Government of Western Australia
Department of Water and Environmental Regulation

Amendment Notice 1

Licence Number	L6945/1997/13
Licence Holder	Shire of Carnamah
Registered business address	PO Box 80 CARNAMAH WA 6517
File Number:	DEC8363
Prescribed Premises	Category 64: Putrescible landfill (Class II)
Premises	Eneabba Waste Disposal Site Lot 1 on Deposited Plan 409612 Certificate of Title Volume 2920 Folio 189 Mineral Sands Road South
Date of Amendment	8 June 2018

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act and follows.

Date signed: 8 June 2018

Stephen Checker
MANAGER LICENSING (WASTE INDUSTRIES)

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Definitions and interpretation

Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
Annual period	01 January to 31 December each year
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
DWER	Department of Water and Environmental Regulation
Delegated Officer	an officer under section 20 of the EP Act
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review
Licence Holder	Shire of Carnamah
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report.
Risk Event	as described in *Guidance Statement: Risk Assessment*

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

This notice is limited only to an amendment for Category 64 landfill trench construction and landfill extension. No changes to the aspects of the original Licence relating to Category 64 have been requested by the Licence Holder. The Licence Holder has requested in the Amendment Application the concurrent assessment of Clearing so the Clearing assessment has been incorporated into this Amendment Notice.

The following DWER guidance statements have informed the decision made on this amendment*:*

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Land Use Planning (February 2017)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Decision Making (November 2016)*
- *Guidance Statement: Risk Assessment (November 2016)*
- *Guidance Statement: Environmental Siting (November 2016)*

Amendment description

The Licence Holder currently operates the Eneabba landfill site under Existing Licence L6945/1997/13 for the Category 64 Class II unlined putrescible landfill and currently accepts approximately 100 tonnes of putrescible waste per annual period. The landfill site has been operating for approximately 30 years incorporated under a State Agreement Act, the *Mineral Sands (Eneabba) Agreement Act 1975*, with the land tenure being held by Iluka Resources. Iluka has agreed to transfer the land to the Licence Holder along with an additional adjacent parcel of land. The land tenure has been excised from the State Agreement Act. As the land tenure has been finalised, the Licence Holder has applied for a licence amendment to incorporate the whole premises boundary and extend the operation of the landfill to meet future waste disposal requirements.

No changes are proposed to existing landfilling operations as part of the landfill extension. Current landfill management incorporates the use of a trench for waste disposal with overburden and topsoil stockpiled on site for rehabilitation. Rehabilitation is proposed to occur as soon as the trench is full of waste. Trench depth is approximately 6m below ground level, giving an approximate 25m separation from the base of the trench to the highest known water table.

The landfill is unmanned and fenced. No machinery or other infrastructure is kept on site, with plant from the Shire depot in Eneabba used to service the landfill as required. No additional infrastructure or plant is proposed as part of this amendment application

Civil works such as constructing new access roads will be constructed at the landfill as required parallel to the construction of new trenches over time.

Clearing of native vegetation is required to allow construction and operation of the new trenches and associated landfill activities over time. The Licence Holder has applied for the approval of clearing within the licence amendment application.

Amendment history

Table 3 provides the amendment history for L6945/1997/13.

Table 3: Licence amendments

Instrument	Issued	Amendment
L6945/1997/13	29/04/2016	Extend licence expiry to 22 August 2026
L6945/1997/13	Draft	Amend premises boundary to extend landfill and allow construction of new landfill trenches including clearing of native vegetation.

Location and receptors

Table 4 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 4: Receptors and distance from activity boundary

Residential and sensitive premises	Distance from Prescribed Premises
Eneabba Townsite residential premises	3045m north

Table 5 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 5: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Eneabba Water Reserve – P1	3.8km north
Arrowsmith Creek	25km north
Eneabba Creek	4.5km north

Risk assessment

Tables 6 and 7 below describe the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

Table 6: Risk assessment for proposed amendments during construction

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Potential adverse impacts**				
Cat 64 Class II unlined putrescible landfill	Construction new landfill trench	Dust: associated with construction of trench	Residential premises 3045m north	Air / wind dispersion	Health and amenity impacts	N/A	N/A	N/A	No receptor present. The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of dust emissions as not foreseeable. Dust can be adequately regulated by section 49 of the EP Act.
		Noise: associated with construction of trench	Residential premises 3045m north	Air / wind dispersion	Amenity impacts causing nuisance	N/A	N/A	N/A	No receptor present. The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of noise emissions as not foreseeable. Noise can be adequately regulated by the Noise Regulations.

Table 7: Risk assessment for proposed amendments during operation

Risk Event						Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Potential adverse impacts**				
Cat 64 Class II unlined putrescible landfill	Operation new landfill trench	Dust: associated with delivery, disposal and compaction of putrescible waste	Residential premises 3045m north	Air / wind dispersion	Health and amenity impacts	N/A	N/A	N/A	No receptor present. The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of dust emissions as not foreseeable. Dust can be adequately regulated by section 49 of the EP Act. No additional conditions are required on the licence as a result of the amendment application.
		Noise: associated with delivery, disposal and compaction of putrescible waste	Residential premises 3045m north	Air / wind dispersion	Amenity impacts causing nuisance	N/A	N/A	N/A	No receptor present. The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of noise emissions as not foreseeable. Noise can be adequately regulated by the Noise Regulations.
		Leachate**:** decomposing of putrescible waste	Groundwater with beneficial use (Groundwater Dependent Ecosystem)	Seepage of leachate	Adverse impacts to the health and survival of vegetation dependent upon groundwater	N/A	N/A	N/A	No receptor present. The Licence Holder disposes less than 100 tonnes of putrescible waste per annual period and depth to groundwater is greater than 30m below the maximum depth of the trench (the maximum depth of the trench is 6m below ground level). The Delegated Officer has

									considered the separation distance between the source and receptors as a guide to inform the risk of leachate emissions as not foreseeable. No additional conditions are required on the licence as a result of the amendment application.
		Odour*: associated with disposal and decomposing of putrescible waste*	Residential premises 3045m north	Air / wind dispersion	Health and amenity impacts	N/A	N/A	N/A	No receptor present. The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of odour emissions as not foreseeable. Odour can be adequately regulated by section 49 of the EP Act. No additional conditions are required on the licence as a result of the amendment application.
		Stormwater: contamination with leachate (metals, heavy metals and organics) associated with disposal and decomposing of putrescible waste	Eneabba Water Reserve 3.8km north Arrowsmith Creek 25km north Eneabba Creek 4.5km north	Overflow into surface water creeks / rivers and infiltration into groundwater	Adverse impacts to the health and survival of vegetation, flora and fauna dependent upon surface water and groundwater	N/A	N/A	N/A	No receptor present. Contaminated stormwater within the trench will not overflow from the trench as it is 6m deep. The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of contaminated stormwater emissions as not foreseeable. No additional conditions are required on the licence as a result of the amendment application.

Decision

The Delegated Officer has determined that an amendment be made to the Licence to extend the landfill premises and authorise construction and operation of new landfill trenches.

The Delegated Officer considers the amended conditions as appropriate and in line with other premises as assessed across the State, and in accordance with DWER's regulatory approach.

The Premises1 map has been amended to incorporate the new premises boundary.

Licence condition G1(b) and G1(c) have been included to detail the approved work requirements for each new putrescible landfill trench at the Premises resulting from the amendment application.

Licence condition G7(b) (vi) has been amended to ensure that a updated map identifying each new trench constructed during the annual period is submitted to DWER in the Annual Environmental Report after construction of a new trench has been completed.

Licence conditions C1 to C3 relating to the clearing of native vegetation have been included. DWER's assessment and decision making in relation to this matter is detailed in the assessment report in Appendix 3. Definitions relating to these conditions have also been included.

The Delegated Officer has considered DWER's *Guidance Statement: Regulatory Principles, Guidance Statement: Setting Conditions* and *Guidance Statement: Risk Assessment* in granting this amendment, and does not consider that this amendment will impact the risk profile of the premises, which is currently considered as Low.

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 21 May 2018. The Licence Holder provided a response to the draft Amendment Notice on 6 June 2018 advising they had no comments.

Amendment

1. The 'Definitions' section of the Licence is amended by the insertion of the following terms:

CEO means the Chief Executive Officer of the Department responsible for administering the *Environmental Protect Act 1986;*

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

environmental specialist: means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Licence, or who is approved by the CEO as a suitable environmental specialist.

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

local provenance means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.
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;

optimal time means the period from April to May for undertaking *direct seeding*, and the period from May to June for undertaking *planting*;

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

regenerate/ed/ion means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing *mulch*;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area;

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.

2. The Licence is amended by the insertion of condition G1(b) below:

G1(b) The Licence Holder must construct the works for the infrastructure and equipment:
(i) specified in Column 1,
(ii) to the requirements specified in Column 2,
detailed in Table 1.1.1.

Table 1.1.1 Work requirements for Premises

Column 1	Column 2
Site Infrastructure	Requirements
New Putrescible Landfill Trench	The Licence Holder must ensure that the Landfill Trench: 1. is not constructed within 35m of the premises boundary; 2. is constructed so that the base of the trench is not more than 6m below natural ground level; 3. incorporates earthen bunds to mitigate inflow of stormwater runoff into the trench; and 4. is constructed such that overburden and topsoil excavated during construction is retained in a cleared area onsite for use in the future rehabilitation of the trench.

3. The Licence is amended by the insertion of condition G1(c) below:

G1(c) The Licence Holder must not depart from the requirements in Column 2 of Table 1.1.1 except;
(i) where such departure is minor in nature and does not materially change or affect the infrastructure; or
(ii) where such departure improves the functionality of the infrastructure and reduces the risk to public health and the environment; and
(iii) and all other conditions in this Licence are still satisfied.

4. Condition G7 (b) (vi) of the Licence is amended by the deletion of the text shown in strikethrough below and the insertion of the red text shown in underline below:

G7(b) (vi) Provide a detailed site cadaster plan that includes but is not limited to site boundaries, former ~~and~~ landfill cell locations , the location of any new landfill cells constructed during the Annual period ~~future cell locations~~ and monitoring bores in the region.

5. The Licence is amended by the insertion of Clearing conditions C1 to C3 below:

C1 Clearing authorised
The works approval holder shall not clear more than 10 hectares of native vegetation within the area cross-hatched yellow on Plan 7606/1 as shown in Attachment 1.

C2 The Licence Holder shall:
(a) retain the vegetative material and topsoil removed by clearing authorised under this Licence and stockpile the vegetative material and topsoil in an area that has already been cleared.

(b) at an *optimal time* following clearing authorised under this Permit, *revegetate* and *rehabilitate* the area(s) that are no longer required for the purpose for which they were cleared under this Permit by:
  (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land; and
  (ii) laying the vegetative material and topsoil retained under condition C2(a) on the cleared area(s).

(c) within 18 months of laying the vegetative material and topsoil on the cleared area in accordance with condition C2(b) of this Permit:
  (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
  (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition C2(c)(i) of this Licence will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.

(d) where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition C2(c)(ii) of this Licence, the Licence Holder shall repeat condition C2(c)(i) and C2(c)(ii) within 18 months of undertaking the additional *planting* or *direct seeding* of native vegetation.

(e) where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in condition C2(c)(i) and (ii) of this Licence, that determination shall be submitted for the CEO's consideration. If the CEO does not agree with the determination made under condition C2(c)(ii), the CEO may require the Licence Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition C2(c)(ii).

C3 Weed control

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

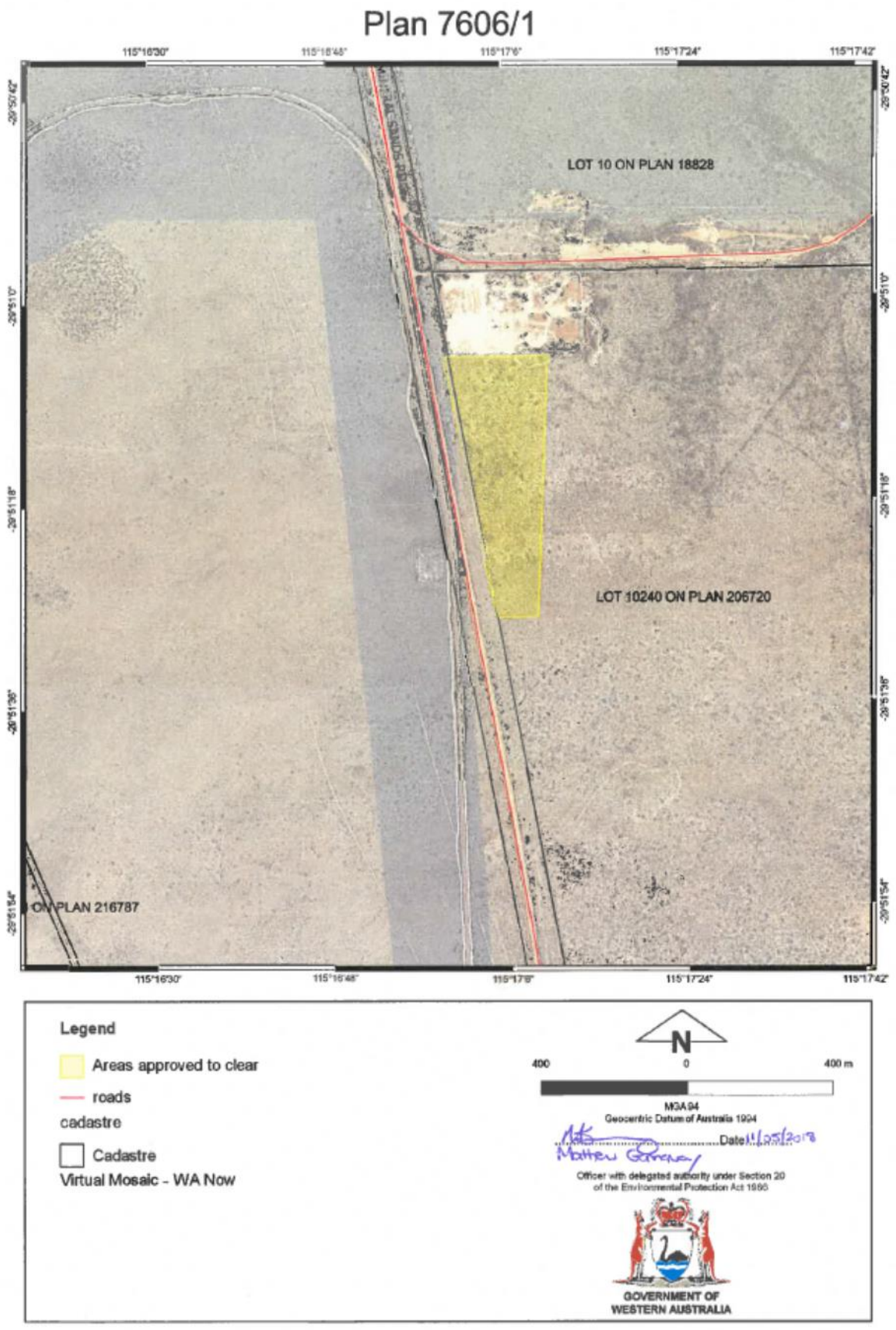
(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
(b) ensure that no weed-affected soil, mulch, fill or other material is brought into the area to be cleared; and
(c) restrict the movement of machines and other vehicles to the limits of the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

6. Attachment 1 of the Licence is amended by the replacement of the Premises boundary map and the inclusion of Plan 7606/1 as shown over:

Attachment 1

The Premises is shown in the map below, the red line depicts the premises boundary.

The area authorised to be cleared is shown in yellow hatching in Plan 7606/1 below.



Appendix 1: Key documents

	Document title	In text ref	Availability
1	Licence L6945/1997/13 – Eneabba Waste Disposal Site	L6945/1997/13	accessed at www.dwer.wa.gov.au
2	Shire of Carnamah Eneabba Landfill Extension Environmental Scoping Document February 2017	Application	DWER records (A1425031)
3	DER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
4	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	DER 2015b	
5	DER, August 2016. *Guidance Statement: Licence duration.* Department of Environment Regulation, Perth.	DER 2016a	
6	DER, November 2016. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.	DER 2016b	
7	DER, November 2016. *Guidance Statement: Decision Making*. Department of Environment Regulation, Perth.	DER 2016c	

Appendix 3: Clearing Permit Assessment Report

Government of Western Australia
Department of Water and Environmental Regulation

Assessment Report

1. Application details

1.1. Permit application details

Permit application No.: 7606/1
Permit type: Works Approval / Licence Assessment

1.2. Applicant details

Applicant's name: Shire of Carnamah

1.3. Property details

Property: Lot 1 on Plan 409612, Eneabba
Local Government Authority: Carnamah, Shire of
Localities: Eneabba

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
10	-	Mechanical Removal	Waste disposal/management

2. Site Information

2.1. Existing environment and Information

2.1.1. Description of the native vegetation under application

Clearing Description

The application is to clear 10 hectares of native vegetaiton within Lot 1 on Plan 409612, Eneabba, for the purpose of extending the Eneabba landfill site.

Vegetation Description

The vegetation within the application area is mapped within Beard Vegetation Association 379, described as Shrublands; scrub-heath on lateritic sandplain in the central Geraldton Sandplain Region (Shepherd et al., 2001).

Woodman Environmental (2012) mapped the vegetation within the application area as:

- FCT1a: Open Low Woodland to Open Low Scrub of *Eucalyptus pleurocarpa* and/or *Eucalyptus todtiana* over mixed shrubs dominated by *Banksia* spp. and *Hakea* spp. over sedges on grey to brown sands with very occasional laterite influence on lower to mid slopes.
- FCT1b: Open Woodland to Scrub of *Eucalyptus* spp. and/or *Banksia* spp., with occasional *Xylomelum angustifolium*, over mixed shrubs dominated by myrtaceous spp., *Banksia* spp., and *Jacksonia* spp. on grey sand on mid to upper slopes.

Vegetation Condition

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

The condition of the application was determined via digital aerial imagery.

Comment

The local area is defined as a 10 kilometre radius measured from the outside of the application area. Given the survey effort within the surrounding vegetation and amount of flora records within the local area, a 10 kilometre local area was considered sufficient in determining the potential environmental value of the vegetation within the application area.

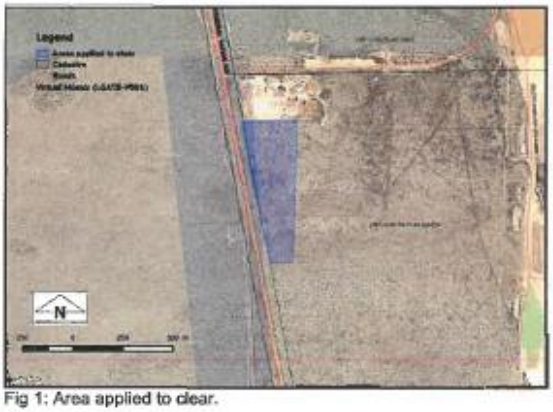


Fig 1: Area applied to clear.

Fig 2: Vegetation within the local area.

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3. Assessment of application against clearing principles

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

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

The application area occurs within an extensive remnant of native vegetation (Figure 2). Due to the presence of large reserves, the local area retains approximately 57.7 per cent vegetation. Surveys of the vegetation within the local area suggest that the application area is likely to contain a low diversity when compared to the local area. However the application area is generally representative of the broad vegetation types within the area (Woodman Environmental, 2007; Woodman Environmental, 2009; Woodman Environmental, 2014; Williams and Son, 2017; Dallywater Consulting, 2017).

An October (2016) and November (2017) survey of the application area undertaken by Williams and Son (2017) recorded the Priority (P) flora species *Allocasuarina ramosissima* (P3) and *Desmocladus elongatus* (P4) within the application area. No further priority flora species were recorded within the application area. The survey was timed to coincide with the flowering times of rare flora that were likely to occur, however none were recorded.

As assessed within Principle (c), the proposed clearing is not likely to contain rare flora or impact on the continued existence of rare flora.

The Department of Biodiversity, Conservation and Attractions (DBCA) (2017) advised that Impacts to Priority 3 and Priority 4 flora species have the potential to be significant dependant on the local representation of the species. A review of flora surveys undertaken within adjoining vegetation and the local area recorded a significant number of conservation significant flora populations. This includes 72 locations of *Desmocladus elongates* (Woodman Environmental, 2009; Woodman Environmental, 2007; Dallywater Consulting, 2017). Given the high representation of *Desmocladus elongates* within the local area and adjoining vegetation, the occurrence within the application area is not likely to be significant to the conservation of the species.

Allocasuarina ramosissima has a range of 150 kilometres. The application area occurs within the centre of the distribution for this species. Thee further occurrences of the species have been recorded within adjoining vegetation to the south and east of the application area (Western Australian Herbarium 1998-). Given the amount of adjoining native vegetation, the presence of three separate records within adjoining vegetation, the conservation status of the species and as the occurrence is within its known distribution, the application area is not likely to be significant to the conservation of the species.

When comparing surveys undertaken within the local area, the application area contains a significantly lower number of conservation significant flora (Woodman Environmental, 2007; Woodman Environmental, 2009; Woodman Environmental, 2014; Williams and Son, 2017; Dallywater Consulting, 2017).

As assessed within Principle (b), the proposed clearing is not likely to impact on conservation significant fauna or the movement of fauna through the landscape.

As assessed within Principle (d), no threatened ecological communities (TEC's) are mapped within the application area or are likely to be impacted by the proposed clearing. As the only Priority Ecological Community (PEC) located within the local area is restricted to soils with a high iron content, that are not present within the application area; no PEC is likely to be present within or impacted by the proposed clearing.

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

(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.

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

Four fauna species listed as rare or likely to become extinct under the *Wildlife Conservaiton Act 1950* have been recorded within the local area (DBCA, 2007-):

- Carnaby's cockatoo (*Calyptorhynchus latirostris*);
- *Egernia stokesii* subsp. *badia* (Western Spiny-tailed Skink);
- *Idiosoma nigrum* (Shield-backed Trapdoor Spider); and
- *Macroderma gigas* (Ghost Bat).

Carnaby's cockatoo nest in large hollows of *Eucalyptus* trees and forage on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (*Banksia, Hakea, Grevillea*), *Eucalyptus, Corymbia* and a range of introduced species (DBCA, 2013; Valentine and Stock, 2008). DBCA (2018) has advised that that the application areas contains vegetation consistent with foraging habitat of Carnaby's cockatoos. Given this and the established vegetation type and condition (section 2), the application area contains suitable foraging habitat for black cockatoos in a very good (Keighery, 1994) condition.

The Carnaby's cockatoo recovery plan states, "Success in breeding is dependent on the quality and proximity of feeding habitat within 12 kilometres of nesting sites. Along with the trees that provide nest hollows, the protection, management and increase of this feeding habitat that supports the breeding of Carnaby's cockatoo is a critical requirement for the conservation of the species" (DBCA, 2013). The closest mapped Carnabys cockatoo breeding area occurs 25 kilometres from the application area and all mapped breeding areas occur to the east of the application area.

As large hollow forming Eucalypt species are not present within the application area and given the distance to mapped breeding areas, the vegetation within the application area is not likely to support breeding for Carnabys cockatoo. Given this and the amount of vegetation surrounding the application area, the foraging habitat present within the application area is not likely to be significant to the conservation of the species.

The Western Spiny-tailed Skink occurs in open eucalypt woodlands and *Acacia*-dominated shrublands in semi-arid areas of Western Australia (DEC, 2012). The record from the local area is an outlier with the main distribution of the species located 60 kilometres east of the application area. Given this and the amount of vegetation surrounding the application area, it is unlikely to contain significant habitat for this species.

The Shield-backed Trapdoor Spider typically inhabits clay soils of eucalypt woodlands and *Acacia* vegetation (TSSC, 2013). As the application area has sandy soils and does not occur within the core distribution of the species, it is not likely to contain significant habitat for this species.

The Ghost Bat's current known range is discontinuous, with colonies occurring within the Pilbara, Kimberley, northern Northern Territory, the Gulf of Carpenteria, coastal and near coastal eastern Queensland from Cape York to near Rockhampton and western Queensland (TSSC, 2016). The two records of the Ghost Bat occurring within the local area were recorded in 2007 within caves (Parks and Wildlife, 2007-). As caves or rock crevices are not present within the application area, the application area is not likely to contain significant habitat for this species.

As the application area forms part of a significant larger remnant, the proposed clearing is not likely to have a significant impact on the movement of fauna between remnant vegetation located within the local area.

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

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

Proposed clearing is not likely to be at variance to this Principle
Twelve rare flora species have been recorded within the local area. An assessment of the mapped vegetation and soil types against the habitat preferences determined that six of the twelve rare flora species had the potential to occur (Western Australian Herbarium, 1998-).

A flora survey of the application area undertaken within the flowering times of these species did not record any rare flora. Species likely to occur within the application area were specifically targeted however no individuals were recorded (Williams and Son, 2017).

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

(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.

Proposed clearing is not likely to be at variance to this Principle
One TEC, Ferricrete floristic community (Rocky Springs type), is mapped within the local area, seven kilometres to the south west of the application area. As the application area does not contain the iron dominated habitat requirements for this TEC, it is not likely to be present within the application area.

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

(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.

Proposed clearing is not likely to 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 Geraldton Sandplains Interim Biogeographic Regionalisation of Australia (IBRA) bioregion which retain approximately 44.8 per cent pre-European vegetation (Government of Western Australia, 2016). The local area retains approximately 57.7 per cent vegetation.

The application area is mapped as Beard vegetation association 379 of which there is approximately 23.7 percent of the pre-European vegetation extents remaining within the Geraldton Sandplains IBRA bioregion (Government of Western Australia, 2016).

The vegetation within the application area forms part of an extensive area of native vegetaiton. Given this, the removal of the application area is not likely to effect the movement of biological material through the landscape. Surveys of the vegetation within the local area have shown that the application area is likely to contain a low diversity when compared to vegetation within the local area and is generally representatinve of the broad vegetation types within the area.

Given the above, although mapped vegetation association 379 retains below 30 per cent native vegetaiton, the proposed clearing is not likely to be at variance to this Principle.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in Parks and Wildlife Managed Lands (%)
IBRA Bioregion*				
Geraldton Sandplains	3,136,037	1,404,373	44.8	40.3
Beard vegetation association in Bioregion*				
379	546,507.25	129,496.74	23.7	22.3
Local Area*				
10 km radius	33, 259.7	19,181.84	57.7	-

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

Proposed clearing is not likely to be at variance to this Principle
No watercourses or wetlands have been recorded within the application area. There are several non-perennial minor water courses within the local area, with the closest being approximately 250 metres west of the application area.

Given the distance to the closest watercourse, the application area is not likely to be growing in, or in association with a watercourse or wetland and the proposed clearing is not likely to be at variance to this Principle.

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

Proposed clearing is not likely to be at variance to this Principle
The application area is mapped within soil type Ca27, which is described as 'Sandy plains with occasional pockets of sand dunes, a few small swamps, and stream courses: chief soils are leached sands, often with a sandy clay substrate between 3 and 6 feet in depth. Associated are gravelly soils with soils on the dunes (Northcote et al., 1960-68).

The former Department of Agriculture and Food Western Australia mapping indicates that the wind erosion risk, phosphorus export risk, water logging risk, subsurface acidification risk, flood risk and the water erosion risk of the soil unit that covers the application area are within the lowest risk category (less than three per cent of the mapped soil unit as having a high to extreme risk) (DPIRD, 2018).

The topography of the application area is gently undulating and the annual rainfall is 600 millimetres. Groundwater salinity within the application area is considered to be fresh at 500 to 1000 milligrams per litre total dissolved solids. Given the topography of the application area, the porous nature of sandy soils within the application area, and relatively low rainfall, the proposed clearing is not likely to cause appreciable land degradation through water erosion, waterlogging or salinity.

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

(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.

Proposed clearing is not likely to be at variance to this Principle
The closest conservation areas to the proposed clearing are an un-named nature reserve and 'South Eneabba Nature Reserve' located approximately 4.3 and three kilometres from the application area respectively.

As vegetation surrounds the application area, the proposed clearing is not likely to have a significant impact on the movement of fauna or biological material between remnant vegetation located within the local area.

Larger remnants located within the local area, including the un-named Nature Reserve and South Eneabba Nature Reserve will continue to contribute to fauna movement across the landscape.

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

(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.

Proposed clearing is not likely to be at variance to this Principle
No watercourses or wetlands have been recorded within the application area. Groundwater salinity is mapped as 500-1000 milligrams per litre, total dissolved solids which is considered fresh.

The application area is mapped as having a low to moderate risk of salinity and no known risk of acid sulfate soils occurring within three metres of the soil surface.

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

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

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

There are no watercourses or wetlands that occur within the application area and the land gently slopes towards the west.

As assessed under Principle (g) the application area has a low flood risk. Given the topography of the application area and the porous nature of sandy soils, the proposed clearing is not likely to cause or exacerbate the incidence or intensity of flooding.

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

Planning instruments and other relevant matters.

There are no Aboriginal Sites of Significance mapped within the application area.

In support of the clearing permit application, the Shire of Camamah submitted an environmental scoping document outlining the revegetation actions to be undertaken progressively as each trench has been utilised. This includes (Dallywater Consulting, 2017):

- Seed collection;
- Stockpiling of topsoil;
- Compaction and contouring;
- Respreading of topsoil; and
- Monitoring and maintenance of rehabilitation.

4. Recommendation

An assessment of the environmental impacts of the proposed clearing has been undertaken in accordance with DWER's Regulatory Principles, taking into consideration the clearing principles contained in Schedule 5 of the *Environmental Protection Act 1986* (EP Act). Section 62(1) of the EP Act provides for conditions to be placed on a works approval to prevent, control, abate or mitigate pollution or environmental harm. Recommended conditions are as follows:

1. Clearing authorised
   The works approval holder shall not clear more than 10 hectares of native vegetation within the area cross-hatched yellow on attached Plan 7606/1.

2. The Permit Holder shall:
   (a) retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.

   (b) at an *optimal time* following clearing authorised under this Permit, *revegetate* and *rehabilitate* the area(s) that are no longer required for the purpose for which they were cleared under this Permit by:
      (i) re-shaping the surface of the land so that it is consistent with the surrounding 5 metres of uncleared land; and
      (ii) laying the vegetative material and topsoil retained under condition 2(a) on the cleared area(s).

   (c) within 18 months of laying the vegetative material and topsoil on the cleared area in accordance with condition 2(b) of this Permit:
      (i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and
      (ii) where, in the opinion of an *environmental specialist*, the composition structure and density determined under condition 2(c)(i) of this Permit will not result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, *revegetate* the area by deliberately *planting* and/or *direct seeding* native vegetation that will result in a similar species composition, structure and density of native vegetation to pre-clearing vegetation types in that area and ensuring only *local provenance* seeds and propagating material are used.

   (d) Where additional *planting* or *direct seeding* of native vegetation is undertaken in accordance with condition 2(c)(ii) of this permit, the Permit Holder shall repeat condition 2(c)(i) and 2(c)(ii) within 18 months of undertaking the additional *planting* or *direct seeding* of native vegetation.

   (e) Where a determination by an *environmental specialist* that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, as determined in condition 2(c)(i) and (ii) of this permit, that determination shall be submitted for the CEO's consideration. If the CEO does not agree with the determination made under condition 2(c)(ii), the CEO may require the Permit Holder to undertake additional *planting* and *direct seeding* in accordance with the requirements under condition 2(c)(ii).

3. 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*:
   (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
   (b) ensure that no 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.

Permit Definitions
The following meanings are given to terms used in the above conditions:

CEO means the Chief Executive Officer of the Department responsible for administering the *Environmental Protect Act 1986;*

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

environmental specialist: means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist;

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

local provenance means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

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;

optimal time means the period from April to May for undertaking *direct seeding*, and the period from May to June for undertaking *planting*;

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

regenerate/ed/ion means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing *mulch*;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area;

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 Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or
(c) not indigenous to the area concerned.

Mathew Gannaway
MANAGER
CLEARING REGULATION

11 May 2018

5. References

Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.

Commonwealth of Australia (2012) EPBC Act referral guidelines for three threatened black cockatoo species, Canberra.

Dallywater Consulting (2017) Shire of Carnamah Eneabba Landfill Extension, Environmental Scoping Document, February 2017.

Department of Biodiversity Conservation and Attractions (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: http://naturemap.dpaw.wa.gov.au/. Accessed April 2018.

Department of Biodiversity Conservation and Attractions (DBCA) (2013) Carnaby's cockatoo (*Calyptorhynchus latirostris*) Recovery Plan. Department of Parks and Wildlife, Perth, Western Australia.

Department of Biodiversity, Conservation and Attractions (2017) Species and Community Advice for Clearing Permit Application CPS 7606/1. Western Australia (DER Ref: A1478166).

Department of Biodiversity, Conservation and Attractions (2018) Regional Advice for Clearing Permit Application CPS 7606/1. Western Australia (DER Ref: A1478165).

Department of Environment and Conservation (2012), Western Spiny-tailed Skink (*Egernia stokesii*) Recovery Plan

Department of Primary Industry and Regional Development (DPIRD) (2018) NRInfo Digital Mapping. Department of Primary Industry and Regional Development. Government of Western Australia. URL: https://maps.agric.wa.gov.au/nrm-info/ (accessed April 2018).

Government of Western Australia (2016) 2016 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2016) WA Department of Parks and Wildlife, Perth.
Government of Western Australia. (2017) 2016 South West Vegetation Complex Statistics. Current as of December 2016. WA Department of Parks and Wildlife, Perth
Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
Northcote, K. H. with Beckmann G. G., Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68): 'Atlas of Australian Soils, Sheets 1 to 10, with explanatory data'. CSIRO and Melbourne University Press: Melbourne.
Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
Threatened Species Scientific Committee (TSSC) (2013). Commonwealth Conservation Advice on *Idiosoma nigrum* (shield-back trapdoor spider). Canberra: Department of Sustainability, Environment, Water, Population and Communities. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/66798-conservation-advice.pdf. In effect under the EPBC Act from 14-May-2013.
Threatened Species Scientific Committee (2016). Approved Conservation Advice for Macroderma gigas (ghost bat). Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/174-conservation-advice-05052016.pdf. In effect under the EPBC Act from 05-May-2016.
Valentine, L.E. and Stock, W. (2008) Food Resources of Carnaby's Black Cockatoo (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.
Western Australian Herbarium, Department of Parks and Wildlife (1998-). Text used with permission https://florabase.dpaw.wa.gov.au/help/copyright). Accessed on Monday, 10 April 2018.
Williams and Son (2017) Response to Preliminary Report Department of Environment Regulation Permit Application No. 7606/1. Lot 10240 on Plan 206720
Woodman Environmental (2007) Iluka Resources Limited declared rare flora and priority flora search, Mulch areas A and B, November 2007 (DWER ref: A1670669).
Woodman Environmental (2009) Iluka Resources Limited declared rare flora and priority flora search IPL North and IPL South, March 2009 (DWER ref: A1670669).
Woodman Environmental (2014) Field Survey for *Thelymitra pulcherrima* (P2) IPL North, January 2014 (DWER ref: A1670669).