



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 7030/1
File Number: DER20106/000571-1
Duration of Permit: From 8 October 2016 to 8 October 2019

PERMIT HOLDER

Alcoa of Australia Limited

LAND ON WHICH CLEARING IS TO BE DONE

Lot 700 on Deposited Plan 59305, Wagerup

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than nine hectares of native vegetation within the area hatched yellow on attached Plan 7030/1a.

CONDITIONS

1. Dieback and weed control

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

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

2. Revegetation

The Permit Holder shall establish and maintain native vegetation within the area cross-hatched red on attached Plan 7030/1b in accordance with the following conditions:

- (a) The vegetation shall be established and maintained with low local native shrubs.
- (b) The planting is to commence before 8 October 2017.

DEFINITIONS

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

dieback means the effect of *Phytophthora* species on native vegetation;

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

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

weed/s means any plant -

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

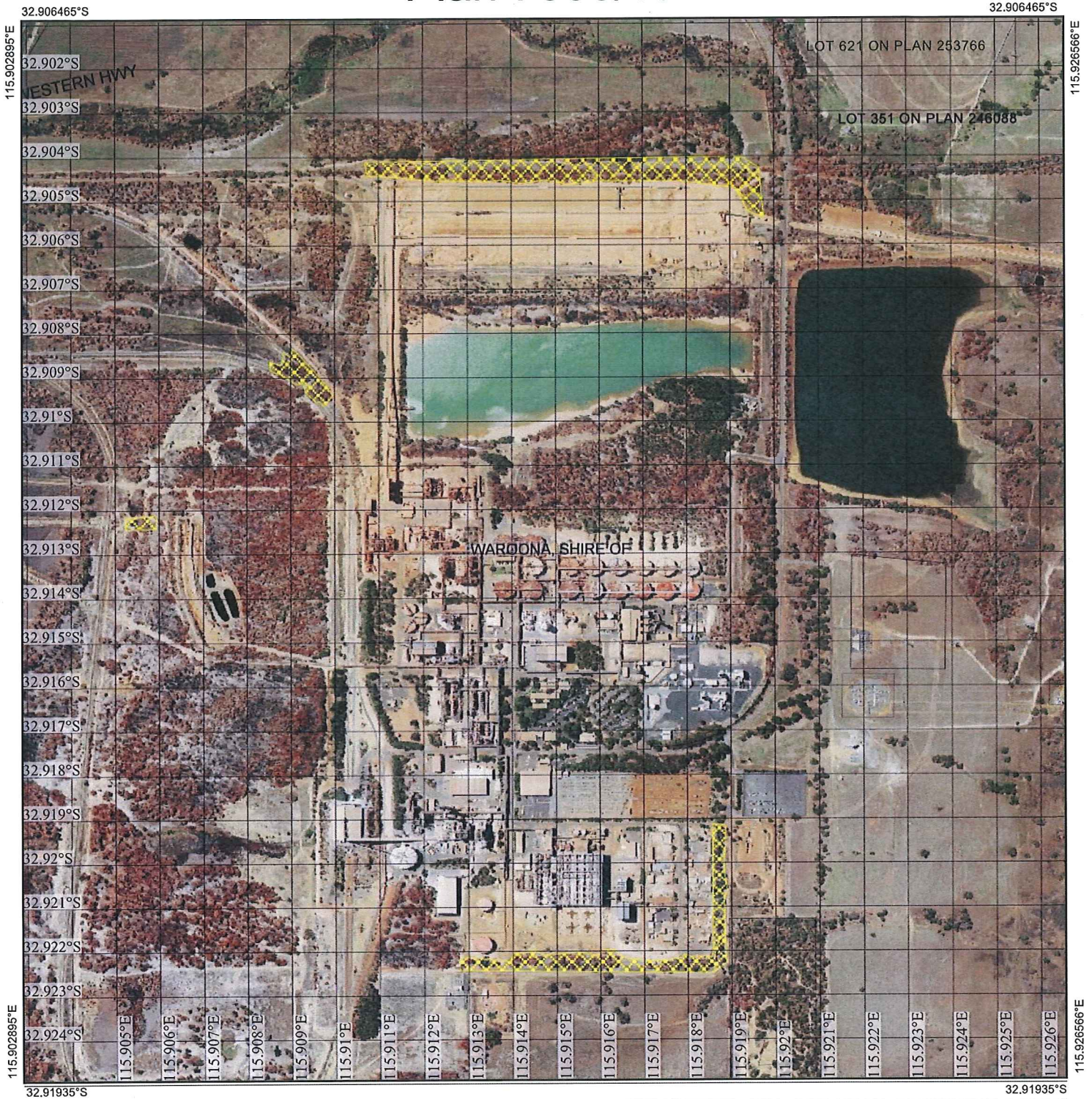


Emma Bramwell
A/ MANAGER
CLEARING REGULATION

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

8 September 2016

Plan 7030/1a



Legend

-  Imagery
-  Clearing Instruments Activities
-  Local Government Authority



1:11,729

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

E Branwell Date *08/09/16*
E Branwell

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986



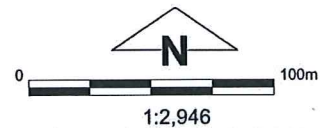
GOVERNMENT OF
 WESTERN AUSTRALIA
 WA Crown Copyright 2016

Plan 7030/1b



Legend

-  Roads
-  Imagery
-  Local Government Authority
-  Clearing Instruments Conditions
-  Cadastre



(Approximate when reproduced at A4)
GDA 94 (Lat/Long)
Geocentric Datum of Australia 1994

E. Bramwell Date 08/09/16
E. Bramwell

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986



1. Application details

1.1. Permit application details

Permit application No.: 7030/1
Permit type: Area Permit

1.2. Applicant details

Applicant's name: Alcoa of Australia Limited

1.3. Property details

Property: LOT 700 ON PLAN 59305, WAGERUP
Colloquial name:
Local Government Authority: WAROONA, SHIRE OF
DER Region: Greater Swan
DPaW District: PERTH HILLS
LCDC:
Localities: WAGERUP

1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
|--------------------|-----------|--------------------|----------------------------------|
| 9 | | Mechanical Removal | Hazard reduction or fire control |

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 8 September 2016
Reasons for Decision: The clearing application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the *Environmental Protection Act 1986*, and the Delegated Officer determined that the proposed clearing may be at variance to clearing principles (d), (e) and (f) and is not likely to be at variance to any of the remaining clearing principles.

A multiple use wetland is mapped over 0.73 hectares of the application area. Given the extent and shape of the proposed clearing and the condition of the vegetation within the application area, it is considered that the proposed clearing is unlikely to have any significant environmental impacts on the values of this wetland.

Part of the application area (Area 4) is located approximately 17 metres from a threatened ecological community (TEC) '*Banksia attenuata* and/or *Eucalyptus marginata* woodlands of the eastern side of the Swan Coastal Plain'. The mapped vegetation types retain less than the recommended 30 per cent threshold. A requirement for a portion of Area 4 to be revegetated with suitable local native shrubs following clearing will minimise the risk of impacts to the TEC and assist in mitigating impacts on highly cleared vegetation types.

Through assessment the Delegated Officer determined that the clearing is unlikely to have any significant environmental impacts. State policies and other relevant policies have been taken into consideration in the decision to grant a clearing permit.

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

| Vegetation Description | Clearing Description | Vegetation Condition | Comment |
|---|---|---|--|
| Mapped Beard vegetation association 3 is described as medium forest; jarrah-marri (Shepherd et al. 2001). | The application proposes to clear nine hectares of native vegetation within Lot 700 on Deposited Plan 59305, Wagerup, for the purpose of bush fire risk management. | Good: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery 1994). | The condition and description of the vegetation within the application area was determined by a site inspection undertaken by officers of the Department of Environment Regulation (DER): <ul style="list-style-type: none"> Area 1 (5.023 hectares) is located adjacent to Willowdale Road and consists of <i>Eucalyptus marginata</i> (jarrah) over mixed shrub species and an area of individual jarrah over cleared understorey (DER 2016). This area is in a completely degraded to degraded (Keighery 1994) condition, the majority in a completely |
| Mapped Heddle vegetation Forrestfield complex is comprised of open forest and fringing woodland | | To Completely Degraded: No longer intact; | |

(Heddle et al. 1980).

Mapped Heddle vegetation Guildford complex is comprised of open forest to tall open forest and woodland (Heddle et al. 1980).

completely/almost completely without native species (Keighery 1994)

- degraded (Keighery 1994) condition.
- Area 2 (0.73 hectares) is located between a railway line and installed pipelines and consists of jarrah and *Corymbia calophylla* (marri) over a completely degraded (Keighery 1994) understorey, scattered *Xanthorrhoea* sp. were observed throughout the understorey (DER 2016).
- Area 3 (0.2 hectares) consists of a small area of completely degraded to degraded (Keighery 1994) native vegetation consisting of *Banksia attenuata* and jarrah over weeds. No understorey is present (DER 2016).
- Area 4 (three hectares) is located south of the refinery infrastructure and consists of Jarrah and marri over a completely degraded (Keighery 1994) understorey. Within the northern portion of this area the application area contained a distinct midstorey including *Adenanthos sericeus*, *Xanthorrhoea* sp. and some non-native planted species in a degraded to good (Keighery 1994) condition (DER 2016).

3. Assessment of application against clearing principles

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

Comments

Proposed clearing is not likely to be at variance to this Principle

The application is for the clearing nine hectares of native vegetation within Lot 700 on Deposited Plan 59305, Wagerup, for the purpose of bush fire risk management. The proposed clearing is to improve separation zones between native vegetation growing within the refinery industrial zone from neighbouring bushlands so as to create improved bushfire prevention zones. The application area comprises four distinct areas being:

- Area 1 (5.023 hectares) is located adjacent to Willowdale Road and consists of *Eucalyptus marginata* (jarrah) over mixed shrub species and an area of individual jarrah over cleared understorey (DER 2016). This area is in a completely degraded to degraded (Keighery 1994) condition, the majority in a completely degraded (Keighery 1994) condition.
- Area 2 (0.73 hectares) is located between a railway line and installed pipelines and consists of jarrah and *Corymbia calophylla* (marri) over a completely degraded (Keighery 1994) understorey, scattered *Xanthorrhoea* sp. were observed throughout the understorey (DER 2016).
- Area 3 (0.2 hectares) consists of a small area of completely degraded to degraded (Keighery 1994) native vegetation consisting of *Banksia attenuata* and jarrah over weeds. No understorey is present (DER 2016).
- Area 4 (three hectares) is located south of the refinery infrastructure and consists of Jarrah and marri over a completely degraded (Keighery 1994) understorey. Within the northern portion of this area the application area contained a distinct midstorey including *Adenanthos sericeus*, *Xanthorrhoea* sp. and some non-native planted species in a degraded to good (Keighery 1994) condition (DER 2016).

The vegetation within the application area was impacted by the January 2016 Waroona/Yarloop fires. Vegetation communities have the ability to regenerate following natural disturbance events such as fire and with time the environmental values of the application area are likely to return. Therefore, taking into consideration the site's ability to regenerate, the following assessment is based on its pre fire condition.

The vegetation within the application area is considered to be in a completely degraded to good (Keighery 1994) condition. The majority of the vegetation within the application area is considered to be in a completely degraded to degraded (Keighery 1994) condition, lacking native understorey species (DER 2016). The application area is located within the footprint of the Alcoa Wagerup Refinery, and the vegetation has been impacted by the current land use and is located adjacent to roads and infrastructure. The application area has been previously grazed prior to the current land use.

Eight fauna species listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* have been recorded within the local area (10 kilometre radius) (Parks and Wildlife 2007-). Noting the extent and shape of the proposed clearing and the type and condition of the vegetation, it is considered that the proposed clearing is unlikely to impact on significant habitat for indigenous fauna including species of conservation significance. Suitable habitat for these species is present within Dwellingup State Forest, located east of the application area.

Six rare flora and 18 priority flora species have been recorded within the local area. Noting the extent and shape of the proposed clearing and the type and condition of the vegetation, it is considered that the application area is unlikely to include rare flora and that the proposed clearing is unlikely to have a significant impact on the conservation status of priority flora.

Seven threatened ecological communities (TEC) have been recorded within the local area, the closest being 'Banksia attenuata and/or Eucalyptus marginata woodlands of the eastern side of the Swan Coastal Plain' located approximately 17 metres from the application area. The strip of vegetation between the TEC and the refinery infrastructure (being Area 4) is in degraded (Keighery 1994) condition. The Department of Parks and Wildlife (2016) advised that given the relatively close proximity of the application area to the TEC, the vegetation is likely to provide protection to the TEC from impacts of dust, hydrological change, weed invasion and increased wind speed (Parks and Wildlife 2016). On this basis it is considered that the proposed clearing may impact on this TEC.

Areas 1, 3 and 4 are located between infrastructure and/or roads and remnant vegetation. It is considered that the proposed clearing may indirectly impact on adjacent vegetation through the spread of weeds and dieback.

The proposed clearing may impact upon a TEC, however noting the condition of the vegetation and that the application area is unlikely to comprise significant fauna habitat and is unlikely to contain rare or priority flora, it is considered that the application area is unlikely to comprise a high level of biological diversity.

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

A requirement for a portion of Area 4 to be revegetated with local native shrubs following clearing will minimise the risk of impacts to this TEC. Weed and dieback management practices will help mitigate the risk of spread of weeds and dieback into adjacent vegetation.

Methodology

References:

DER (2016)
Keighery (1994)
Parks and Wildlife (2007-)
Parks and Wildlife (2016)

GIS Datasets:

SAC Bio Datasets – accessed June 2016

(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

Proposed clearing is not likely to be at variance to this Principle

The vegetation within the application area is considered to be in a completely degraded to good (Keighery 1994) condition. The majority of the vegetation within the application area is considered to be in a completely degraded to degraded (Keighery 1994) condition, lacking native understorey species (DER 2016). Area 2 of the application area is located within a mapped multiple use wetland. Area 2 is approximately 0.73 hectares in size, and the vegetation comprises jarrah and marri over a completely degraded (Keighery 1994) understorey with scattered *Xanthorrhoea* sp. throughout (DER 2016). A site inspection undertaken by DER officers did not identify any riparian vegetation within the application area (DER 2016).

Eight fauna species listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* have been recorded within the local area (10 kilometre radius) being: noisy scrub bird (*Atrichornis clamosus*), forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), southern brush-tailed phascogale, (*Phascogale tapoatafa* subsp. *tapoatafa*), quokka (*Setonix brachyurus*), chuditch (*Dasyurus geoffroi*) and numbat (*Myrmecobius fasciatus*) (Parks and Wildlife 2007-).

Carnaby's cockatoo is listed as endangered and Baudin's cockatoo and forest red-tailed cockatoo are listed as vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Black cockatoos breed in large hollow-bearing trees, generally within woodlands or forests or in isolated trees. These species nest in hollows in live or dead trees of karri, marri, wandoo, tuart, salmon gum, jarrah, flooded gum, York gum, powderbark, bullich and blackbutt. Black cockatoos have a preference for feeding habitat that includes jarrah and marri woodlands and forest heathland and woodland dominated by proteaceous plant species such as *Banksia* sp., *Hakea* sp. and *Grevillea* sp. (Commonwealth of Australia 2012). The application area contains some jarrah and marri species that could potentially provide nesting habitat for the black cockatoo species, however a site inspection undertaken by DER did not identify any trees with hollows suitable for breeding by the black cockatoo species (DER 2016). Vegetation within the application area may provide foraging habitat for the black cockatoo species, however noting the extent and shape of the proposed clearing, proximity to refinery infrastructure and previous disturbance, it is considered that the application area is unlikely to comprise of significant foraging habitat for this species.

The chuditch inhabits most kinds of wooded habitat within its current range including eucalypt forest (especially jarrah, dry woodland and mallee shrublands). In jarrah forest, chuditch populations occur in both moist, densely vegetated, steeply sloping forest and drier, open, gently sloping forest (Department of the Environment 2016a). Noting the extent and shape of the proposed clearing and the type and condition of the vegetation, it is considered that the application area is unlikely to comprise significant habitat for this species.

In southwest Western Australia brush-tailed phascogale has been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees (Parks and Wildlife 2012). Large eucalypts present within the application area may provide suitable habitat for this species.

The remaining populations of the numbat are in eucalypt forests and woodlands dominated by jarrah, marri and wandoo. Noting the extent and shape of the proposed clearing and the type and condition of the vegetation, it is considered that the application area is unlikely to contain significant habitat for this species.

The noisy scrub bird inhabits ecological communities that support a dense understorey or lower stratum of sedges and shrubs, a dense accumulation of leaf litter and an abundant population of litter-dwelling invertebrate. This species mainly occurs in low closed forests that are dominated by *Eucalyptus* sp. or *Agonis flexuosa* and *Banksia littoralis* and occur in the steep and wetter gullies, and drainage lines of hills and granite mountains, and on the margins of freshwater lakes (Department of the Environment 2016b). Noting the type and condition of the vegetation within the application area, it is considered that significant habitat for this species is unlikely to be present within the application area.

The quokka's main habitat for mainland populations is dense riparian vegetation (Department of the Environment 2016c). Noting the condition of the vegetation, the extent of the proposed clearing within Area 2 (multiple use wetland) and that no riparian vegetation was found within the application area, it is considered that significant habitat for this species is unlikely to be present within the application area.

Noting the type and condition of the vegetation within the application area, the extent and shape of the proposed clearing, the proximity of the application area to refinery infrastructure, and the presence of habitat in similar or better condition within Dwellingup State Forest located east of the application area, it is considered that the application area is unlikely to comprise significant habitat for indigenous fauna.

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

Methodology **References:**
Department of the Environment (2016a)
Department of the Environment (2016b)
Department of the Environment (2016c)
DER (2016)
Keighery (1994)
Parks and Wildlife (2007-)
Parks and Wildlife (2012)

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

Comments **Proposed clearing is not likely to be at variance to this Principle**
Six rare flora species have been recorded within the local area (10 kilometre radius), the closest being recorded approximately 100 metres from the application area.

Four of the six rare flora species recorded within the local area are associated with winter-wet areas from similar soil and vegetation types as found within Area 2 of the application area (Western Australian Herbarium 1998-; Brown et al. 1998). Area 2 is located within a mapped multiple use wetland. Area 2 is approximately 0.73 hectares in size, and the vegetation comprised jarrah and marri over a completely degraded (Keighery 1994) understorey with scattered *Xanthorrhoea* sp. throughout (DER 2016). A site inspection undertaken by DER officers did not identify any riparian vegetation within the application area (DER 2016). Noting the condition of the vegetation and the extent of the proposed clearing within Area 2, it is considered that the application area is unlikely to contain suitable habitat for these four rare flora species associated with winter-wet areas.

Two of the six rare flora species recorded within the local area are associated with sandy soils and sheoak and jarrah or jarrah and banksia woodland (Western Australian Herbarium 1998-; Brown et al. 1998). Noting the condition of the vegetation within the application area and the shape and extent of the proposed clearing, it is considered that the application area is unlikely to contain suitable habitat for these two rare flora species.

On the basis of the above, it is considered that the application area is unlikely to be necessary for the continued existence of rare flora.

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

Methodology **References:**
Brown et al. (1998)
Keighery (1994)
Western Australian Herbarium (1998-)

GIS Datasets
SAC Bio Datasets – accessed June 2016

(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

Proposed clearing may be at variance to this Principle

Seven threatened ecological communities (TEC) have been recorded within the local area (10 kilometre radius), the closest being '*Banksia attenuata* and/or *Eucalyptus marginata* woodlands of the eastern side of the Swan Coastal Plain' located approximately 17 metres from Area 4 of the application area. The application area is separated from this TEC by a cleared firebreak.

There are approximately 40 occurrences of this TEC currently mapped, covering a total area 293 hectares. The TEC located adjacent to Area 4 is approximately 5.5 hectares in size.

Area 4 is located between the TEC and the refinery infrastructure, and consists of vegetation in a completely degraded to good (Keighery 1994) condition (DER 2016). The Department of Parks and Wildlife (Parks and Wildlife) advised that given the relatively close proximity of this area to the TEC, the vegetation is likely to provide protection to the TEC from impacts of dust, hydrological change, weed invasion and increased wind speed. Parks and Wildlife advised that there is a minimum of about 15 metres of mainly vegetated land between the TEC and the application area (Parks and Wildlife 2016). On this basis it is considered that Area 4 may be necessary for the maintenance of the TEC.

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

A requirement for a portion of Area 4 to be planted with suitable local native shrubs will minimise the risk to the TEC while still addressing the need for reduced fire risk to adjacent infrastructure.

Methodology

References:

DER (2016)

Keighery (1994)

Parks and Wildlife (2016)

GIS Datasets

SAC Bio Datasets – accessed June 2016

(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

Proposed clearing may be at variance to this Principle

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 percent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia 2001).

The application area is located within the Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. This IBRA bioregion has approximately 39 per cent of its pre-European vegetation extent remaining (Government of Western Australia 2015).

The application area is located within Shire of Waroona, within which there is approximately 54 per cent pre-European vegetation extent remaining (Government of Western Australia 2015). The local area (10 kilometre radius) retains approximately 40 per cent vegetation.

The application area is mapped as Beard vegetation association 3 and Hedde vegetation complexes Forrestfield and Guildford, of which there is approximately 18, 12 and 5 per cent respectively of the pre-European vegetation extents remaining within the Swan Coastal Plain bioregion (Government of Western Australia 2015). On this basis the mapped vegetation types retain less than the recommended 30 per cent threshold and therefore the application area is considered to be in an extensively cleared area.

The majority of the vegetation within the application area is considered to be in a completely degraded to degraded (Keighery 1994) condition (DER 2016). The application area is unlikely to comprise a high level of biological diversity or significant habitat for indigenous fauna, and is unlikely to be necessary for the continued existence of rare and priority flora. Area 2 of the application area is located within a mapped multiple use wetland, however no riparian vegetation was identified within the application area (DER 2016). Area 4 of the application area includes vegetation considered to be in good (Keighery 1994) condition which is representative of the mapped vegetation types, and is likely to provide protection to a TEC located east of the application area. On this basis it is considered that Area 4 may be significant as a remnant of native vegetation.

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

A requirement for a portion of Area 4 to be revegetated with suitable local native shrubs will assist in mitigating impacts on highly cleared vegetation types while still addressing the need for reduced fire risk to adjacent infrastructure.

| | Pre-European (ha) | Current Extent (ha) | Remaining (%) | Extent in Parks and Wildlife Managed Lands (%) |
|---|-------------------|---------------------|---------------|--|
| IBRA Bioregion* | | | | |
| Swan Coastal Plain | 1,501,222 | 579,162 | 39 | 37 |
| Shire* | | | | |
| Shire Of Waroona | 83,233 | 44,613 | 54 | 78 |
| Beard vegetation association in Bioregion* | | | | |
| 3 | 17,365 | 3,166 | 18 | 11 |
| Heddl vegetation complex in Bioregion** | | | | |
| Forrestfield complex | 20,168 | 2,337 | 12 | 1 |
| Guildford complex | 92,497 | 4,963 | 5 | 0.4 |

Methodology References:
Commonwealth of Australia (2001)
DER (2016)
Keighery (1994)
*Government of Western Australia (2015)
**Parks and Wildlife (2015)

GIS Datasets:
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 Proposed clearing may be at variance to this clearing to this Principle

A number of watercourses are located within the local area (10 kilometre radius), the closest being located approximately 70 metres from the application area.

Area 2 of the application area is located within a mapped multiple use wetland. Multiple use wetlands have few important ecological attributes and functions remaining (Water and Rivers Commission 2001).

Area 2 is approximately 0.73 hectares in size, and the vegetation comprises jarrah and marri over a completely degraded (Keighery 1994) understorey with scattered *Xanthorrhoea* sp. throughout (DER 2016). A site inspection undertaken by DER officers did not identify any riparian vegetation within the application area (DER 2016).

On the basis of the above it is considered that Area 2 may include vegetation growing in association with a wetland. However given the extent and shape of the proposed clearing and the condition of the vegetation within the application area, it is considered that the proposed clearing is unlikely to have any significant environmental impacts on the values of this wetland.

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

Methodology References:
DER (2016)
Keighery (1994)
Water and Rivers Commission (2001)

GIS Databases:
Hydrology, linear

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

Comments Proposed clearing is not likely to be at variance to this Principle

Two soil types are mapped within the application area (Northcote et al. 1960-68):

- Sp2: gently sloping bench or terrace - the Ridge Hill Shelf: chief soils are hard acidic yellow soils containing ironstone gravels.
- Wd6: Plain: chief soils are sandy acidic yellow mottled soils, some of which contain ironstone gravel.

The topography of the application area is relatively flat.

Areas 2 and 3 of the application area are relatively small in size (0.73 and 0.2 hectares respectively), and it is considered that the proposed clearing within these areas is unlikely to cause appreciable land degradation in the form of wind or water erosion.

Areas 1 and 4 of the application area are linear in shape with the majority of the vegetation in a completely degraded to degraded (Keighery 1994) condition (DER 2016). Area 1 is located between the refinery infrastructure and remnant vegetation. Noting the relatively flat topography, it is considered that the proposed clearing of Areas 1 and 4 is unlikely to cause appreciable land degradation in the form of wind or water erosion.

Groundwater salinity is mapped between 500-1,000 total dissolved solids (milligrams per litres). Given that the application area comprises four areas and that the majority of the vegetation is considered to be in a completely degraded to degraded (Keighery 1994) condition, and noting that the local area retains approximately 40 per cent vegetation cover, it is considered that the proposed clearing is unlikely to contribute to the rise of groundwater or cause land degradation in the form of salinity.

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

Methodology References:
DER (2016)
Keighery (1994)
Northcote, et al. (1960-68)

GIS Datasets:
Groundwater Salinity 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 Proposed clearing is not likely to be at variance to this Principle

No conservation areas have been mapped within the application area. The closest conservation area is Dwellingup State Forest, located approximately two kilometres east of the application area.

No ecological linkages are expected to be impacted by the proposed clearing.

Given the distance to the closest conservation area, it is considered that the proposed clearing is unlikely to have an impact upon the environmental values of any nearby conservation areas.

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

Methodology GIS Datasets:
Parks and Wildlife 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 Proposed clearing is not likely to be at variance to this Principle

Area 2 of the application area is located within a mapped multiple use wetland. A number of watercourses are located within the local area (10 kilometre radius) the closest being located approximately 70 metres from the application area. Area 2 is approximately 0.73 hectares in size. A site inspection undertaken by DER officers did not identify any riparian vegetation within the application area (DER 2016). Given the relatively small size of Area 2 (multiple use wetland) and the distance between the application area and the closest watercourse, it is considered that the proposed clearing is unlikely to cause deterioration in the quality of surface water.

Groundwater salinity is mapped between 500-1,000 total dissolved solids (milligrams per litres). The mapped soil types are sandy (Northcote et al. 1960-68). On this basis, and noting that the application area comprises four areas and that the majority of the vegetation is considered to be in a completely degraded to degraded (Keighery 1994) condition, it is considered that the proposed clearing is unlikely to cause deterioration in the quality of underground water in the form of salinity.

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

Methodology References:
Keighery (1994)
Northcote et al. (1960-68)

GIS Datasets:
Groundwater Salinity Statewide
Hydrography linear
Topographic contours

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

Comments Proposed clearing is not likely to be at variance to this Principle

The mapped soil types are sandy (Northcote et al. 1960-68). On this basis, and noting the application area comprises four areas and that the majority of the vegetation is considered to be in a completely degraded to degraded (Keighery 1994) condition, it is considered that the proposed clearing is unlikely to cause or exacerbate flooding.

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

Methodology References:
Keighery (1994)
Northcote et al. (1960-68)

GIS Datasets:
Soils, statewide

Planning instruments and other relevant matters.

Comments One Aboriginal Site of Significance has been mapped within the application area. The applicant will be notified of their obligations under the *Aboriginal Heritage Act 1972*.

On 16 May 2016 the application was advertised in *The West Australian* newspaper for a 21-day submission period. No submissions have been received in relation to this application.

Methodology GIS Datasets:
Aboriginal Sites of Significance

4. References

- Brown, A., Thomson-Dans, C. and Marchant, N. (1998) *Western Australia's Threatened Flora*, Department of Conservation and Land Management, Western Australia.
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