Government of **Western Australia**
Department of **Mines and Petroleum**

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 5056/1
Permit type: Purpose Permit

1.2. Proponent details

Proponent's name: **Talison Lithium Australia Pty Ltd**

1.3. Property details

Property: Mining Lease 01/3
Mining Lease 01/6
Mining Lease 01/7
Mining Lease 01/16
General Purpose Lease 01/1
General Purpose Lease 01/2
Local Government Area: Shire of Bridgetown-Greenbushes
Colloquial name: Greenbushes Project

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 13 November 2014

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Beard vegetation associations have been mapped for the whole of Western Australia. One Beard vegetation association has been mapped within the application area: 3: Medium forest; jarrah-marri (GIS Database). A Level 2 flora and vegetation survey was undertaken over ten mining leases, totalling approximately 10,060 hectares, which contain and surround the application area. The survey was conducted by botanists from Onshore Environmental in October 2011. Six vegetation associations were described and mapped over the application area and these were classified into four broad floristic formations according to dominant vegetation strata (Onshore Environmental, 2012). **Eucalyptus Dense Forest 1a:** *Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla* Dense Forest over *Banksia grandis*, *Bossiaea linophylla* and *Persoonia longifolia* Open Scrub over *Pteridium esculentum*, *Macrozamia riedlei* and *Leucopogon verticillatus* Open Low Scrub B (with *Leucopogon capitellatus* and *Bossiaea ornata* Open Dwarf Scrub D) in brown sandy loam on upper hill slopes and plateaux. **Eucalyptus Dense Forest 1b:** *Eucalyptus marginata* subsp. *marginata* and *Corymbia calophylla* Dense Forest over *Bossiaea ornata*, *Hibbertia hypericoides* and *Leucopogon capitellatus*	Talison Lithium Australia Pty Ltd has applied to clear up to 120 hectares of native vegetation within an application area of approximately 1,250 hectares for the purpose of mineral production and mineral exploration. The clearing is for the ongoing operation of the Greenbushes Mine including pit development, expansion of waste rock and tailings storage facilities, infrastructure development and rehabilitation activities. The clearing is for the period now to 2026.	Completely Degraded: No longer intact; completely/almost completely without native species (Keighery, 1994). To: Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).	The vegetation condition was assessed by botanists from Onshore Environmental (2012). The application area consists of the existing Greenbushes Mine and the surrounding area, near Greenbushes townsite. The original application area applied for was 1,590 hectares. The boundary was reduced during the assessment period to better align with the project area assessed by the Commonwealth Department of the Environment for matters of national environmental significance (three Threatened Black Cockatoo species).

Dwarf Scrub D in brown sandy loam over undulating hill slopes and plateaux.

Eucalyptus Forest 2a: *Eucalyptus marginata* subsp. *marginata*, *Corymbia calophylla* Forest (to Dense Forest) over *Banksia grandis*, *E. marginata* subsp. *marginata*, *C. calophylla* Low Forest A over *Pteridium esculentum*, *Leucopogon capitellatus* and *Bossiaea ornata* Dwarf Scrub C in brown loamy sand on upper hill slopes and plateaux.

Eucalyptus Forest 2c: *Eucalyptus rudis*, *Corymbia calophylla* and *Eucalyptus patens* Forest (to Woodland) over *Banksia littoralis* Open Low Woodland A over *Taxandria linearifolia*, *Taxandria parviceps* and *Pteridium esculentum* Heath A in brown sandy clay loam along drainage lines and flats.

Leptospermum Scrub 3: *Leptospermum erubescens* Scrub over *L. erubescens*, *Bossiaea aquifolium*, *Allocasuarina humilis* Heath A over *Hypocalymma angustifolium*, *Babingtonia camphorosmae* and *Thomasia foliosa* Low Heath C in brown loamy sand on granite outcrops and sheets.

***Typha Dense Tall Sedges 4:** **Typha orientalis* Dense Tall Sedges.

*indicates introduced species

The application area also included areas that were mapped as cleared farmland, water body, townsite, mine rehabilitation and mine disturbance (Onshore Environmental, 2012).

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 area occurs within the Southern Jarrah Forest (JF2) Interim Biogeographic Regionalisation of Australia (IBRA) subregion (GIS Database). This subregion is characterised by Jarrah-Marri forest on laterite gravels and, in the eastern part, by Wandoo-Marri woodlands on clayey soils (CALM, 2002). Eluvial and alluvial deposits support Agonis shrublands and in areas of Mesozoic sediments Jarrah forests occur in a mosaic with a variety of species-rich shrublands (CALM, 2002).

A Level 2 flora and vegetation survey was undertaken by botanists from Onshore Environmental in October 2011 over the application area and the surrounding tenements. A total of 368 plant taxa, from 73 families and 208 genera, were recorded within the survey area (Onshore Environmental, 2012). Species representation was greatest among the Fabaceae, Poaceae, Myrtaceae, Cyperaceae, Asteraceae and Orchidaceae (Onshore Environmental, 2012).

One Threatened Flora species and one Priority Flora species were recorded during the flora and vegetation survey but neither were recorded within the application area (Onshore Environmental, 2012; GIS Database). The known population of *Caladenia harringtoniae*, located south-west of the application area, was revisited during the flora and vegetation survey and its extent was expanded. Despite targeted searches at the appropriate time of the year, no populations were recorded within the application area (Onshore Environmental, 2012). *Tetratheca parvifolia* (P3) was recorded during the survey at two locations to the north-west of the application area. The first location had scattered plants and the second location had a single plant (Onshore Environmental, 2012).

No Threatened Ecological Communities or Priority Ecological Communities were recorded during the flora and vegetation survey or have previously been recorded within the application area (Onshore Environmental, 2012; GIS Database).

A total of 86 introduced flora species were recorded during the flora and vegetation survey by Onshore Environmental (2012). Three weed taxa are Declared Plants under the *Agriculture and Related Resources Act 1976*: Blackberry (*Rubus ulmiflius*), Bridal Creeper (*Asparagus asparagoides*) and Goosegrass (*Galium aparine*) (Onshore Environmental, 2012). The diversity of weeds within the application area is relatively high and reflects the long mining history in the Greenbushes area as well as nearby clearing of native vegetation for farmland and plantation timber (Onshore Environmental, 2012). A weed management program has been implemented at the site and a dedicated weed control officer is employed on site to manage weeds (Onshore Environmental, 2012; Talison Lithium Australia, 2012b). Potential impacts to biodiversity as a result of the

proposed clearing may be minimised by the implementation of a weed management condition.

Dieback has been detected within the application area (Onshore Environmental, 2012; GIS Database) and this poses a risk to biodiversity in the application area and surrounds. Potential impacts to biodiversity as a result of the proposed clearing may be minimised by the implementation of a dieback management condition.

A total of 82 vertebrate fauna species were recorded during the Level 1 fauna survey of the application area and its surrounds; comprising of eight native mammal, six introduced mammal, 59 bird, four reptile and five amphibian species (Biologic, 2011). Five of these, 1 mammal and 4 birds, were of conservation significance (Biologic, 2011).

The remnant vegetation in application area does provide habitat for conservation significant fauna and a large number of flora species were recorded within the larger survey area. However, the remnant and regrowth vegetation mapped within the application area was also mapped throughout Talison Lithium Australia's surrounding tenements and a large portion (approximately 68%) of the application area has been mapped as disturbed (Onshore Environmental, 2012; Talison Lithium Australia, 2014).

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

Methodology

Biologic (2011)
CALM (2002)
Onshore Environmental (2012)
Talison Lithium Australia (2012b)
Talison Lithium Australia (2014)
GIS Database:
- Dieback Occurence
- IBRA WA (Regions - Sub Regions)
- Threatened and Priority Flora
- 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 is at variance to this Principle

A Level 1 fauna survey was conducted by zoologists from Biologic which consisted of a literature and database review, a field survey to map and describe fauna habitats and conducting targeted surveys for fauna of conservation significance (Biologic, 2011). The field survey took place in October 2011 and included habitat tree assessments for three threatened Black Cockatoo species that potentially occurred in the application area, nocturnal surveys, bat recordings, motion cameras and opportunistic surveys (Biologic, 2011). While the survey was conducted over all of Talison Lithium Australia's Greenbushes mining tenements, the survey effort was focussed within the active mining area which was the original application area (Biologic, 2011). During the assessment phase the application area was reduced to better align the clearing permit boundary with the project boundary being assessed by the Commonwealth Department of the Environment. The boundary reduction removed threatened Black Cockatoo habitat from the west and south-east of the original application area.

Four broad fauna habitats were present within the application area as well as a disturbed category. The mapped fauna habitats were:

- Jarrah/Marri forest over Banksia dominated midstorey;
- Jarrah/Marri forest;
- Marri/Blackbutt/Flooded Gum woodland over Banksia dominated midstorey;
- Typha dense tall sedges; and
- Disturbed/rehabilitated areas (Biologic, 2011).

The Jarrah/Marri forest over Banksia dominated midstorey and Jarrah/Marri forest habitats were the dominant natural habitat types, with each covering approximately 21% of the original application area (Biologic, 2011). Disturbed/rehabilitated areas covered approximately 56% of the original application area (Biologic, 2011). In the reduced application area approximately 23% is Jarrah/Marri forest over Banksia dominated midstorey or Jarrah/Marri forest habitats and 68% is disturbed/rehabilitated areas.

A total of 82 vertebrate fauna species were recorded during the fauna survey comprising of eight native mammal, six introduced mammal, 59 bird, four reptile and five amphibian species (Biologic, 2011).

Based on database searches and previous surveys in the region, a total of 22 species of conservation significant have the potential to occur in the application area (Biologic, 2011). Five conservation significant species were recorded during the fauna survey:

- Baudin's Cockatoo (*Calyptorhynchus baudinii*);
- Carnaby's Cockatoo (*Calyptorhynchus latirostris*);
- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*);

- Rainbow Bee-eater (*Merops ornatus*); and
- Southern Brush-tailed Phascogale (*Phascogale tapaotafa tapaotafa*) (Biologic, 2011).

Most of the areas of remnant native Jarrah-Marri forest in the application area are considered suitable foraging habitat for Black Cockatoos based on tree density assessments. The canopy layer in the native vegetation is entirely comprised of Jarrah and Marri and the midstorey is dominated by *Banksia grandis* trees, all of which are known feeding resources for Black Cockatoos and are located throughout the application area and the surrounding survey area (Biologic, 2011). The larger survey area is utilised by all three species of Black Cockatoos as foraging habitat, as evidenced by chewed Marri nuts and Banksia cones. Signs of feeding Carnaby's Cockatoos and Baudin's Cockatoos were recorded at two sites each, while the Forest Red-tailed Black Cockatoo was sighted during the survey and feeding signs were recorded at ten sites (Biologic, 2011). Vegetation mapping depicts that an area of approximately 657.65 hectares (out of 1,590.78 hectares) within the original application area and a further 6,369.97 hectares (out of 8,469.02 hectares) within the remaining lease areas are suitable for foraging habitats for Black Cockatoos (Biologic, 2011).

Using the breeding habitat classification, most of the areas of remnant native Jarrah-Marri forest in the application area considered potential breeding habitat for Black Cockatoos based on the tree density assessments (Biologic, 2011). Out of a total area of 1,590.78 hectares in the original application area, an estimated 636.56 hectares provide potential breeding habitats for Black Cockatoos, while a further 173.57 hectares could be classified as future breeding habitats. Within the general survey area, 4,861.46 hectares and 316.03 hectares could be categorised as potential breeding habitats and future breeding habitats for Black Cockatoos, respectively (Biologic, 2011).

The alignment of the application area with the project area for the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* boundary reduced the foraging and potential breeding habitat by approximately 340 hectares. The proposed clearing in the cockatoo habitat is 84.12 hectares, consisting of approximately 55.70 hectares of regrowth/rehabilitated vegetation (Talison Lithium Australia, 2013b).

While the proposed clearing will impact Threatened Black Cockatoo habitat, it is not likely to lead to a long-term decrease in the size of the habitat due to the relatively abundant vegetation of better quality in the surrounding area, the increasing quality of previously disturbed land and the waste dump will be rehabilitated once mining has completed (Talison Lithium Australia, 2013b). Some previous Talison Lithium Australia rehabilitation has been considered self-sustaining after 10 years and the completion criteria for rehabilitation sign-off has been developed in consultation with DPaW (Talison Lithium Australia, 2012b, 2013b). Talison Lithium Australia has lessened the significance of the potential impact by:

- Revisions to the mine plan to avoid or minimise impacts to higher value habitats (marri habitat trees identified by Kirkby);
- Areas of highest habitat value, such as concentrations of mature (i.e. dbh>500 millimetre) trees, are in areas that will not be cleared; and
- Staging clearing over a ten to twelve year period and timing clearing activities to periods that are outside periods of peak or important Black Cockatoo activity, such as breeding (July - January) (Talison Lithium Australia, 2013a, 2013b).

Despite the mitigation measures, a residual environmental impact to Threatened Black Cockatoo habitat remains. An offset will be required to compensate for this residual impact. Conversations with the Department of the Environment have indicated an offset will be required under the EPBC Act for the same reason i.e. impact to the three Threatened Black Cockatoo species (pers. comm. Department of the Environment, 2014). Talison Lithium Australia has been in negotiation with Department of the Environment and Department of Parks and Wildlife over the requirements of the offset (Talison Lithium Australia, 2014). The clearing permit application area was modified with the intention of the offset satisfying the requirements of both the EBPC Act and *Environmental Protection Act 1986* to reduce duplication. Potential impacts to habitat for Threatened Black Cockatoos as a result of the proposed clearing may be minimised by the implementation of an offset condition.

The call of a Rainbow Bee-eater was heard within the survey area in remnant regrowth Marri-Jarrah forest (Biologic, 2011). This south-eastern block of vegetation has been removed from the application area. Additionally, the Rainbow Bee-eater is a highly mobile Migratory species that utilises a variety of habitats with a wide distribution (Department of the Environment, 2014). Therefore, the proposed clearing is not likely to significantly impact this species.

An individual Southern Brush-tailed Phascogale was recorded during a nocturnal survey within the original application area (Biologic, 2011). This south-eastern block of remnant regrowth Marri-Jarrah forest has been removed from the application area.

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

Methodology

Biologic (2011)
Department of the Environment (2014)
Talison Lithium Australia (2012b)
Talison Lithium Australia (2013a)
Talison Lithium Australia (2013b)

Talison Lithium Australia (2014)

(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 known records of Threatened Flora within the application area (GIS Database). The nearest known record of Threatened Flora, *Caladenia harringtoniae*, is located approximately one kilometre south-west of the application area (GIS Database).

A Level 2 flora and vegetation survey was undertaken by botanists from Onshore Environmental in October 2011 over the application area and the surrounding tenements. The survey included re-visiting known locations of conservation significant flora and a focus on specific landforms where significant flora may be expected to occur (Onshore Environment, 2012).

Caladenia harringtoniae was recorded during the survey as 26 plants from an un-incised drainage line/dampland approximately one kilometre south-west of the application area. The orchid was in flower at the time of the survey. This was the same location as the previously known location but the extent of the population was expanded (Onshore Environmental, 2012). The vegetation association at this location was described as *Eucalyptus marginata* and *Corymbia calophylla* forest over *Xanthorrhoea preissii* open scrub over *Logania serphyllifolia* subsp. *angustifolia*, *Banksia dallanneyi* and *Bossiaea ornata* Dwarf Scrub C. Extensive ground truthing of the survey area and targeted searches of similar habitat did not result in any new populations being found (Onshore Environmental, 2012).

No *Caladenia harringtoniae* plants were recorded within the application area despite targeted searches during an optimal survey time, therefore the proposed clearing is unlikely to have a direct impact on the species. However, the close proximity of the proposed clearing to a known *Caladenia harringtoniae* population poses indirect risks such as weed invasion. Potential impacts to habitat for rare flora as a result of the proposed clearing may be minimised by the implementation of a weed management condition.

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

Methodology

Onshore Environmental (2012)
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 is not likely to be at variance to this Principle

A search of available databases revealed there are no known Threatened Ecological Communities (TECs) within the application area (GIS Database). The nearest recorded TEC is located approximately 46 kilometres north-west of the application area (GIS Database).

No TECs were identified during the flora and vegetation surveys conducted by Onshore Environmental botanists (Onshore Environmental, 2012).

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

Methodology

Onshore Environmental (2012)
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 clearing application area falls within the Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) bioregion in which approximately 54.9% of the pre-European vegetation remains (see table) (Government of WA, 2011; 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 clearing application area has been mapped as Beard vegetation association 3 'Medium forest; jarrah-marri' (GIS Database). According to Government of WA (2011), approximately 69.3% of this vegetation association remains at a state level (see table). This vegetation association would be given a conservation status of 'Least Concern' (Department of Natural Resources and Environment, 2002).

The vegetation under application is not a remnant of native vegetation in 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 (and post clearing %)
IBRA Bioregion - Jarrah Forest	4,506,657	2,473,560	54.9	Least Concern	14.1 (25.1)
IBRA Subregion - Southern Jarrah Forest	2,607,876	1,349,387	51.7	Least Concern	17.0 (32.0)
Local Government – Bridgetown-Greenbushes	133,759	73,744	55.1	Least Concern	12.4 (22.4)
Beard vegetation associations - State					
3	2,661,405	1,844,285	69.3	Least Concern	18.5 (26.4)
Beard vegetation associations - Bioregion					
3	2,390,592	1,641,272	68.7	Least Concern	16.3 (23.6)
Beard vegetation associations - subregion					
3	1,482,492	908,058	61.2	Least Concern	18.8 (30.4)

* Government of WA (2011)
** 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 WA (2011)
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 at variance to this Principle

The application area contains numerous minor perennial watercourses, dams and a major perennial watercourse (GIS Database). A number of vegetation associations mapped within the application area are growing along ephemeral drainage lines or around the perimeter of permanent water bodies such as Spring Gully Dam (Talison Lithium Australia, 2012b). Vegetation associations 'Eucalyptus Forest 2c' and 'Eucalyptus Forest 2d' are described as being associated with drainage lines and flats (Onshore Environmental, 2012). There is also an area mapped as '*Typha Dense Tall Sedges' with Typha being an introduced species (Onshore Environmental, 2012). There was only a small amount of these vegetation associations mapped within the application area (Onshore Environmental, 2012).

The Department of Water (DoW) adviced that they do no support clearing within 50 metres from the outer-most water dependent vegetation of any perennial waterways and 30 metres from the outer-most water dependent vegetation of any seasonal waterway (DoW, 2012). The application area was reduced during the assessment stage and the remnant vegetation surrounding the two dams highlighted by DoW has been removed from the application area. Two of the non-perennial watercourses on the eastern boundary do not have mining operations proposed adjacent to them and the two other non-perennial watercourses are already highly disturbed (Talison Lithium Australia, 2013a).

Based on the above, the proposed clearing is at variance to this Principle. However, the proposed clearing is only likely to impact on small amounts of vegetation associated with highly disturbed minor non-perennial watercourses.

Methodology DoW (2012)
Onshore Environmental (2012)
Talison Lithium Australia (2012b)

Talison Lithium Australia (2013a)
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

The soils of the Wellington-Blackwood District were mapped by Tille (1996) and the larger Talison Lithium Australia tenement area occurs within the Hester Subsystem of the Darling Plateau System. This consists of undulating ridges and hill crests formed on laterite and gneiss which typically slope downwards off the main plateau into the surrounding Lowden Valleys System. The soils are mostly loamy gravels, sandy gravels and loamy earths (Onshore Environmental, 2012).

The application area is not considered to contain acid sulphate soils and it is not expected that waterlogging or soil salinity will be increased by the proposed clearing (Talison Lithium Australia, 2012b).

Short-term erosion may be associated with the proposed clearing and Talison Lithium Australia has procedures to mitigate soil erosion. Some of the environmental management commitments include progressive rehabilitation of areas disturbed by mining, and staged clearing over a ten to twelve year period (Talison Lithium Australia, 2013a). The proponent's Surface Water Management will also assist in managing any water erosion. While mitigation measures are in place, the amount of proposed clearing is large and if large areas are cleared then left exposed for long periods of time then degradation may be a risk. Potential impacts from land degradation may be minimised by the implementation of a stage clearing condition.

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

Methodology

Onshore Environmental (2012)
Talison Lithium Australia (2012b)
Talsion Lithium Australia (2013a)

(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 majority of the application area is in Greenbushes State Forest (GIS Database). Talison Lithium Australia Pty Ltd has been consulting with Department of Parks and Wildlife (DPaW), and its predecessors, regional offices over a long period on mining operations and rehabilitation practices (Talison Lithium Australia, 2012a).

Advice was received from the Department of Environment and Conservation (DEC, now DPaW) regarding the proposed clearing. DEC (2012) raised the following issues:

- Potential for suitable habitat for Threatened Flora species *Caladenia harringtoniae* and several Priority Flora species;
- Clarification on proposed rehabilitation activities;
- Cockatoo habitat;
- Dieback;
- Weeds; and
- Fire management.

Despite targeted searches at the appropriate time of the year, no populations of *Caladenia harringtoniae* were recorded within the application area and no Priority Flora species were recorded within the application area (Onshore Environmental, 2012). The proposed clearing will impact on feeding habitat and potential breeding habitat of three Threatened Black Cockatoo species and an offset condition is proposed to compensate for the residual impact of the proposed clearing. Potential impacts to state forest as a result of the proposed clearing may be minimised by the implementation of a weed and dieback management condition.

Rehabilitation is managed through the Mining Proposal and Mine Closure Plan under the *Mining Act 1978* and clarification on rehabilitation activities will occur through these processes. Fire management is unlikely to be impacted by the proposed clearing.

Based on the above, the proposed clearing may be at variance to this Principle. However, the conditions imposed on the permit will minimise the impact on the environmental values of the state forest.

Methodology

DEC (2012)
Onshore Environmental (2012)
Talison Lithium Australia (2012a)
GIS Database:
- DEC Tenure

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

Comments

Proposal is not likely to be at variance to this Principle

The application area contains numerous minor perennial watercourses, dams and perennial swamps (GIS Database). The Department of Water (DoW) has advised that they do not support clearing within 50 metres from the outer-most water dependent vegetation of any perennial waterway and 30 metres from the outer-most water dependent vegetation of any seasonal waterway (DoW, 2012). The application area was reduced during the assessment stage and the remnant vegetation surrounding the two perennial dams has been removed from the application area. Two of the non-perennial watercourses on the eastern boundary do not have mining operations proposed and the two other non-perennial watercourses are already in highly disturbed and active mining domains and would be partly modified (Talison Lithium Australia, 2013a). Given the large amount of proposed clearing (120 hectares), a staged clearing condition is included to minimise the risk of erosion. This will reduce the risk of sedimentation in local waterways and only a temporary effect may occur following clearing.

A small part of the application is within Greenbushes Catchment Area, a Public Drinking Water Source Area (GIS Database). Mining is a compatible land use with conditions according to the 'Land use compatibility in Public Drinking Water Sources Areas' (DOE, 2004).

Talison Lithium Australia Pty Ltd has a Surface Water Management Plan that was referred to DoW for comments during its preparation. The plan manages water usage and quality on site and any subsequent downstream impacts, and uses an adaptive management approach (Talison Lithium Australia, 2013a).

The proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.

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

Methodology

DOE (2004)
DoW (2012)
Talison Lithium Australia Pty Ltd (2013a)
GIS Database:
- Geodata, Lakes
- Hydrography, Linear

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

Comments

Proposal is not likely to be at variance to this Principle

The application area is located within the Hardy Estuary-Blackwood River catchment area (GIS Database). Given the size of the area to be cleared (120 hectares) in relation to the size of the catchment area (1,373,020 hectares) (GIS Database), the proposed clearing is not likely to increase the potential of flooding on a catchment scale.

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

Methodology

GIS Database:
- Hydrographic Catchments - Catchments

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

Comments

The clearing permit application was advertised on 11 June 2012 by the Department of Mines and Petroleum inviting submissions from the public. One submission was received stating there were no objections to this application, one concerning Aboriginal heritage and another submission expressed concerns about Threatened and Priority Flora. Threatened and Priority Flora is addressed in the assessment under Principles (a) and (c).

There are three native title claims over the application area (WC96/109, WC 98/70 and WC06/4) (GIS Database). These claims have been registered with the National Native Title Tribunal on behalf of the claimant group. 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 Talison Lithium Greenbushes Operations Clearing for Waste Rock Dump Expansion project was referred to

the Department of the Environment (formerly Department of Sustainability, Environment, Water, Population and Communities) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 17 June 2013, due to the presence of EPBC Act listed fauna and flora species within the project area. The project was deemed a 'controlled action' and required assessment under the EPBC Act with the level of assessment being set at 'Preliminary Documentation'.

Methodology GIS Database:
- Aboriginal Sites of Significance
- Native Title Claims - Registered with the NNTT

4. References

Biologic (2011) Greenbushes Level 1 Fauna Survey. Report Prepared by Biologic for Talison Lithium Australia Pty Ltd, November 2011.

CALM (2002) A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions. Jarrah Forest 2 (JF2 - Southern Jarrah Forest Subregion). Department of Conservation and Land Management, Western Australia.

DEC (2012) Advice to Assessing Officer for Clearing Permit Application CPS 5056/1. Department of Environment and Conservation, Blackwood District, November 2012.

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.

Department of the Environment (2014) Species Profile and Threats Database - *Merops ornatus* - Rainbow Bee-eater. Department of the Environment. URL: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=670, Accessed 11/11/2014.

DOE (2004) Water Quality Protection Note: Land Use Compatibility in Public Drinking Water Source Areas. Department of Environment, June 2004.

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5. Glossary

Acronyms:

BoM	Bureau of Meteorology, Australian Government
CALM	Department of Conservation and Land Management (now DEC), Western Australia
DAFWA	Department of Agriculture and Food, Western Australia
DEC	Department of Environment and Conservation, Western Australia
DEH	Department of Environment and Heritage (federal based in Canberra) previously Environment Australia
DEP	Department of Environment Protection (now DEC), Western Australia
DIA	Department of Indigenous Affairs
DLI	Department of Land Information, Western Australia
DMP	Department of Mines and Petroleum, Western Australia
DoE	Department of Environment (now DEC), Western Australia
DoIR	Department of Industry and Resources (now DMP), Western Australia
DOLA	Department of Land Administration, Western Australia
DoW	Department of Water
EP Act	Environmental Protection Act 1986, Western Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (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
RIWI Act	Rights in Water and Irrigation Act 1914, Western Australia
s.17	Section 17 of the Environment Protection Act 1986, Western Australia
TEC	Threatened Ecological Community

Definitions:

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

P1 **Priority One - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

P2 **Priority Two - Poorly Known taxa**: taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

P3 **Priority Three - Poorly Known taxa**: taxa which are known from several populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in need of further survey.

P4 **Priority Four – Rare taxa**: taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5–10 years.

R **Declared Rare Flora – Extant taxa** *(= Threatened Flora = Endangered + Vulnerable)*: taxa which have been adequately searched for, and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

X **Declared Rare Flora - Presumed Extinct taxa**: taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such, following approval by the Minister for the Environment, after recommendation by the State's Endangered Flora Consultative Committee.

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

Schedule 1 **Schedule 1 – Fauna that is rare or likely to become extinct:** being fauna that is rare or likely to become extinct, are declared to be fauna that is need of special protection.

Schedule 2 **Schedule 2 – Fauna that is presumed to be extinct:** being fauna that is presumed to be extinct, are declared to be fauna that is need of special protection.

Schedule 3 **Schedule 3 – Birds protected under an international agreement:** being birds that are subject to an agreement between the governments of Australia and Japan relating to the protection of migratory birds and birds in danger of extinction, are declared to be fauna that is need of special protection.

Schedule 4 **Schedule 4 – Other specially protected fauna:** being fauna that is declared to be fauna that is in need of special protection, otherwise than for the reasons mentioned in Schedules 1, 2 or 3.

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

P1 **Priority One: Taxa with few, poorly known populations on threatened lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, active mineral leases. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P2 **Priority Two: Taxa with few, poorly known populations on conservation lands**: Taxa which are known from few specimens or sight records from one or a few localities on lands not under immediate threat of habitat destruction or degradation, e.g. national parks, conservation parks, nature reserves, State forest, vacant Crown land, water reserves, etc. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P3 **Priority Three: Taxa with several, poorly known populations, some on conservation lands**: Taxa which are known from few specimens or sight records from several localities, some of which are on lands not under immediate threat of habitat destruction or degradation. The taxon needs urgent survey and evaluation of conservation status before consideration can be given to declaration as threatened fauna.

P4 **Priority Four: Taxa in need of monitoring**: Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. These taxa are usually represented on conservation lands.

P5 **Priority Five: Taxa in need of monitoring**: Taxa which are not considered threatened but are subject to a specific conservation program, the cessation of which would result in the species becoming threatened within five years.

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

EX **Extinct:** A native species for which there is no reasonable doubt that the last member of the species has died.

EX(W) **Extinct in the wild:** A native species which:
(a) is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
(b) has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

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

EN **Endangered:** A native species which:
(a) is not critically endangered; and
(b) is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.

VU **Vulnerable:** A native species which:
(a) is not critically endangered or endangered; and
(b) is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

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