



## 1. Application details

### 1.1. Permit application details

Permit application No.: 6196/1  
Permit type: Purpose Permit

### 1.2. Proponent details

Proponent's name: Western Areas Limited

### 1.3. Property details

Property: Mining Lease 77/99  
Mining Lease 77/582  
Mining Lease 77/911  
Local Government Area: Shire of Kondinin  
Colloquial name: Forrestiana Nickel Operation

### 1.4. Application

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

## 2. Site Information

### 2.1. Existing environment and information

#### 2.1.1. Description of the native vegetation under application

**Vegetation Description** Two Beard vegetation associations are located within the application area (Government of Western Australia, 2013; GIS Database):

- 511: Medium woodland; salmon gum & morel
- 519: Shrublands; mallee scrub, Eucalyptus eremophila

A flora and vegetation survey was undertaken over the Greater North Ironcap area by Botanica Consulting (Botanica) in 2011 (Botanica, 2012) which covered the majority of the application area. The following vegetation communities were identified within the application area:

1. Low scrub of mixed *Allocasuarina* over mixed dwarf scrub.
2. Open shrub mallee of *Eucalyptus polital*/*E. platycorys*/*E. horistes* over low heath of *Melaleuca hamata* and dwarf scrub of *Microcybe multiflora*/*Acacia intricata*.
3. Open tree mallee of *E. polital*/*E. salubris* over scrub of *Melaleuca pauperiflora* subsp. *pauperiflora* and heath of *Melaleuca adnata*/*Melaleuca lateriflora*/*Melaleuca sparsiflora*.
4. Open tree mallee of *E. livida*/*E. eremophila* over low scrub of *Allocasuarina acutivalvis* and dwarf scrub of *Dodonaea bursariifolia*.
5. Low woodland of *E. salmonophloia* over open tree mallee of *E. cylindrocarpa*/*E. cylindriflora*/*E. pileata*.
6. Regrowth forest of *E. salmonophloia*/*E. salubris* over heath of *Melaleuca cucullata*/*Melaleuca pauperiflora* subsp. *pauperiflora* and open dwarf scrub of *Wilsonia humilis*/*Acacia acanthoclada*.
7. Low woodland of *E. salmonophloia* over open tree mallee of *E. cylindrocarpa*/*E. cylindriflora*/*E. pileata*.
8. Heath of *Allocasuarina campestris*/*Melaleuca hamata*/*Acacia eremophila* over low grass of *Borya constricta*.
9. Open tree mallee of *E. melanoxydon* over scrub of *Santalum acutum* and dwarf scrub of *Acacia merrallii*/*Acacia deficiens*.

A flora and vegetation survey was undertaken over the Greater Flying Fox area by Botanica (2013) which covered the remaining portion of the application area not covered in the Greater Northcap survey. The following additional vegetation communities were identified within the application area:

1. Heath of *Acacia*/*Allocasuarina*/*Melaleuca*
2. Open shrub mallee of *E. eremophila* & *E. pileata* over low heath of mixed *Acacia*/*Melaleuca*.

<b>Clearing Description</b>	Forrestiana Nickel Operation Western Areas Limited (Western Areas) proposes to clear up to 12 hectares of native vegetation within a total boundary of approximately 802 hectares for the purpose of mineral exploration. The project is located approximately 77 kilometres east of Hyden, in the Shire of Kondinin.
<b>Vegetation Condition</b>	Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).  To  Good: Structure significantly altered by multiple disturbances; retains basic structure/ability to regenerate (Keighery, 1994).
<b>Comment</b>	The vegetation condition was determined by Botanica (2012, 2013).  The subject area has historically been extensively explored so there are many old grid lines that have been previously rehabilitated (Western Areas, 2014). The proposed clearing will be restricted to these historical disturbances where possible (Western Areas, 2014).

### 3. Assessment of application against clearing principles

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

##### Comments **Proposal is at variance to this Principle**

The application area occurs within the Southern Cross (COO2) subregion of the Coolgardie Interim Biogeographic Regionalisation of Australia (IBRA) bioregion (GIS Database). This subregion is characterised by gently undulating uplands dissected by broad valleys with bands of low greenstone hills (CALM, 2002). Diverse Eucalyptus woodlands rich in endemic Eucalyptus occur around salt lakes, low greenstone hills, valley alluvials and broad plains of calcareous earths (CALM, 2002). Mallees and scrub-heaths occur on uplands as well as sand lunettes associated with playas along the broad valley floors and sand sheets around the granite outcrops. The scrubs are rich in endemic acacias and Myrtaceae (CALM, 2002).

The application area also occurs within the Lake Cronin Area which is listed on the Register of National Estate due to its high level of flora and fauna diversity and endemism (Australian Heritage Database, 2014). According to the Environmental Protection Authority (2009), the region supports extensive shrubland, sandplain and woodland environments including an excellent representation of a range of vegetation types that are now extensively cleared in the Wheatbelt. Based on its high biodiversity conservation significance and competing land use interests, various forms of conservation reservation and management are proposed for the area (EPA, 2009). The application area is located within an area proposed to be managed under section 33(2) of the *Conservation and Land Management Act 1984* (EPA, 2009).

Two flora and vegetation surveys have been conducted over the application area whereby 11 vegetation communities were recorded (Botanica, 2012; 2013). A total of 46 families, 107 genera and 203 species were recorded within the application area and surrounding vegetation (Botanica, 2012). No Threatened flora species were recorded within the application area but three Priority flora species were recorded; *Boronia westringioides* (P2), *Eutaxia acanthoclada* (P3) and *Microcorys sp. forrestiana* (V. English 2004) (P4) (Botanica, 2012; 2013).

*Boronia westringioides* was only identified once within the Greater North Ironcap survey area, which was within the application area (Botanica, 2012). The Greater Flying Fox survey recorded the species in three locations however none of these locations were within the application area (Botanica, 2013).

*Eutaxia acanthoclada* was recorded in 13 locations in the Greater North Ironcap survey area and in three locations in the Greater Flying Fox survey area (Botanica 2012; 2013). All 16 locations of *Eutaxia acanthoclada* were found within the application area (Botanica 2012; 2013).

*Microcorys sp. Forrestiana* (V. English 2004) was recorded in 66 locations within the two survey areas, but in only one location within the application area (Botanica, 2012; 2013).

Department of Parks and Wildlife (DPaW) has advised that the area has known high biodiversity conservation significance and recommends that targeted searches for conservation significant flora species occur prior to clearing (DPaW, 2014). Western Areas (2014) has committed to undertaking targeted searches for Threatened and Priority flora prior to clearing and will consult with DMP and DPaW if the clearing of a Priority species is proposed (Western Areas). Threatened flora species will be avoided (Western Areas, 2014). Potential impacts to Threatened or Priority flora species as a result of the proposed clearing may be minimised by the implementation of a flora management condition.

The application area is located within the boundary of the Priority Ecological Community (PEC) "Ironcap Hill Vegetation Complexes", which includes Mt Holland, Middle Ironcap Hill, North and South Ironcap Hills, Digger Rock and Hatter Hill. (Botanica, 2013; GIS Database). An 'A' Class reserve is proposed for the North Ironcap Hill to protect the core area of highest conservation significance being the North Ironcap Banded Iron Stone Formation (BIF) (EPA, 2009). The proposed 'A' class reserve is located approximately 1.6 kilometres to the north-west of the application area. Western Areas has committed to clearing within historically disturbed areas where possible and with a raised blade technique (Western Areas, 2014). The proposed clearing is not likely to have a significant impact on this PEC.

Four weed species were identified in the Greater North Ironcap area; *Arctotheca calendula* (Cape weed), *Carpobrotus aequilaterus* (Angular pigface), *Dittrichia graveolens* (Stinkwork) and *Ursinia anthemoides* (Ursinia). Western Areas has flagged the spread of weeds and soil borne pathogens as a potential risk associated with the proposed clearing (Western Areas, 2014). Potential impacts from weeds and dieback as a result of the proposed clearing may be minimised by the implementation of a weed and dieback management condition.

A fauna survey has not been undertaken over the application area however a four-phase fauna inventory has been undertaken over the Forrestiana area. A total of 125 fauna species comprising 71 bird, 20 mammal and 34 herpetofauna species were recorded within the study area (Biota, 2007).

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

**Methodology** Australian Heritage Database (2014)  
Botanica (2012)  
Botanica (2013)  
CALM (2002)  
DPaW (2014)  
EPA (2009)  
Western Areas (2014)  
GIS Database:  
- IBRA WA (Regions - Subregions)  
- 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**

A fauna survey has not been undertaken over the application area however a fauna inventory has been maintained for the Forrestiana project area, specifically surrounding the Flying Fox mine. Surveys were undertaken in February/November 2005 and May/November 2006 (Western Areas, 2014).

A total of nine conservation significant species were recorded in these surveys; Carnaby's Black Cockatoo, Chuditch, Western Rosella, Western Brush Wallaby, Carpet Python, White-browed Babbler, Crested Bellbird, Rufous Fieldwren and the Shy Groundwren (Western Areas, 2014). An additional six species of conservation significance were recorded within 15 kilometres of the application area; Australian Peregrine Falcon, Lake Cronin Snake, Malleefowl, Peregrine Falcon, Rainbow Bee-eater and Sharp-tailed Sandpiper (DEC, 2014).

Carnaby's Black Cockatoo (Schedule 1) forage in woodland and heath that is dominated by proteaceous species and nest in hollows of large eucalypts, usually Salmon Gum and Wandoo (DEC, 2012a). Three vegetation communities within the application area consist of open low woodland of Salmon Gum (Botanica, 2012) and large trees may provide hollows of suitable size. The Western Rosella (Priority 4) also nests within hollows of Eucalypts and other large trees and may utilise the vegetation within the application area for nesting (DEC, 2009).

The Chuditch (Schedule 1) occupies a wide range of habitats from woodlands, dry sclerophyll (leafy) forests, riparian vegetation, beaches and deserts (DEC, 20012b). Chuditch den in hollow logs and burrows and have also been recorded in tree hollows and cavities (DEC, 2012b). The application area consists of eucalypt woodlands that could potentially produce hollows suitable for the Chuditch.

Potential impacts to Schedule fauna species may be minimised by the implementation of fauna management conditions.

Malleefowl (Schedule 1) are largely confined to the arid and semi-arid woodland that is dominated by mallee eucalypts on sandy soils, with less than 430 millimetres of rainfall annually (DEC, 2012c). The application area is considered to fall within this range given the vegetation communities identified by Botanica (2012; 2013). An inactive mound was recorded within the Greater Flying Fox flora survey area however this mound fell outside of the proposed clearing area (Western Areas, 2014). Potential impacts to Malleefowl as a result of the proposed clearing may be minimised by the implementation of a fauna management condition.

Some of the remaining conservation significant species listed above are considered highly mobile or have a wide distribution and are not likely to be impacted by the proposed clearing.

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

**Methodology** Botanica (2012)  
Botanica (2013)  
DEC (2009)  
DEC (2012a)  
DEC (2012b)  
DEC (2012c)

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

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

According to available datasets there are no known records of Threatened flora within the application area (GIS Database). The nearest record of Threatened Flora is located approximately two kilometres north-west of the application area (GIS Database).

One Threatened fauna species, *Banksia sphaerocarpa* var. *dolichostyla*, was recorded during the Greater North Ironcap survey (Botanica, 2012). This species was located exclusively on the BIF of North Ironcap Hill, which is located outside of the application area (Western Areas, 2014). This species was found to be associated with the vegetation community "Open tree mallee of *Eucalyptus livida* over heath of *Acacia steedmanii*/*Allocasuarina campestris* and low heath of *Phebalium ambiguum*/*Acacia sulcata* on rock outcrop" (Botanica, 2012). This vegetation community was not mapped within the application area therefore it is considered unlikely that the proposed clearing will impact on this Threatened species.

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

**Methodology** Botanica (2012)  
Western Areas (2014)  
GIS Database:  
- Threatened and Priority Flora

**(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 not likely to be at variance to this Principle**

According to available databases, there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest known TEC is located approximately 120 kilometres south-west of the application area.

No TECs were identified during the Great North Ironcap or Flying Fox flora surveys undertaken by Botanica (2012; 2013).

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

**Methodology** Botanica (2012)  
Botanica (2013)  
GIS Database:  
- Threatened Ecological Sites Buffered

**(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 Coolgardie Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (GIS Database) in which approximately 97.96% of pre-European vegetation remains (Government of Western Australia 2013; GIS Database). This gives it a conservation status of 'Least Concern' according to the Bioregional Conservation Status of Ecological Vegetation Classes (Department of Natural Resources and Environment, 2002).

The vegetation of the application area has been mapped as the following Beard vegetation associations (GIS Database):

- 511: Medium woodland; salmon gum & morel
- 519: Shrublands; mallee scrub, *Eucalyptus* eremophila

Approximately 74.31% of vegetation association 511 and 61.71% of vegetation association 519 remains at a state level (Government of Western Australia, 2013). On a bioregional level, 93.70% of vegetation association 511 and 99.57% of vegetation association 519 remains within the Coolgardie bioregion (Government of Western Australia, 2013). Therefore, the vegetation under application is not a remnant of vegetation within an area that has been extensively cleared.

	Pre-European area (ha)*	Current extent (ha)*	Remaining %*	Conservation Status**	Pre-European % in IUCN Class I-IV Reserves
IBRA Bioregion - Coolgardie	12,912,204	12,648,491	~98	Least Concern	15.53
Beard vegetation associations - State					
511	700,692	520,668	~74	Least Concern	14.57
519	2,333,413	1,440,020	~62	Least Concern	10.50
Beard vegetation associations - Bioregion					
511	464,424	435,177	~94	Least Concern	18.14
519	147,579	146,943	~99	Least Concern	10.67

\* 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 (2013)  
GIS Database:  
- IBRA WA (Regions - Subregions)  
- 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 not at variance to this Principle**  
Available datasets do not show the application area intersecting within any watercourses or wetlands (GIS Database).

Vegetation surveys undertaken by Botanica (2012; 2013) did not identify any vegetation growing in, or in association with, a watercourse or wetland.

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

**Methodology** Botanica (2012)  
Botanica (2013)  
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 is not likely to be at variance to this Principle**  
According to available databases, there are three soil types (Ms8, X17 and Ya28) within the application area (GIS Database). These soil types are described as:

Ms8 - Gently undulating plains with broad shallow drainage depressions: a wide range of loamy yellow earths and related soils occurs. All of these soils commonly contain a horizon of ironstone nodules at 30 - 36 inches and occasionally at shallower depths. In the broad shallow drainage depressions loamy duplex soils occur, together with some grey leached earths;

X17 - Slopes and valleys: chief soils are sandy neutral and alkaline yellow mottled soils;

Ya28 - Sandy plains with some clay pans and small salt lakes, dunes, and lunettes: chief soils are sandy alkaline yellow mottled soils (Northcote et al, 1960-68).

Sandy soils have the potential to be impacted by wind erosion. Western Areas has advised they will employ the raised blade clearing technique to allow for rapid regrowth following the clearing (Western Areas, 2014). Given the proposed clearing activities will not disturb the surface vegetation and topsoil, the likelihood of significant erosion being caused by the proposed clearing is considered low.

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

**Methodology** Northcote et al (1960-68)  
Western Areas (2014)  
GIS Database:  
- 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 may be at variance to this Principle**

The application area is located within the Lake Cronin Area which is listed on the Register of National Estate (GIS Database). At over 31,000 hectares, the Lake Cronin Area is a significant area in maintaining existing processes at a regional scale and therefore is a potentially important contemporary refugia for many species (Australia Heritage Database, 2014). At its closest point, the application area is approximately 5.4 kilometres west of Lake Cronin and 2.2 kilometres west of Lake Cronin Nature Reserve (GIS Database). Given the distance between the application area and Lake Cronin Nature Reserve and the low impact nature of the clearing, the proposed clearing is not considered likely to impact on the conservation values of Lake Cronin Nature Reserve.

The application area is also located within an area proposed to be managed under section 33 (2) of the *Conservation and Land Management Act 1984* and is in the vicinity of the proposed 'A' Class North Ironcap Nature Reserve (EPA, 2009). DPaW was given the opportunity to comment on the clearing permit application given its location within a proposed conservation area. DPaW advised that the area has a known high biodiversity conservation significance and recommended targeted surveys of conservation significant flora and fauna species be undertaken prior to clearing (DPaW, 2014). Potential impacts to conservation significant flora and fauna species may be minimised by the implementation of relevant management conditions.

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

**Methodology** Australia Heritage Database (2014)  
DPaW (2014)  
EPA (2009)  
GIS Database:  
- DEC Tenure  
- Hydrography, Linear  
- Register of National Estate

**(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.**

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

The application area is not located within a Public Drinking Water Source Area (PDWSA) (GIS Database). The nearest PDWSA is Ravensthorpe Catchment Area, which is approximately 140 kilometres to the south (GIS Database).

The application area is located within a semi-arid, warm Mediterranean environment with an average annual rainfall of 313 millimetres recorded at Lake Carmody approximately 40 kilometres south-west of the application area (CALM, 2002; BoM, 2014). The small size of the proposed clearing within this climate is unlikely to result in significant changes to surface flows.

The groundwater salinity within the application area is approximately 14,000 - 35,000 milligrams/Litre Total Dissolved Solids (TDS) (GIS Database). This is considered to be hyper saline. Given the size of the area to be cleared (12 hectares) and low the impact nature of the clearing, the proposed clearing is not likely to cause salinity levels within the application area to alter significantly.

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

**Methodology** BoM (2014)  
CALM (2002)  
GIS Database:  
- Groundwater Salinity, Statewide  
- Public Drinking Water Source Area (PDWSAs)

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

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

The application area is located within a semi-arid, warm Mediterranean environment with an average annual rainfall of 313 millimetres recorded at Lake Carmody approximately 40 kilometres south-west of the application area (BoM, 2014; CALM, 2002). Rainfall is usually experienced during winter months and it is likely that during times of intense rainfall there may be some localised flooding in the area (CALM, 2002). However, given the

size of the Swan-Avon Yilgarn catchment (5,836,045 hectares) (GIS Database), the proposed clearing is not likely to cause or exacerbate the incidence or intensity of flooding.

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

**Methodology** BoM (2014)  
CALM (2002)  
GIS Database:  
- Hydrographic Catchments - Catchments

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

##### Comments

There are two Native Title Claims (WC2003/006 and WC2000/007) over the area under application (GIS Database). These claims have been filed at the Federal Court of Australia and registered with the National Native Title Tribunal on behalf of the claimant group respectively. 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 registered Aboriginal Sites of Significance within the application area (GIS Database). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal sites of significance are damaged through the clearing process.

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

The clearing permit application was advertised on 4 August 2014 by the Department of Mines and Petroleum inviting submissions from the public. No submissions were received in relation to the application.

**Methodology** GIS Database:  
- Native Title Claims - Filed at the Federal Court  
- Native Title Claims - Registered with the NNTT

#### 4. References

- Australian Heritage Database (2014) Register of the National Estate: Lake Cronin Area. [http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place\\_detail;search=place\\_name%3DLake%2520cronin%3Bkeyword\\_PD%3Don%3Bkeyword\\_SS%3Don%3Bkeyword\\_PH%3Don%3Blatitude\\_1dir%3DS%3Blongitude\\_1dir%3DE%3Blongitude\\_2dir%3DE%3Blatitude\\_2dir%3DS%3Bin\\_region%3Dpart;place\\_id=9929](http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name%3DLake%2520cronin%3Bkeyword_PD%3Don%3Bkeyword_SS%3Don%3Bkeyword_PH%3Don%3Blatitude_1dir%3DS%3Blongitude_1dir%3DE%3Blongitude_2dir%3DE%3Blatitude_2dir%3DS%3Bin_region%3Dpart;place_id=9929) (viewed 27 August 2014).
- BoM (2014) Climate Statistics for Australian Locations. A Search for Climate Statistics for Lake Carmody, Australian Government Bureau of Meteorology, viewed (27 August 2014).
- Botanica (2012) Flora and Vegetation Survey of the Greater North Ironcap Area (E77/1764, M77/543, M77/219, M77/544, M77/582 & M77/99). Unpublished report prepared for Western Areas Ltd.
- Botanica (2013) Flora and Vegetation Survey of the Greater Flying Fox Area (M77/852, M77/911 & M77/545). Unpublished report prepared for Western Areas Ltd.
- CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions - Coolgardie 2 (COO2 - Southern Cross Subregion). Department of Conservation and Land Management, Western Australia.
- DEC (2009) Fauna Notes: No. 24 Western Rosella. Department of Environment and Conservation, Perth. [http://www.dec.wa.gov.au/publications/2/doc\\_download/3781-fauna-note-24-western-rosella.html](http://www.dec.wa.gov.au/publications/2/doc_download/3781-fauna-note-24-western-rosella.html) (Accessed 28 August 2014).
- DEC (2012a) Fauna Profiles: Canaby's Cockatoo. Department of Environment and Conservation, Perth. [http://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/carnabys/Carnabys\\_black\\_cockatoo\\_-\\_species\\_profile\\_2012.pdf](http://www.dpaw.wa.gov.au/images/documents/plants-animals/threatened-species/carnabys/Carnabys_black_cockatoo_-_species_profile_2012.pdf) (Accessed 26 August 2014).
- DEC (2012b) Fauna Profiles: Chuditch. Department of Environment and Conservation, Perth. [http://www.dpaw.wa.gov.au/images/documents/plants-animals/animals/animal\\_profiles/c\\_huditch\\_2012.pdf](http://www.dpaw.wa.gov.au/images/documents/plants-animals/animals/animal_profiles/c_huditch_2012.pdf) (Accessed 27 August 2014).
- DEC (2012c) Fauna Profiles: Malleefowl. Department of Environment and Conservation, Perth. [http://www.dpaw.wa.gov.au/images/documents/conservation-management/pests-diseases/malleefowl\\_2012.pdf](http://www.dpaw.wa.gov.au/images/documents/conservation-management/pests-diseases/malleefowl_2012.pdf) (Accessed 27 August 2014).
- DEC (2014) NatureMap: Mapping Western Australia's Biodiversity. Department of Environment and Conservation. <http://naturemap.dec.wa.gov.au/> (Accessed 26 August 2014).
- DPaW (2014) Advice to the assessing officer for clearing permit application CPS 6196/1. Received on 19 August 2014. Department of Natural Resources and Environment (2002) Biodiversity Action Planning. Action planning for native biodiversity at multiple scales; catchment bioregional, landscape, local. Department of Natural Resources and Environment, Victoria.

EPA (2009) Advice on Conservation Values and Review of Nature Reserve Proposals in the Lake Cronin Region. Advice of the Environmental Protection Authority to the Minister for Environment under Section 16(e) of the *Environmental Protection Act 1986*. Report Number 1329. Published Report Prepared by the Environmental Protection Authority, June 2009. Government of Western Australia, 2013.

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Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia. Northcote et al (1960-68).

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Western Areas (2014) Supporting Document for Clearing Permit (Purpose) Application Mining Tenements M77/99, M77/582, M77/911. Unpublished Report Prepared by Western Areas NL, July 2014.

## 5. Glossary

### Acronyms:

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

### Definitions:

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

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



Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

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

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

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

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

- EX**            **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.
- EX(W)**        **Extinct in the wild:** A native species which:  
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or  
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CR**            **Critically Endangered:** A native species which is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN**            **Endangered:** A native species which:  
(a) is not critically endangered; and  
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU**            **Vulnerable:** A native species which:  
(a) is not critically endangered or endangered; and  
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD**            **Conservation Dependent:** A native species which is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.