

MicroZinc Pty Ltd

Clearing Permit Application - Supporting Information

Lot 77 Wellard Road, Leda, WA



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Abbreviations

Abbreviation	Description
BFS	Bush Forever Site
DBCA	Department of Biodiversity, Conservation and Attractions
DWER	Department of Water and Environmental Regulation
DGs	Dangerous goods
IBC	Intermediate bulk container
kl	Kilolitre, 10 ³ litres, also known as a cubic metre
LPA	Local Planning Area
LPP	Local Planning Policy
mAHD	Metres above Australian height datum (mean sea level)
mbgl	Metres below ground level
m	Metres
m ²	Square metre
m ³	Cubic metre
SCP	Swan Coastal Plain

Glossary of Terms

Vegetation Condition Scale	South West and Interzone Botanical Provinces ¹
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the

¹ Vegetation Condition Scale – adapted from Keighery 1994 and Trudgen 1988

Vegetation Condition Scale	South West and Interzone Botanical Provinces ¹
	presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.

1. Purpose for which clearing is proposed

Construction of 600m² nutrient recovery facility (Site 1) and development of 7400m² vetiver (*Chrysopogon zizanioides*) reed bed (Site 2), refer to Figure 1.

2. Land on which clearing is to be done

Lot 77 on Deposited Plan D06818377, Leda, 6170 [32.2563°S, 115.7883°E]

3. Area of Clearing

Clearing proposed on two (2) parcels of land

- Site 1 – approximately 600m²
- Site 2 (north section) – approximately 600m²

0.12 hectares of regrowth native vegetation within the area delineated on attached Figure 2 and Figure 3.

4. Method of Clearing

Mechanical removal for the purpose of facility development

5. Application

The permit is to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of the permit subject to compliance with the conditions of the permit.

6. Type of Clearing

To clear native vegetation for the activities described.

7. Dieback and Weed Control

The clearing activities will be undertaken with the aim to minimise the risk of introduction and spread of weeds and dieback by:

- a) Using earth-moving machinery clean of off-site soil and vegetation;
- b) Ensuring that no dieback or weed-affected soil, mulch, fill or other material is brought into the area to be cleared; and
- c) Restricting the movement of machines and other vehicles to the limits of the area to be cleared.

8. Site Information

Based on City of Kwinana Intramaps historical aerial photographs, Lot 77 was used as farming land as far back as 1953. Partial regrowth occurred between 1974 and 1979 when the site was cleared again.

Site 1 remained cleared until 2001, when regrowth was noticeable. Site 2 remained clear until 1995, when regrowth was noticeable.

Site 2 is a former dump area, storing approximately 4,000m³ of limestone.



Figure 1 Site Layout with Locations of Site 1 and Site 2 Indicated



Figure 2 Site 1, 600m2 mainly weed grasses and trees



Figure 3 Site 2, 7400m² parcel requiring clearing of 600m² regrowth *Acacia*

Regrowth in the northern section of Site 2 is essentially a monoculture of *Acacia rostellifera* (Coojong).

9. Existing Environment and Information

Table 1 Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
Mapped Beard vegetation association 998 is described as Medium forest jarrah-marri (Shepherd et al, 2001) Heddle vegetation complex: Quindalup Complex – coastal dune complex consisting mainly of two alliances – the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the closed scrub of <i>Acacia rostellifera</i>	Facility development – clearing of 600m² of understorey weeds and diseased trees	Degraded: Basic vegetation structure severely impacted by disturbance. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing (Keighery 1994).	Application proposes to clear: 600m² of weed grass species and dead/diseased jarrah tree trunks for development of processing pad
Mapped Beard vegetation association 998 is described as Medium forest jarrah-marri (Shepherd et al, 2001) Heddle vegetation complex: Quindalup Complex – coastal dune complex consisting mainly of two alliances – the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the closed scrub of <i>Acacia rostellifera</i>	Vetiver reed bed development – clearing of 600m² of <i>Acacia rostellifera</i> monoculture regrowth	Completely Degraded: The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as ‘parkland cleared’ with the flora comprising weed or crop species with isolated native trees and shrubs.	Application proposes to clear: 600m² of <i>Acacia rostellifera</i> monoculture for development of vetiver reed bed.

10. 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 not likely to be at variance to this principle

The application proposes to clear up to 0.12 hectares of native vegetation within Lot 77 Wellard Road, Leda for the purpose of agricultural development. The application is for the clearing of regrowth native vegetation.

The vegetation within the application area consists predominantly of regrowth Acacia with an understorey of grassy weeds. The vegetation is either degraded or completely degraded (Keighery 1994) condition.

Numerous species listed as rarer or likely to become extinct under the Wildlife Conservation Act 1950 have been recorded within the local area (10 kilometre radius). Most notable are:

- *Calyptorhynchus latirostris* (Carnaby's cockatoo);
- *Calyptorhynchus baudinii* (Baudin's cockatoo); and
- *Calyptorhynchus banksia* (Forest red-tailed black cockatoo).

These black cockatoo species nest in large hollows of mature eucalyptus trees and forage on the seeds, nuts and flowers of a large variety of plants including proteaceous species, as well as *Allocasuarina* sp., *Eucalyptus* p., and a range of introduced species (Valentine and Stock, 2008). Several large, potential habitat trees were observed in close proximity to the application area. No large hollow trees were observed within the application area.

The vegetation under application may provide limited foraging habitat for these species, however, well vegetated areas surround the application area (northern section of Bush Forever Site (BFS) 349, vacant crown land). The degraded condition of the vegetation and the relatively small size of the proposed clearing area indicate that the vegetation under application represents a minor foraging habitat for these species (refer to Figure 6).

The application area does not form any part of the nearby Resource Enhanced wetland area.

The northern section of the Bush Forever Site 349 – Leda Bushland, considered as being in good to very good condition (Keighery 1994), is likely to hold a higher level of biological diversity than the area under application. As such, the native vegetation under application is not likely to comprise a high level of biological diversity.

Methodology:

References: DEC (2007), DEC (2011) Government of Western Australia (2000), Keighery (1994)

GIS Database: Swan Coastal Plain Central 20cm Orthomosaic – Landgate 2009, Pre-European vegetation, SAC Biodatasets

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

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

The vegetation within the application area consists predominantly of regrowth Acacia with an understorey of grassy weeds. The vegetation is either degraded or completely degraded (Keighery 1994) condition.

Numerous species listed as rarer or likely to become extinct under the Wildlife Conservation Act 1950 have been recorded within the local area (10 kilometre radius). Most notable are:

- *Calyptorhynchus latirostris* (Carnaby's cockatoo);
- *Calyptorhynchus baudinii* (Baudin's cockatoo); and
- *Calyptorhynchus banksia* (Forest red-tailed black cockatoo).

These black cockatoo species nest in large hollows of mature eucalyptus trees and forage on the seeds, nuts and flowers of a large variety of plants including proteaceous species, as well as *Allocasuarina* sp., *Eucalyptus* p., and a range of introduced species (Valentine and Stock, 2008). Several large, potential habitat trees were observed in close proximity to the application area. No large hollow trees were observed within the application area.

The vegetation under application may provide limited foraging habitat for these species, however, well vegetated areas surround the application area (Led bushland and Leda Nature Reserve). The degraded condition of the vegetation and the relatively small size of the proposed clearing area indicate that the vegetation under application represents a minor foraging habitat for these species.

The Leda Nature Reserve, considered as being in very good condition (Keighery 1994), is likely to hold a higher level of biological diversity than the area under application. As such, the native vegetation under application is not considered to be significant habitat for indigenous fauna.

Methodology:

References: DEC (2007), DEC (2011) Government of Western Australia (2000), Keighery (1994), Valentine and Stock (2008)

GIS Database: Swan Coastal Plain Central 20cm Orthomosaic – Landgate 2009, Pre-European vegetation, SAC Biodatasets.

- 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

Three species of rare flora have been recorded within the local area (10 kilometre radius).

The vegetation under application contains limited understorey or groundcover and has previously been cleared. The vegetation is unlikely to contain suitable habitat to support flora species of conservation significance.

Methodology:

GIS Database: Pre-European vegetation, SAC Biodatasets.

- 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

There are multiple known records of the threatened ecological community TEC SCP 19b – *Woodlands over Sedgeland in Holocene Dune Swales* (wetlands) within the local area (10 kilometre radius). The wetland area is described as Resource Enhancement wetland - with the closest being approximately 50 metres to the west of the proposed clearing application area.

Based on the previous clearing of the application area and the degraded to completely degraded (Keighery 1994) condition, the application area (refer to Figure 5) does not provide maintenance for a threatened ecological community.

Methodology:

GIS Database: SAC Biodatasets.

- 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 likely to be at variance to this Principle

The vegetation under application has been identified as:

- Beard Vegetation Association 998, of which there is approximately 39 per cent of the pre-European extent remaining; and
- Beard Vegetation Association 3048, of which there is approximately 32 per cent of the pre-European extent remaining

Within the Swan Coastal Plan Interim Biogeographic Regionalisation of Australia (IBRA)².

The local area has approximately 40 per cent native vegetation remaining with the majority located within surrounding reserves (Leda Nature Reserve) and unallocated crown land.

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent of 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level³. The mapped vegetation types in the application area retain more than the 30 per cent threshold.

The application area does not contain a high level of biodiversity and is not significant as a remnant.

	Pre-European	Current Extent	Remaining	DEC Managed
	ha	ha	%	%
IBRA Bioregion*	1,501,209	587,889	39	33
City of Kwinana	11,998	4,705	39	9
BVA Bioregion 998	50,897	19,595	39	41
Quindalup Complex	38,238	18,000	47	5

*Swan Coastal Plain

BVA – Beard Vegetation Association in

Methodology:

References: Commonwealth of Australia (2001), Government of Western Australia (2013), Hopkins et al (2001)

² Government of Western Australia (2013)

³ Commonwealth of Australia (2001)

GIS Database: Local Government Authorities, pre-European vegetation, Swan Coastal Plain Central 20cm Orthomosaic – Landgate (2009), SAC Biodatasets.

- 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 likely to be at variance to this Principle

Lot 77 Wellard Road contains a relatively large portion of what is known as Mead Road wetland. This wetland ranges in category from Resource Enhancement, within the boundaries of Lot 77, to Conservation Category wetland abutting the southern edge of the lot. Three sections of this wetland have also been identified within the 1992 Environmental Protection Policy for Lakes [refer to Figure 5].

The vegetation under application consists of regrowth *Acacia rostellifera*, which has colonised the phosphogypsum stockpile since its creation in the 1980's. The vegetation is not associated with the wetland systems present in the surrounding area, being vertically separated approximately 6 metres from the original ground level and wetland vegetation.

The City of Kwinana Intramaps for Lot 77 Wellard Road, indicates that no part of the clearing application area falls within the Resource Enhancement wetland [refer to Figure 4].

References: City of Kwinana Intramaps

GIS Database: Geomorphic Wetlands, Swan Coastal Plain

- 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 area under application is mapped as soil type B24, which Northcote et al (1960-1968) describes as undulating dune landscape underlain by aeolianite which is frequently exposed; small swales of estuarine deposits are included: chief soils are siliceous sands with smaller areas of brown sands and leached sands in the wetter areas.

The porous nature of the soils within the application area indicates that the site is well drained and is subject to minimal overland surface water flow, minimising the risk of water erosion.

The sandy nature of the soils makes them prone to wind erosion, however, given the degraded condition of the vegetation and the small size of the proposed clearing, it is unlikely that the proposed clearing will cause appreciable land degradation in the form of wind erosion.

The area under application has a low risk of salinity.

References: K. Northcote et al (1960-1968)

GIS Database: Soils Atlas



Figure 4 Lot 77 Wellard Road, REW (Resource Enhancement wetland) areas



Figure 5 Lot 77 Wellard Road, environmentally sensitive areas



Figure 6 Lot 77 Wellard Road, Flora Risk Areas – Ecological Linkages

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

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

The application area is adjacent to (refer to Figure 6) Bush Forever Site 349 – Leda and Adjacent Bushland (Government of Western Australia, 2000) and approximately one kilometre north of the DBCA managed Leda Nature Reserve.

The disturbance caused by the proposed clearing is unlikely to increase the risk of weeds and dieback being introduced/spread in the adjacent conservation reserve. Weed and dieback management will assist in mitigating any impacts.

References: Government of Western Australia 2000

GIS Database: Local Biodiversity Program - Bush Forever

- 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

No part of the clearing application encroaches on the Resource Enhancement wetland area (refer to Figure 4).

References: City of Kwinana Intramaps

GIS Database: Perth Groundwater Atlas

- 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 area immediately surrounding the vegetation is a defined sumpland. The vegetation condition and vertical separation from the surrounding groundwater table and the application area consisting of sandy, porous soils indicates that the application area is well drained and is unlikely to exacerbate the incidence of localised or off-site flooding.

References:

GIS Database: Soils Atlas, Perth Groundwater Atlas

Planning Instrument, Native Title, Previous EPA decision or other matter

The application area does not fall within any Environmentally Sensitive Area (refer to Figure 5) and only has a minor impact on a Flora Risk Area (refer to Figure 6), the area impacted being regrowth *Acacia rostellifera*.

References: Government of Western Australia (2000)

GIS Database: Bush Forever areas, Perth Groundwater Atlas

References

DEC (2007) NatureMap: Mapping Western Australia's Biodiversity

DEC (2011) Site Inspection Report for Clearing Permit Application CPS 4685/1

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