 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.

It is the proponent's responsibility to liaise with the Department of Environment Regulation, the Department of Parks and Wildlife and the Department of Water, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

On 3 June 2014, the Abydos DSO Stage 2 Project received Commonwealth approval under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The approval requires adherence to a Significant Species Management Plan (SSMP), and includes the provision of funds towards research for the Northern Quoll, Pilbara Leaf-nosed Bat, and Pilbara Olive Python. The proponent has advised that an updated version of the SSMP is to be submitted to the Department of Mines and Petroleum following approval by the Department of Environment. The updated version will include the Cove deposit.

The clearing permit application was advertised on 7 September 2015 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received.

Methodology DAA (2015)
GIS Database:
- Aboriginal Sites of Significance

4. References

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MWH (2015a) Cove Deposit Project: Terrestrial Fauna Impact Assessment. *Supporting Information for Clearing Permit Application CPS 5877/2* MWH Global, Jolimont, Western Australia.

MWH (2015b) Cove Deposit Project: Troglifauna Impact Assessment. *Supporting Information for Clearing Permit Application CPS 5877/2*. MWH Global, Jolimont, Western Australia

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Woodman (2013) Abydos Direct Shipping Ore Project Stage 2 Flora and Vegetation Impact Assessment. *Supporting Information for Clearing Permit Application CPS 5877/1*. Woodman Environmental, Applecross, Western Australia.

Woodman (2015) Abydos Iron Ore Project, Cove Deposit, Significant Flora Survey and Flora and Vegetation Impact Assessment. *Supporting Information for Clearing Permit Application CPS 5877/2*. Woodman Environmental, Applecross, Western Australia.

5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
DAA	Department of Aboriginal Affairs, Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia (now DPaW and DER)
DER	Department of Environment Regulation, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DRF	Declared Rare Flora
DotE	Department of the Environment, Australian Government
DoW	Department of Water, Western Australia
DPaW	Department of Parks and Wildlife, Western Australia
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities (now DotE)
EPA	Environmental Protection Authority, Western Australia
EP Act	<i>Environmental Protection Act 1986</i> , Western Australia
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
GIS	Geographical Information System
ha	Hectare (10,000 square metres)
IBRA	Interim Biogeographic Regionalisation for Australia
IUCN	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
PEC	Priority Ecological Community, Western Australia
RIWI Act	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
s.17	Section 17 of the <i>Environment Protection Act 1986</i> , Western Australia
TEC	Threatened Ecological Community

Definitions:

{DPaW (2013) Conservation Codes for Western Australian Flora and Fauna. Department of Parks and Wildlife, Western Australia}:-

T

Threatened species:

Specially protected under the *Wildlife Conservation Act 1950*, listed under Schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice for Threatened Fauna or the Wildlife Conservation (Rare Flora) Notice for Threatened Flora (which may also be referred to as Declared Rare Flora).

Threatened Fauna and Flora are further recognised by the Department according to their level of threat using IUCN Red List criteria. For example Carnaby's Cockatoo *Calyptorhynchus latirostris* is specially protected under the *Wildlife Conservation Act 1950* as a threatened species with a ranking of Endangered.

Rankings:

CR: Critically Endangered - considered to be facing an extremely high risk of extinction in the wild.

EN: Endangered - considered to be facing a very high risk of extinction in the wild.

VU: Vulnerable - considered to be facing a high risk of extinction in the wild.

- X Presumed Extinct species:**
Specially protected under the Wildlife Conservation Act 1950, listed under Schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora (which may also be referred to as Declared Rare Flora).
- IA Migratory birds protected under an international agreement:**
Specially protected under the Wildlife Conservation Act 1950, listed under Schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice.
Birds that are subject to an agreement between governments of Australia and Japan, China and The Republic of Korea relating to the protection of migratory birds and birds in danger of extinction.
- S Other specially protected fauna:**
Specially protected under the Wildlife Conservation Act 1950, listed under Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice.
- P1 Priority One - Poorly-known species:**
Species that are known from one or a few collections or sight records (generally less than five), all on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, Shire, rail reserves and Main Roads WA road, gravel and soil reserves, and active mineral leases and under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes.
- P2 Priority Two - Poorly-known species:**
Species that are known from one or a few collections or sight records, some of which are on lands not under imminent threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, unallocated Crown land, water reserves, etc. Species may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes.
- P3 Priority Three - Poorly-known species:**
Species that are known from collections or sight records from several localities not under imminent threat, or from few but widespread localities with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and known threatening processes exist that could affect them.
- P4 Priority Four - Rare, Near Threatened and other species in need of monitoring:**
- (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands.
 - (b) Near Threatened. Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable.
 - (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.
- P5 Priority Five - Conservation Dependent species:**
Species that are not threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.