



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

### ADVICE NOTE:

In relation to condition 10 of this Permit, it is noted that 16.6 hectares of Reserve 16777; Lot 11795 on Deposited Plan 217554, will be attributed to the offset for this project. The remaining balance of the property (approximately 40.2 hectares) may be used as a banked offset for other projects. The nominated 16.6 hectare area contains similar environmental values to the clearing area.

### PERMIT DETAILS

Area Permit Number: CPS 7775/1  
File Number: CEO2610/17  
Duration of Permit: From 3 September 2021 to 3 September 2023

### PERMIT HOLDER

Shire of Perenjori

### LAND ON WHICH CLEARING IS TO BE DONE

Lot 10591 on Deposited Plan 168362, Perenjori.

### AUTHORISED ACTIVITY

The permit holder must not clear more than 3.0 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

### CONDITIONS

#### 1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 3 September 2023

#### 2. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

- (a) avoid the clearing of *native vegetation*;

- (b) minimise the amount of *native vegetation* to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

### **3. Weed management**

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of 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 known 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.

### **4. Revegetation and rehabilitation – retention of vegetative material and topsoil**

The permit holder must 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.

### **5. Fencing (pre-clearing)**

- (a) Prior to commencing clearing, the permit holder shall construct a 3.6 metre boundary fence within the area cross-hatched red in Figure 1 of Schedule 2.
- (b) Within one month of installing the fence the permit holder shall notify the *CEO* in writing that the fence has been completed.

### **6. Flora management**

- (a) Prior to commencing clearing, the permit holder shall construct a fence enclosing the Priority flora locations within the area cross-hatched red in Figure 1 of Schedule 3.
- (b) Within one month of installing the fence the permit holder shall notify the *CEO* in writing that the fence has been completed.

### **7. Clearing not authorised**

This permit does not authorise the permit holder to clear *Priority* flora identified in Figure 1 of Schedule 4.

**8. Staged clearing - period in which clearing is authorised**

The permit holder shall not clear more than 1.5 hectares of *native vegetation* within a 12 month period.

**9. Directional clearing**

The permit holder must conduct clearing activities in a slow, progressive manner from west to east, or south to north, to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

**10. Offset – Land acquisition**

Within 12 months of the commencement of clearing, the permit holder must amend the purpose of the area outlined in red on Figure 1 of Schedule 5 (Reserve 16777; Lot 11795 on Deposited Plan 217554) from ‘Parks and Recreation’ to ‘Conservation’.

**11. Records that must be kept**

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

**Table 1: Records that must be kept**

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2; and (f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with condition 3.
2.	In relation to the retention of vegetative material and topsoil pursuant to condition 4	(a) the location and volumes of vegetative material and topsoil retained in accordance with condition 4.
3.	In relation to required fencing pursuant to	(a) the location, specifications, and date of fencing erected in accordance with

No.	Relevant matter	Specifications
	condition 5 and condition 6	condition 5 and condition 6.
4.	In relation to required avoidance pursuant to condition 7	(a) actions taken to avoid the clearing of <i>Priority</i> flora in accordance with condition 7.
5.	In relation to the offset condition 10	(a) actions taken to amend the purpose of the area outlined in red on Figure 1 of Schedule 2 from 'Parks and Recreation' to 'Conservation' in accordance with condition 10.

## 12. Reporting

- (a) The permit holder must provide to the *CEO*, on or before 30 June of each calendar year, a written report containing:
- (i) the records required to be kept under condition 11; and
  - (ii) records of activities done by the permit holder under this permit between 1 January and 31 December of the preceding calendar year.
- (b) If no clearing authorised under this permit has been undertaken, a written report confirming that no clearing under this permit has been undertaken, must be provided to the *CEO* on or before 30 June of each calendar year.
- (c) The permit holder must provide to the *CEO*, no later than 90 calendar days prior to the expiry date of the permit, a written report of records required under condition 11, where these records have not already been provided under condition 12(a).

## DEFINITIONS

In this permit, the terms in Table have the meanings defined.

**Table 2: Definitions**

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fill	means material used to increase the ground level, or to fill a depression.
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
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.

Term	Definition
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
priority flora	means those plant taxa described as priority flora classes 1, 2, 3, or 4 in the Department of Biodiversity, Conservation and Attractions Threatened and Priority Flora List for Western Australia (as amended from time to time).
rehabilitate/rehabilitated/ rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetate/revegetated / revegetation	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.
weeds	means any plant – <ul style="list-style-type: none"> <li>(a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or</li> <li>(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or</li> <li>(c) not indigenous to the area concerned.</li> </ul>

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**END OF CONDITIONS**



Mathew Gannaway  
MANAGER  
NATIVE VEGETATION REGULATION

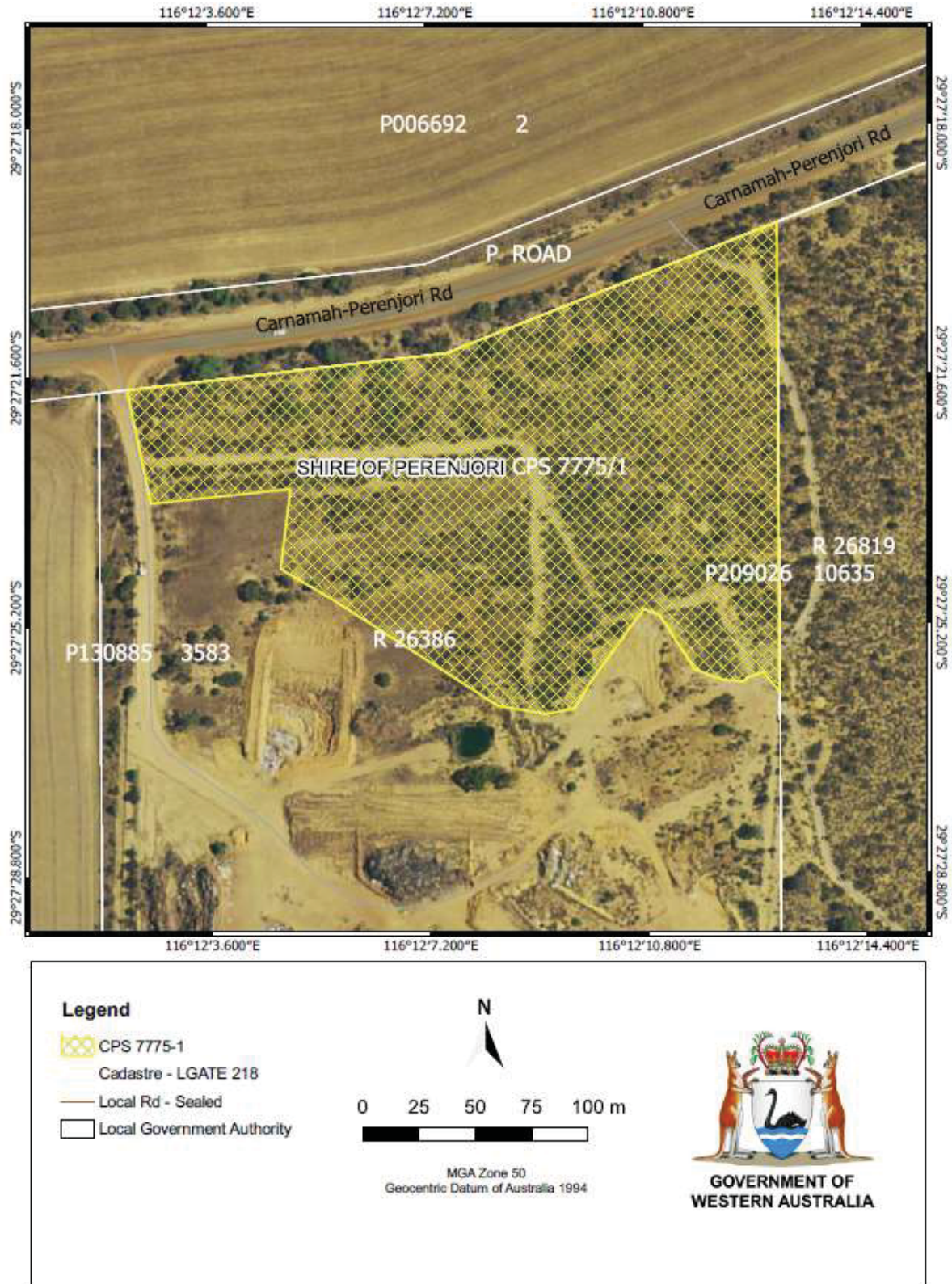
*Officer delegated under Section 20  
of the Environmental Protection Act 1986*

10 August 2021

# SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

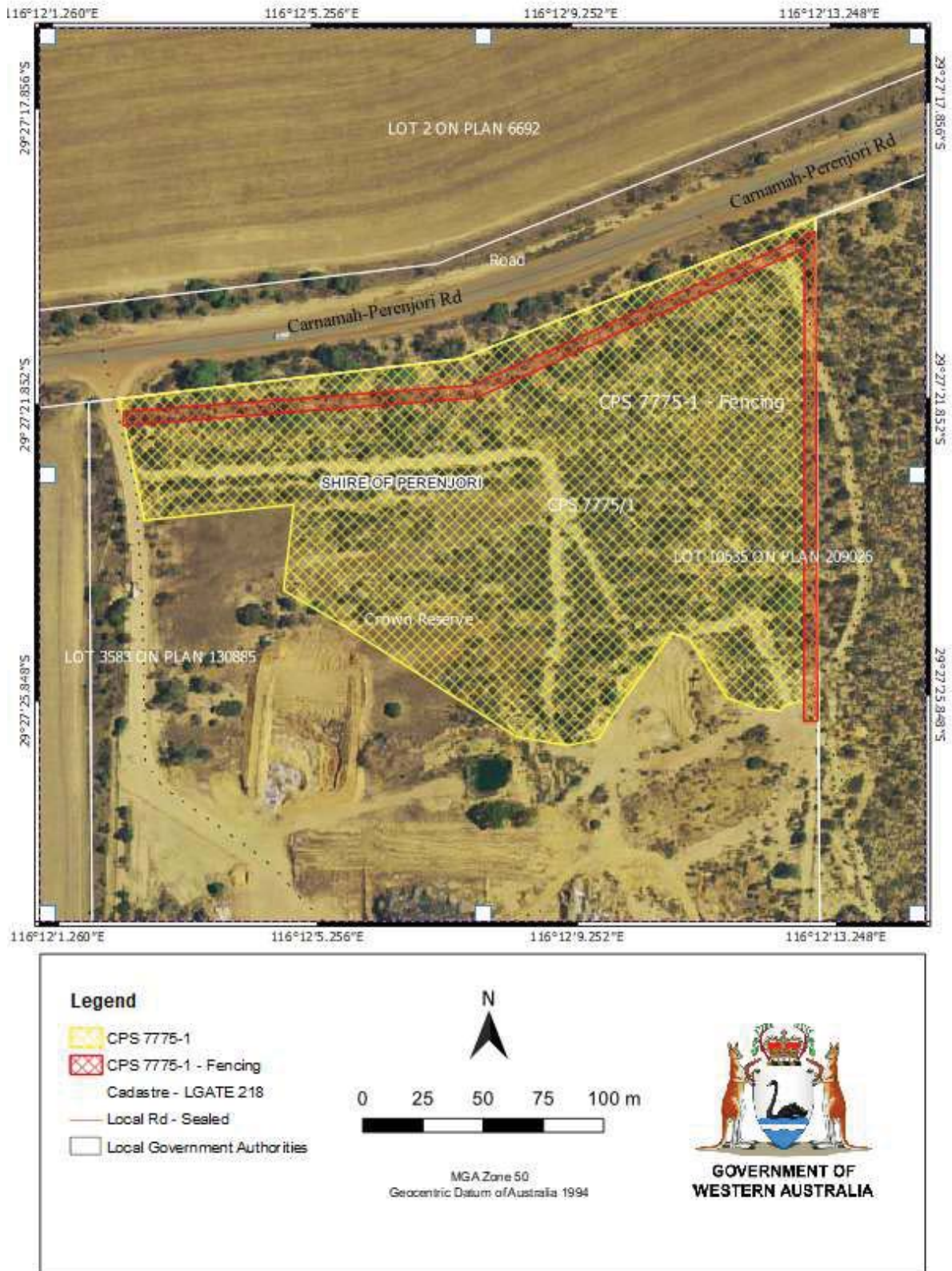
**Figure 1: Map of the boundary of the area within which clearing may occur**



## SCHEDULE 2

The boundaries of the areas where specific *conditions* apply are shown in the map below (Figure 2).

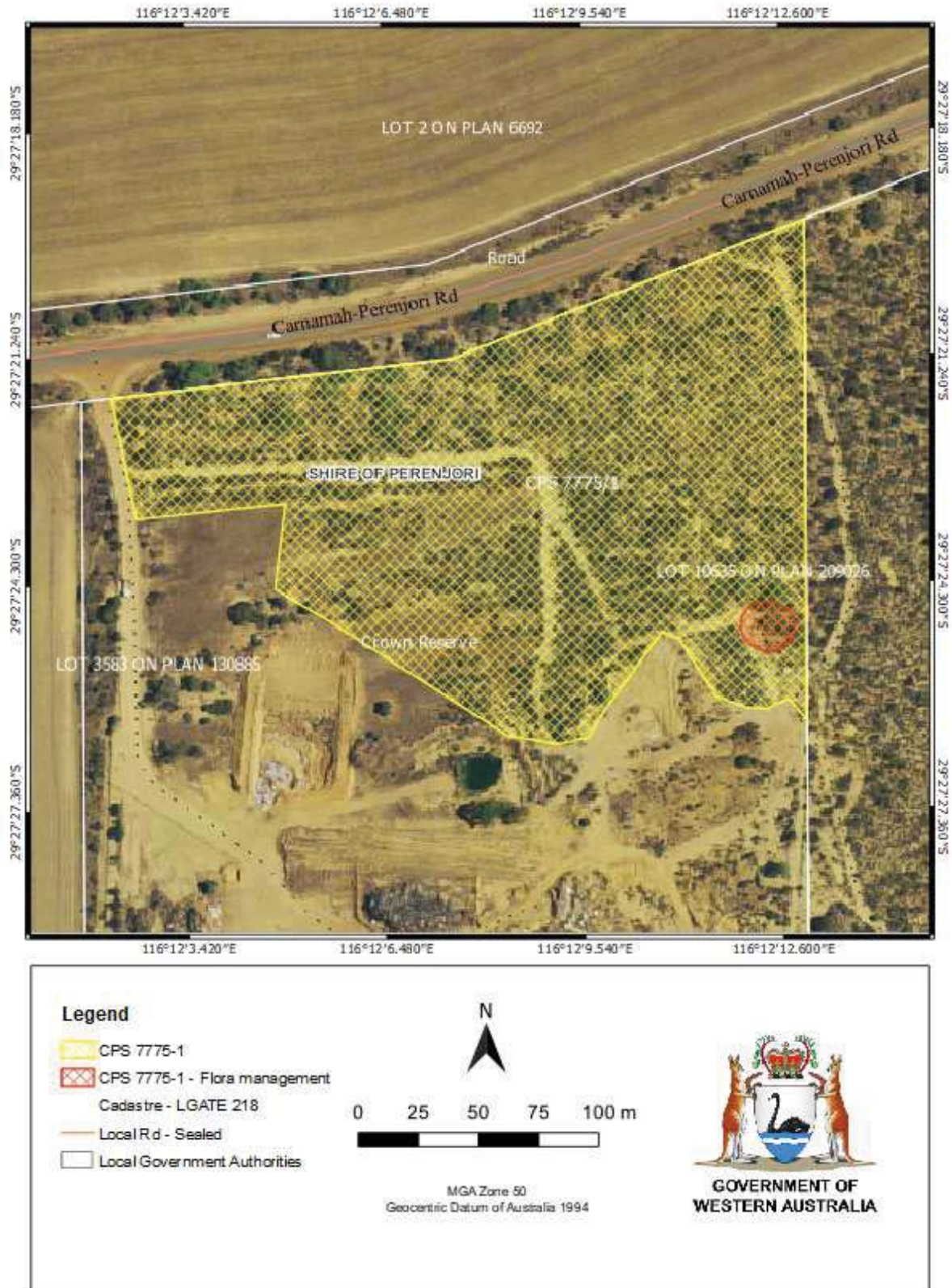
**Figure 1: Map of the boundaries of the areas where specific conditions apply - Fencing**



# SCHEDULE 3

The boundaries of the areas where specific *conditions* apply are shown in the map below (Figure 3).

**Figure 1: Map of the areas where specific conditions apply – Flora management**

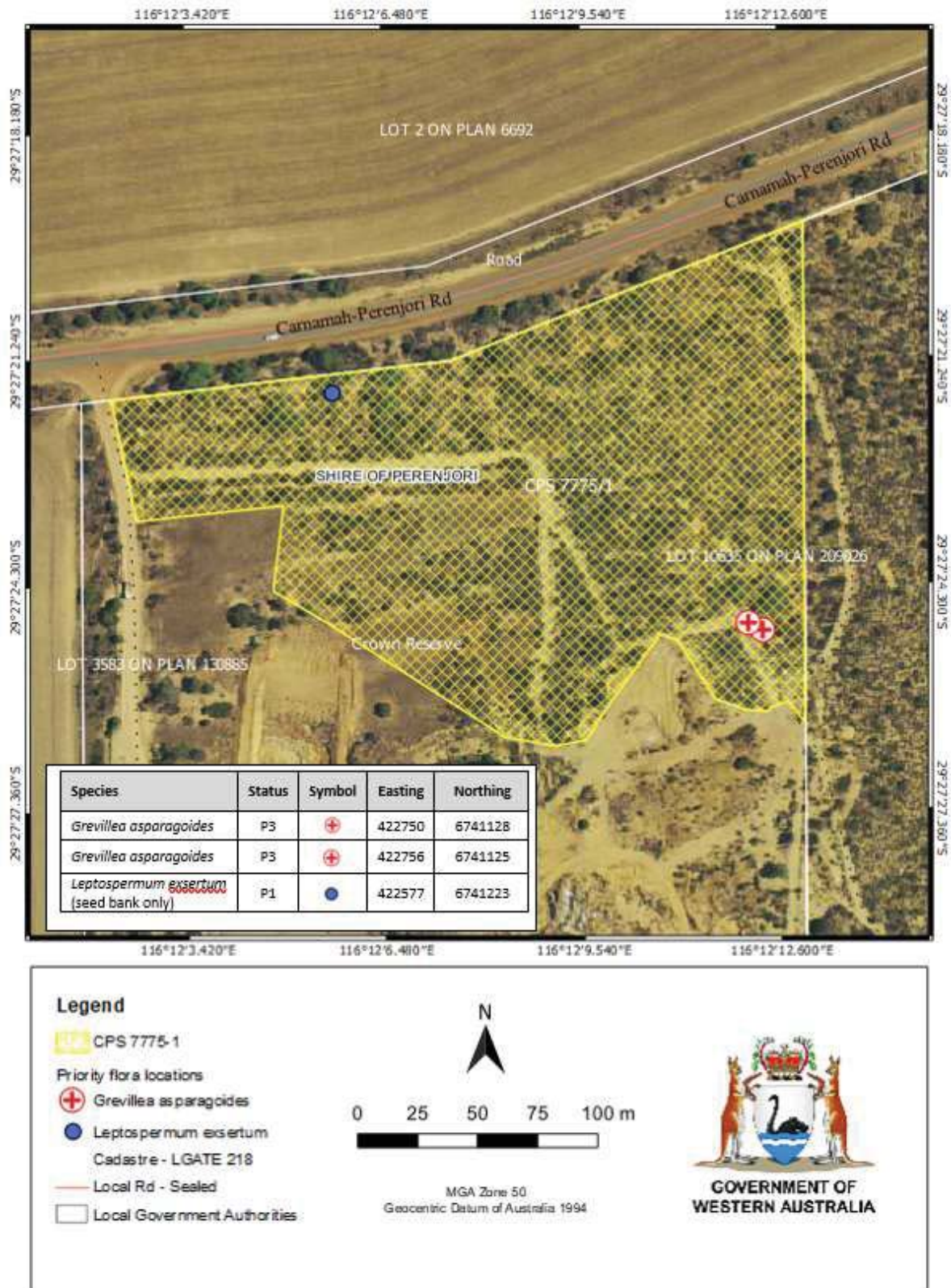




# SCHEDULE 4

The locations of where specific *conditions* apply are shown in the map below (Figure 4).

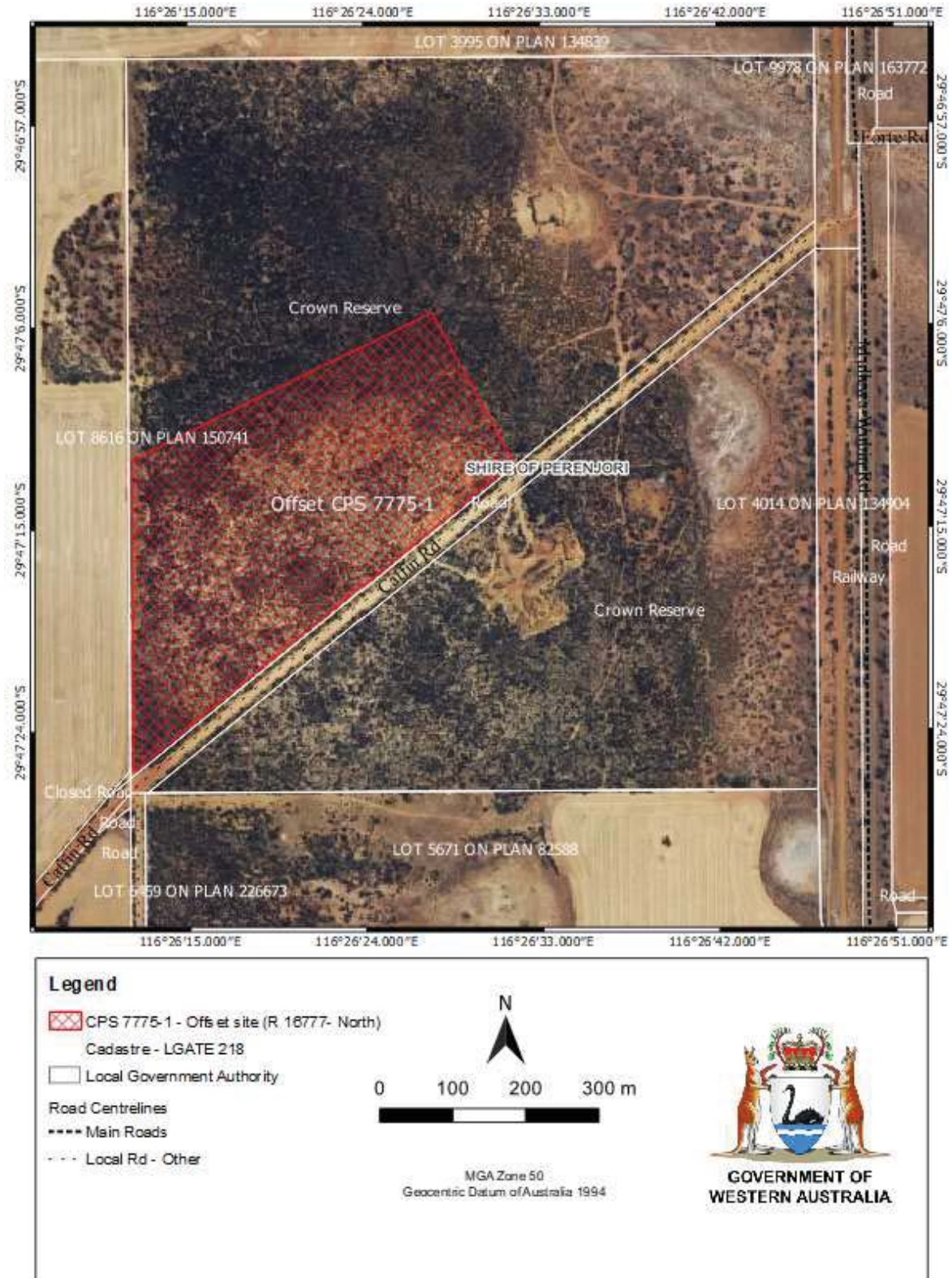
**Figure 1: Locations where specific conditions apply – Flora management**



## SCHEDULE 5

The area where specific offset *conditions* apply are shown in the map below (Figure 5).

**Figure 1: Map of the areas where specific conditions apply – Environmental offset area**





# Clearing Permit Decision Report

## 1. Application details and outcome

### 1.1. Permit application details

<b>Permit number:</b>	CPS 7775/1
<b>Permit type:</b>	Area permit
<b>Applicant name:</b>	Shire of Perenjori
<b>Application received:</b>	19 September 2017
<b>Application area:</b>	3.0 hectares (ha) of native vegetation
<b>Purpose of clearing:</b>	Expanding an existing waste landfill facility
<b>Method of clearing:</b>	Mechanical means
<b>Property:</b>	Lot 10591 on Deposited Plan 168362, Perenjori
<b>LGA area:</b>	Shire of Perenjori
<b>Localities:</b>	Perenjori

### 1.2. Description of clearing activities

The application is for an area permit with the proposed clearing of up to 3.0 ha of native vegetation located within Lot 10591 on Deposited Plan 168362 (Reserve 26386), Perenjori. Proposed clearing is immediately adjacent to cleared areas associated with an existing waste landfill facility, and will allow for the expansion of that waste facility.

### 1.3. Decision on application and key considerations

<b>Decision:</b>	Granted
<b>Decision date:</b>	10 August 2021
<b>Decision area:</b>	3.0 hectares of native vegetation as depicted in Figure 1, Section 1.5, below.

### 1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix G2), the findings of a flora and vegetation survey (Appendix A), the findings of a fauna assessment (Appendix A), a site assessment undertaken by DWER, the clearing principles set out in Schedule 5 of the EP Act (Appendix C), relevant planning instruments, and any other matters considered relevant to the assessment (Section 3). The Delegated Officer also took into consideration the purpose of the clearing to expanding an existing regional waste facility to accommodate waste generated within the Shire of Perenjori (the Shire).

The assessment identified that the proposed clearing will result in:

- the loss of 2.98 hectares of native vegetation considered a significant remnant of native vegetation in an area that has been extensively cleared;
- the potential introduction and spread of weeds into adjacent vegetation, including a nature reserve, which could impact on the quality of the adjacent vegetation and its habitat values;
- an increased risk of wind erosion and of wind-blown waste entering an adjacent nature reserve;
- the potential loss of two Priority flora locations; and
- impacts to terrestrial fauna that may be present at the time of clearing.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (Section 3.1), the Delegated Officer determined an offset is required to counterbalance the significant residual impacts of the proposed clearing. The Delegated Officer considered the applicant has suitably demonstrated

avoidance and minimisation measures (Section 3.1). The offset provided, amending the purpose of the northern portion of Lot 11795 on Plan 217554 from 'Parks and Recreation' to 'Conservation', counterbalances the loss of 2.98 hectares of native vegetation considered a significant remnant of native vegetation in an area that has been extensively cleared (Section 4). Lot 11795 contains approximately 56.8 hectares of remnant vegetation in good to very good condition, of which 16.6 hectares will be used to offset the proposed clearing.

The applicant has committed to avoid two locations of Priority flora and will be fenced. The Delegated Officer noted that due to the inability to provide appropriate buffers, it is possible that the two locations may be disturbed by the proposed clearing via secondary impacts. It is considered that the inadvertent loss of Priority flora as a result of the clearing will not impact the conservation status of any particular taxa, and will not significantly impact their local or regional occurrence.

In determining to grant a clearing permit subject to conditions, the Delegated Officer found that the proposed clearing is not likely to lead to an unacceptable risk to the environment. The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise and reduce the impacts and extent of clearing;
- implement weed management strategies to minimise the risk to the biodiversity values of adjacent native vegetation;
- avoid Priority flora locations by fencing known sites;
- retain the vegetative material and topsoil removed by clearing and stockpile the vegetative material and topsoil in an area that has already been cleared;
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- install appropriate fencing to prevent the impacts of wind erosion and airborne waste;
- undertake staged clearing to minimise wind erosion; and
- implement an environmental offset to counter-balance the loss of 2.98 hectares of a significant remnant of native vegetation in an area that has been extensively cleared.

## 1.5. Site map

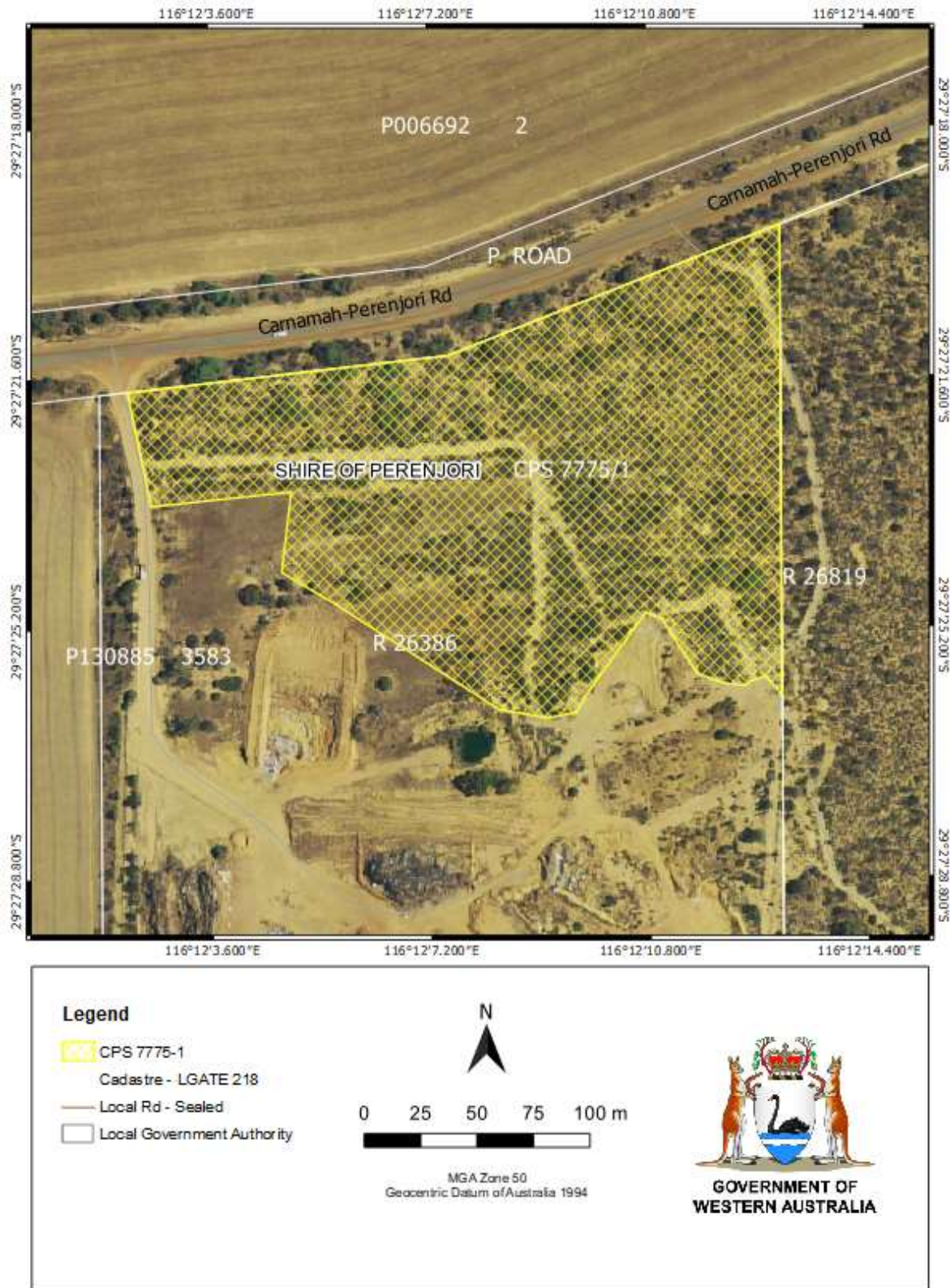


Figure 1. Map of the application area. The area cross-hatched yellow indicates the area within which up to 3.0 hectares of native vegetation is authorised to be cleared under the granted clearing permit.

## 2. Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.3), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle;
- the principle of intergenerational equity; and
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act); and
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011).

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013);
- *Procedure: Native vegetation clearing permits* (DWER, October 2019);
- *Environmental Offsets Guidelines* (August 2014);
- Technical guidance - *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016); and
- Technical guidance - *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA 2016)

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant demonstrating avoidance and mitigation measures and the Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts. Due to the constrained nature of Lot 10591 on Deposited Plan 168362 (Lot 10591), which is zoned for public purposes with a restricted use of R1 (Rubbish Disposal) under the local planning scheme, the majority of the application area is required for the disposal of waste generated within the Shire (Figure 1).

The West Perenjori Nature Reserve is located immediately adjacent to the east of the application area. The Shire has committed to weed management and the installation of a 3.6 metre boundary fence, with the lower half fitted with shade cloth, to separate the landfill facility from the nature reserve and to ensure wind-blown waste is contained on site. Fencing of the northern boundary will be set back at least six metres which will result in a vegetated buffer of at least 20 metres (including vegetation within a road reserve) between the proposed clearing and the Carnamah-Perenjori Road. The location of one Priority flora location can be avoided within this vegetated buffer, and a second Priority flora location will be fenced and avoided (Shire of Perenjori 2021a).

Consideration of a revegetation strategy to mitigate impacts to the clearing of 3.0 hectares of native vegetation was considered by the Shire. However, at the present time the majority of Lot 10591 is required for the storage and disposal of waste products, and the Shire does not have immediate plans to revegetate any areas within Lot 10591. No other locations within the Shire were identified that required revegetation, and there are no immediate plans to utilise topsoil removed from the proposed clearing area in any other localities within the Shire. The Shire is currently investigating options for a separate and larger site for a waste facility. Once additional areas become available for waste disposal, areas within Lot 10591 will become available for revegetation. Topsoil and vegetative material removed from the proposed clearing area will be stored for future revegetation use when the requirement arises (Shire of Perenjori 2021a).

After consideration of avoidance and mitigation measures, it was determined that an offset was necessary to counterbalance the significant residual impact associated with the loss of 2.98 hectares of native vegetation considered a significant remnant of native vegetation in an area that has been extensively cleared. In accordance with the Government of Western Australia's Environmental Offsets Policy and Environmental Offsets Guidelines, this significant residual impact has been addressed through the conditioning of an environmental offset requirement on the permit. An offset was provided by the applicant (Shire of Perenjori 2021b), and the nature and suitability of the offset provided is summarised in Section 4.

### 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (Appendix C) identified that the impacts of the proposed clearing present a risk to flora and fauna values, significant remnant vegetation, conservation areas and land resources and that these required further consideration. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

#### 3.2.1. Environmental value: biological values (flora and vegetation) – Clearing Principle (a) and (c)

**Assessment:** The application area consists of native vegetation within the Avon Wheatbelt (AVW) IBRA Bioregion. The landform consists of gently undulating sandplain with yellow and brown deep sands and sandy earths, with a flora and vegetation survey describing both a sandplain, as well as sand over laterite (JB Botanical 2019). Two vegetation communities were described and mapped by JB Botanical (2019) over the application area, as well as disturbed areas:

- Allocasuarina tall shrubland: *Allocasuarina acutivalvis* subsp. *acutivalvis* tall shrubland over *Melaleuca cordata*, *Grevillea paradoxa*, *Cyathostemon heterantherus*, *Acacia longiphylloidea* and *Micromyrtus racemosa* shrubland to open shrubland on lateritic gravel.
- Eucalyptus low mallee woodland: *Eucalyptus leptopoda* and *E. eudesmioides* low mallee woodland to low open mallee woodland over *Ecdeiocolea monostachya*, *Rhagodia drummondii* and *Melaleuca fabri* sedgeland to open sedgeland with sparse shrubs on brownish yellow sandy loam.
- Disturbed areas: Isolated shrubs and mallee over *Avena fatua*\*, *Ptilotus polystachyus*, *Maireana brevifolia* mixed ground cover

The majority of the application area (54.3 per cent) consists of Eucalyptus low mallee woodland with approximately 20 per cent of the area disturbed. Approximately 2.98 hectares of Allocasuarina tall shrubland and Eucalyptus low mallee woodland were assessed to be in good to very good condition (JB Botanical 2019; Appendix D; Appendix E1 and E2).

The Eucalypt Woodlands of the Western Australian Wheatbelt is a Critically Endangered Threatened Ecological Community (TEC) under the EPBC Act, and a Priority 3 Priority Ecological Community (PEC) as listed by the Department of Biodiversity, Conservation and Attractions (DBCA). The flora and vegetation survey concluded that the wheatbelt woodlands TEC was not present over the application area with the eucalypt species present not listed as the key dominant species of the TEC (JB Botanical 2019; DoEE 2015). Advice received from DBCA confirmed that the Eucalypt Woodlands of the Western Australian Wheatbelt is unlikely to be represented over the application area (DBCA 2018).

According to available databases and advice received from the DBCA, 11 priority flora species and four Threatened flora species have been recorded from within the local area. Of the Threatened flora species, DBCA (2018) advised that there is a low likelihood of these taxa being found within the application area. The habitat for *Eremophila rostrata* subsp. *trifida*, *Eremophila nivea* and *Eremophila viscida* differs to that of the application area. One species (*Dasymalla axillaris*) has been mapped as occurring within the same vegetation complex and similar soil type, however, the nearest record is over seven kilometres distant. JB Botanical (2019) did not record any Threatened flora and *Dasymalla axillaris* is a shrub growing to three metres. Given its size and morphological characteristics, the species would have a high likelihood of being recorded during surveys if present.

Of the Priority flora recorded within a 10 kilometre radius, *Leptospermum exsertum* (P1) has been recorded within the application area. Of the remaining Priority taxa, five occur in similar habitats as the application area including; *Acacia isoneura* subsp. *nimia* (P3), *Enekbatus longistylus* (P3), *Grevillea asparagoides* (P3), *Grevillea granulosa* (P3), and *Verticordia venusta* (P3).

The flora and vegetation survey recorded a total of fifty-two flora taxa from 21 families and 38 genera (JB Botanical 2019; Appendix E2). The Priority 1 species *Leptospermum exsertum*, previously recorded from the application area, was not recorded during the survey (JB Botanical 2019) nor by the site inspection (DWER 2017) that included a qualified botanist. The Priority 3 species *Grevillea asparagoides* was recorded during the DWER (2017) site visit and the flora survey (JB Botanical 2019; Appendix E2).

Priority 1 taxa are those known from one or a few locations (generally five or less) which are potentially at risk. The Priority 1 *Leptospermum exsertum* occurs in sandy soils and sandplains and is known from 14 records (WA Herb 2021) and at possibly 10 locations (DBCA 2018) over a range of approximately 135 kilometres from Mullewa to south of Perenjori. Apart from the now absent record from the application area, seven records of *Leptospermum exsertum*

have been made within the local area from four individual localities. The previous record made within the application area is based on a collection from 18 August 1994. The species may have perished during the intervening period, however, it is possible that a seed bank is stored within the soil profile (DBCA 2018).

Priority 3 species are those that are known from several locations, and do not appear to be under imminent threat. The Priority 3 *Grevillea asparagoides* is known from 31 records at sites generally associated with soils consisting of white or yellow sand or gravelly loam (WA Herb 2021) from north of Morawa to Wongan Hills; a range of approximately 215 kilometres. Three individual plants of *Grevillea asparagoides* were recorded near the eastern boundary of the application area. Plants were healthy and had dehisced fruit, so seeds will be present in the soil below the shrubs (JB Botanical 2019). The applicant has committed to the avoidance of *Grevillea asparagoides* Priority flora locations, however, due to the constrained area standard buffers are unable to be applied.

Apart from the records within the application area, six other records of *Grevillea asparagoides* have been made within the local area from four locations including approximately 323 metres to the south of the application area, within the adjacent West Perenjori Nature Reserve, where over nine mature plants with flower buds have been recorded.

The adjacent West Perenjori Nature Reserve contains a band of the same mapped regional vegetation (Association 551 and Association 352) and soil type (Pindar 1 subsystem) (Appendix B1) with similar or better vegetation condition as found within the application area. *Grevillea asparagoides* has been recorded in the West Perenjori Nature Reserve. It is likely that in addition to the seven records of *Leptospermum exsertum* in the local area, given its known habitat preferences, it too is likely to be present in the adjacent reserve.

The risk of dieback affecting adjacent native vegetation is considered minimal due to the location in the eastern area of the northern wheatbelt for which there are no records of dieback occurrence, and the location of the application area at the top of the catchment. However, adjacent native vegetation is susceptible to weed invasion.

Revegetation of the site is not currently feasible due to the majority of Lot 10591 being required for the storage and disposal of waste products (Section 3.1). Topsoil and vegetative material removed from the proposed clearing area will be stored for future revegetation use when suitable areas become available (Shire of Perenjori 2021a).

**Conclusion:** The application area comprises native vegetation in good to very good condition that provides suitable habitat for two priority flora species. The Priority 1 species *Leptospermum exsertum* is likely no longer present in the application area, however it is possible that a dormant seed bank remains. The Priority 3 species *Grevillea asparagoides* occurs at one location within the application area. Considering the habitat and distribution of the Priority flora identified, and that large areas of native vegetation with similar soil types to the application area in similar or better condition occur to the east and south, the risk posed by the proposed clearing on Priority flora is considered low. Adjacent native vegetation is susceptible to weed invasion exacerbated by the proposed clearing. For the reasons set out above it is considered that the impacts of the proposed clearing can be managed by taking steps to minimise the risk of the introduction and spread of weeds, particularly into an adjacent nature reserve, and to avoid Priority flora locations.

**Conditions:** To address the above impact, the following management measures will be required as a condition on the clearing permit:

- Implement weed management strategies to minimise the risk to the biodiversity values of adjacent native vegetation.
- Avoid Priority flora locations by fencing known sites.
- Retain the vegetative material and topsoil removed by clearing and stockpile the vegetative material and topsoil in an area that has already been cleared.

### **3.2.2. Environmental value: biological values (fauna) – Clearing Principle (b)**

**Assessment:** Based on available datasets, two conservation significant fauna species have been recorded within 10 kilometres of the application area; the Threatened (Vulnerable) Western Spiny-tailed Skink (*Egernia stokesii badia*) and the Peregrine Falcon (*Falco peregrinus*) (specially protected fauna).

The Peregrine Falcon occurs throughout Australia but are generally absent from treeless and waterless deserts, as well as dense forests. They require high cliff ledges or large trees within which to breed (Marchant and Higgins 1993) which are not present over the application area. The species may overfly the application area without utilising the particular habitat present.

Seven records of the Western Spiny-tailed Skink have been made within the local area. The sub-species is known from the adjacent West Perenjori Nature Reserve with the closest within 700 metres of the application area. The West Perenjori Nature Reserve has also been used as a translocation site with nine animals released within the reserve approximately 760 metres south of the application area in 2008 (Appendix B2).



*Egernia stokesii badia* was widely distributed up until the 1960s through semi-arid areas of south-western Western Australia from Minnivale (150 km ENE of Perth) north to Mullewa and east to Perenjori and south of the Yalgoo (DEC 2012). Clearing for agriculture has removed most of its potential habitat through this region and the population has consequently declined as a result of isolation through fragmentation. It tends to shelter in logs and cavities in the trunks and branches of shrubs. It lives in small colonies often in large eucalypt trees with abundant hollows and crevices for shelter, and the lizards use a communal latrine (How *et al.* 2003) which is useful for ascertaining presence/absence. Ideal colony sites are situated in very large York Gums (*Eucalyptus loxophleba*), and occasionally very large melaleucas, have both narrow and broad hollows, raised branches for basking and an abundance of dense shrubs (often *Eremophila* spp.) around the tree (Bamford 2019). However, they may also utilise human-created habitats such as abandoned buildings, piles of corrugated iron, building rubble and piles of railway sleepers (How *et al.*, 1999).

A site inspection of DWER (2017) identified a small section of woodland within the north-west corner of the application area that may provide habitat, however, the majority of the application area was not considered preferred habitat. Considering the proximity of known populations DBCA (2018) suggest that the large amount of human constructed habitat such as old bits of tin and assorted rubbish within the application area may provide habitat for *Egernia stokesii badia*.

A survey for the Western Spiny-tailed Skink was undertaken by Bamford (2019). While vegetation in the adjacent West Perenjori Nature Reserve includes large York Gums, the vegetation in the application area itself consists of heath and sedgeland with scattered mallee eucalypts (Bamford 2019). These trees are small, with maximum stem diameters in the order of 20 to 25 centimetres, and occasional small hollows. These mallees are considered too small to provide the range and abundance of hollows favoured by the Spiny-tailed Skink (Bamford 2019), and *Eremophila* spp. are either absent or only a minor component of the understorey (Bamford 2019) (Appendix E2).

No evidence of the Spiny-tailed Skink was recorded during the survey and the habitat present is of marginal value (Bamford 2019). This suggests that the skinks are not present, however, as they are known from the adjacent Nature Reserve Bamford (2019) suggests that individuals may occasionally move into the application area taking temporary shelter in the small mallee eucalypts present (Bamford 2019) (Appendix E2) or human constructed habitat such as old bits of tin and assorted rubbish (DBCA 2018).

During the fauna survey, Bamford (2019) recorded abundant evidence of the Echidna (*Tachyglossus aculeatus*) with the level of foraging activity suggesting that several individuals may be present (Bamford 2019). The Echidna is not a listed conservation significant species but has declined dramatically across the wheatbelt due to land-clearing.

**Conclusion:** Based on the above assessment, the application area does not provide primary habitat for conservation-significant fauna species. The application area may provide temporary marginal habitat for the Western Spiny-tailed Skink (*Egernia stokesii badia*), from time-to-time but the loss of this habitat is unlikely to impact the status of local colonies occurring in adjacent areas with primary woodland habitat. Fencing of the northern boundary will be set back at least six metres which will result in a vegetated buffer of at least 20 metres (including vegetation within a road reserve) between the proposed clearing and the Carnamah-Perenjori Road. For the reasons set out above it is considered that the impacts of the proposed clearing can be managed by implementing slow directional clearing to allow ground fauna such as the Echidna to move into adjacent vegetation ahead of the clearing.

**Conditions:** To address the above impacts, undertaking slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity will be required as a condition on the clearing permit.

### **3.2.3. Environmental value: significant remnant vegetation– Clearing Principle (e)**

**Assessment:** The national objectives and targets for biodiversity conservation in Australia has a target to prevent the clearance of ecological communities with an extent below 30 per cent of that present prior to the year 1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia 2001).

The remaining extent of native vegetation within the Avon Wheatbelt IBRA bioregion (Thackway and Cresswell 1995) is at 15.5 per cent.

Regional native vegetation mapping over the application area, as described and mapped by Shepherd *et al.*, (2001), confirms two vegetation associations:

- Association 551 – Shrublands; *Allocasuarina campestris* thicket. Thickets of Wattle, *casuarina* and teatree *Acacia-Allocasuarina-Melaleuca* alliance; and
- Association 352 – Medium woodland; York gum, salmon gum etc. *Eucalyptus loxophleba*, *E. salmonophloia*. Goldfields; gimlet, redwood etc. *E. salubris*, *E. oleosa*. Riverine; rivergum *E. camaldulensis*.

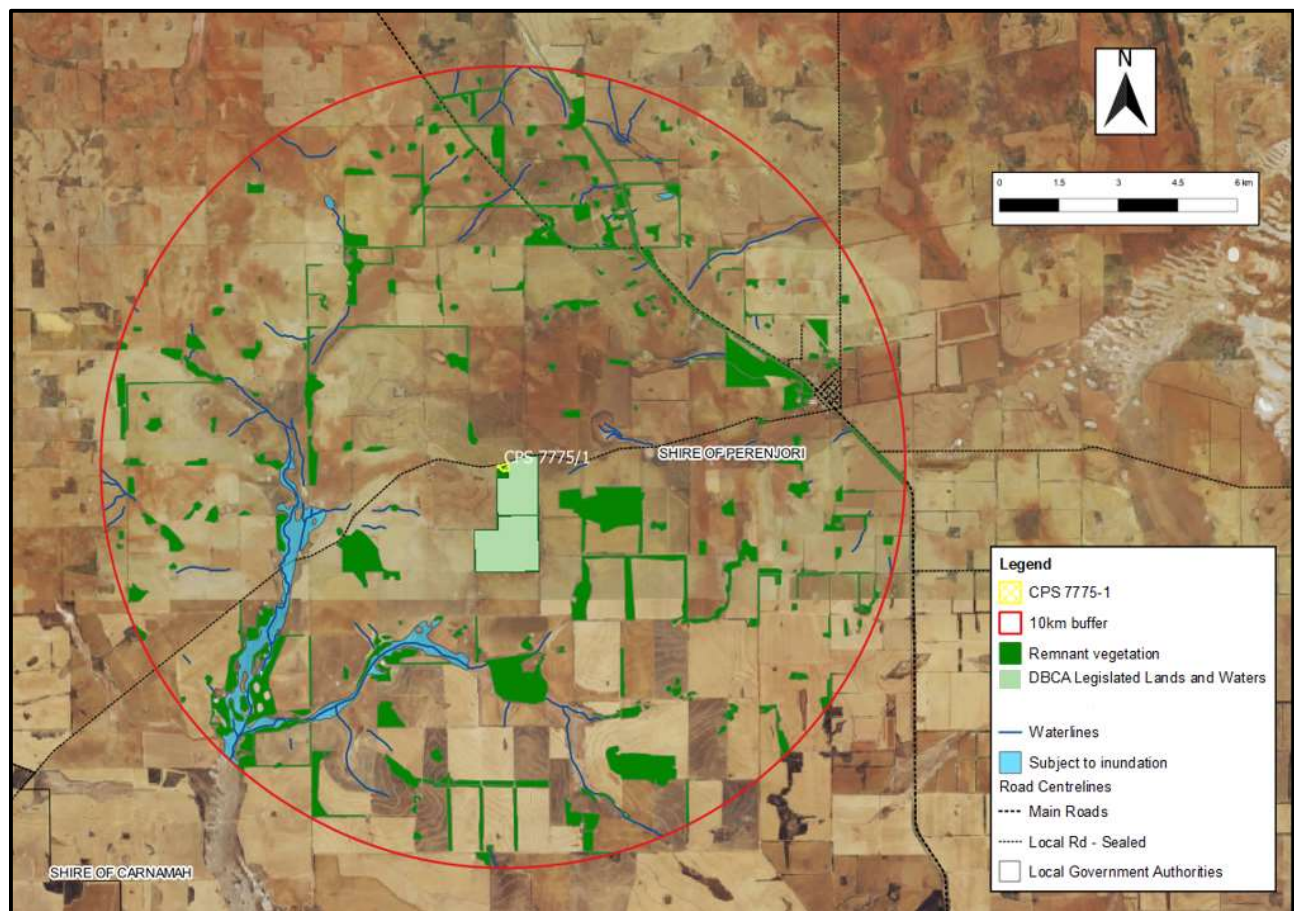
The flora and vegetation survey (JB Botanical 2019) described two vegetation communities over the application area that align broadly with the descriptions of Shepherd *et al.*, (2001).

The mapped vegetation association 551 retains approximately 27.67 per cent of its original vegetation extent, with approximately 19.68 per cent retained within the Avon Wheatbelt bioregion (Government of Western Australia 2019). The mapped vegetation association 352 retains approximately 19.61 per cent of its original vegetation extent, with approximately 17.27 per cent retained within the Avon Wheatbelt bioregion (Government of Western Australia 2019) (Appendix B3).

Within the local area of a 10 kilometre radius of the application area, approximately 2,823 hectares of native vegetation is retained, representing 8.75 per cent of the original native vegetation extent (Figure 2).

**Conclusion:** Based on the above assessment, the Avon Wheatbelt bioregion, and mapped regional vegetation associations over the application area at various scales, are all below the 30 per cent threshold below which species loss appears to accelerate exponentially. The local area supports just 8.75 per cent of the original native vegetation extent, and the application area itself is contiguous with, and located strategically at the north-west extremity of the West Perenjori Nature Reserve (Figure 2). Native vegetation within the application area is in good to very good condition (JB Botanical 2019) and significant as a remnant of native vegetation in an area that has been extensively cleared. For the reasons set out above it is considered that the impacts of the proposed clearing constitutes a significant residual impact.

**Conditions:** To address the above impacts, the provision of an offset (Section 4) to counter-balance the significant residual impacts to a significant remnant of native vegetation in an area that has been extensively cleared is required as a condition on the permit.



**Figure 2: CPS 7775-1 - Context map showing mapped remnant vegetation in the local area**

### 3.2.4. Environmental value: conservation areas – Clearing Principle (h)

Just one reserve managed by the DBCA for conservation purposes is located within 10 kilometres of the application area. That is, the West Perenjori Nature Reserve (R 26819), an A class Nature Reserve vested in the Western Australian Conservation and Parks Commission for the conservation of flora and fauna (Figure 2). The application area is contiguous with this Nature Reserve and located at its north-west extremity (Figure 2).

The West Perenjori Nature Reserve covers an area of approximately 347 hectares, with a north to south length of approximately 2.7 kilometres. Approximately 200 metres of the Nature Reserve abuts the application area immediately to the west.

Due to its location adjacent to the West Perenjori Nature Reserve the application area contributes to its ecological values by extending its effective size, and providing a vegetated buffer to the established waste facility. Conversely, impacts to the application area may have consequences to the adjacent reserve.

The DWER site inspection (DWER 2017) and advice from DBCA (2018) identified rubbish and debris originating from the waste facility within the nature reserve with no fencing at the application area separating or defining the two land uses. Proposed clearing has the potential to have an impact on the environmental values of the nature reserve through edges effects, and in particular increasing the risk of weeds being spread into the nature reserve. The risk of dieback is considered minimal due to the location in the eastern area of the northern wheatbelt for which there are no records of dieback occurrence, and the location of the application area at the top of the catchment (JB Botanical 2019). However, adjacent native vegetation is susceptible to weed invasion. The end land use will also increase the risk of rubbish being spread into the nature reserve by wind.

Conclusion: Based on the above assessment the proposed clearing has the potential to impact the environmental values of the adjacent conservation area. The management of edge effects can improve the quality and long-term viability of habitats. Implementing weed management measures would assist in minimising the risk, and the erection of appropriate fencing between the application area and the nature reserve would mitigate the likelihood on wind-blown waste entering the nature reserve.

Conditions: To address the above impacts, the following management measure will be required as a condition on the clearing permit:

- Implement weed management strategies to minimise the risk to the biodiversity values of adjacent native vegetation.
- Install appropriate fencing between the application area and the adjacent West Perenjori Nature Reserve.

### **3.2.5. Environmental value: land degradation – Clearing Principle (g)**

Assessment: The application area is mapped as the Pindar System of gently undulating sandplain with long gentle slopes. Soils are described as unit 271Pi. That is, acidic yellow and brown deep sands and sandy earths (Schoknecht *et al.*, 2004). The vegetation and flora survey (JB Botanical 2019) and the site inspection (DWER 2017) confirmed the permeable sandy textures soils present.

The land degradation risk categories that apply to this subsystem indicate that the soil unit 271Pi has a high to extreme wind erosion risk. Other risk factors are relatively low (Appendix B1). The proposed removal of vegetation has the potential to further expose the soils and increase the risk of wind erosion impacting the application area itself, as well as adjacent vegetation including within the West Perenjori Nature Reserve located immediately to the east (Figure 2). Landfill licence conditions and EPA (2015) guidance stipulate that any disposal of waste must be at least 35 metres from the premises boundary.

Conclusion: Based on the above assessment the proposed clearing has the potential to cause land degradation in the form of wind erosion which may impact the environmental values of adjacent vegetation, including that within a recognised conservation area. The applicant has committed to the installation of a 3.6 metre boundary fence, with the lower half fitted with shade cloth (Section 3.1). The implementation of staged clearing and the erection of appropriate fencing will assist in mitigating the wind erosion risk.

Conditions: To address the above impacts, the following management measure will be required as a condition on the clearing permit:

- Undertake staged clearing to minimise wind erosion.
- Install appropriate fencing between the application area and the adjacent West Perenjori Nature Reserve.

### **3.3. Relevant planning instruments and other matters**

This clearing permit application was advertised on DWER's website on 16 October 2017 with a 21 day submission period. No public submissions have been received in relation to this application.

The application area is zoned for public purposes (Zone no.1808) with a restricted use (R1- Rubbish Disposal) under the Shire of Perenjori Local Planning Scheme No. 2. The Shire of Perenjori is the public authority that manages the Perenjori Landfill Site that includes the application area (Reserve No.26818 Carnamah Perenjori Road - Lot 10591 on Deposited Plan 168362). The landfill is a licenced Category 64 - Class II putrescible landfill site (L6850/1997/13) with a production or design capacity of more than 20 tonnes per year but not more than 5,000 tonnes per year (Shire of Perenjori 2021a). Licence conditions and EPA (2015) guidance stipulate that any disposal of waste must be at

least 35 metres from the premises boundary. Additional statutory approvals are not required (Shire of Perenjori 2021a).

The application area is not located within any Surface Water Areas or Irrigation Districts proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act), nor any *Country Areas Water Supply Act 1947* (CAWS Act) clearing control catchments or Public Drinking Water Source Areas. No rivers proclaimed under the RIWI Act intersect the application area. The application area is located within the Gascoyne Groundwater Area (UFI 37) proclaimed under the RIWI Act. No groundwater will be required for the proposed clearing or end land-use and no additional water licensing or permitting under DWER will be required.

An offset has been provided by the applicant that considers an amendment to the purpose of the northern portion of a Shire of Perenjori Reserve (Reserve 16777 - Lot 11795 on Plan 217554) from 'Parks and Recreation' to 'Conservation' (Section 4). Reserve 16777 is currently zoned parks and recreation (Zone no. 954) under the Shire's Local Planning Scheme No. 2. On conclusion of the amendment, the northern portion of Reserve 16777 will be identified as Lot 500 with a purpose of 'Conservation'. The Department of Planning, Lands and Heritage (DPLH) have advised DWER that the Shire has accepted management over the northern portion of Reserve 16777, and that no objections have been received as part of its due diligence referral process (DPLH 2021). DWER has provided support to the DPLH for the proposed amendment (DWER 2021). On conclusion of the amendment process the northern portion of Reserve 16777 will be identified as Lot 500.

A registered Native Title claim covers the application area; Southern Yamatji (WAD19/2019) as well as an Indigenous Land Use Agreement (ILUA); the Yamatji Nation Agreement (WI2020/002) (ILUA 3388). No Aboriginal sites of significance have been mapped within the application area, with the closest located approximately 1.6 kilometres to the east. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

#### 4. Suitability of offset

##### Offset proposal

The assessment against the ten clearing principles has identified that the proposed clearing is at variance with principle (e) (Appendix C). That is, native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared (section 3.2.4). After the consideration of the avoidance and mitigation measures provided by the applicant a significant residual impact remains. That being; the loss of 2.98 hectares of a significant remnant of native vegetation in an area that has been extensively cleared.

To counter-balance the significant residual impact, the applicant (the Shire of Perenjori) has submitted an offset proposal (Shire of Perenjori 2021b) that considers an amendment to the purpose of the northern portion of Reserve 16777 (Lot 11795 on Plan 217554) from 'Parks and Recreation' to 'Conservation'. Reserve 16777 is located along Caffin Road, at the intersection with the Mullewa–Wubin Road, in the locality Latham within the Shire (Figure 3).

Reserve 16777 is currently zoned 'Parks and Recreation' (Zone no. 954) under the Shire's Local Planning Scheme No. 2. On conclusion of the amendment the northern portion of Reserve 16777 will be identified as Lot 500 with a purpose of conservation.

Proposed Lot 500 (the offset site) is located within the Shire approximately 42.5 kilometres south of the application area. The offset site consists of approximately 56.8 hectares of remnant vegetation in good to very good condition (Appendix D).

The offset site is located within the South-West Botanical Province of Western Australia and within the Avon Wheatbelt (AVW) IBRA Bioregion of Thackway and Cresswell (1995), and the Merredin sub-region.

The offset site is located within the Upsan Downs System of gently undulating rises with long gentle gradients with yellow deep sands, yellow sandy earths, some gravels and loamy duplexes. A small area in the east of the offset site consists of the Wallambin System of salt lake soils and calcareous loamy earth with mallee, morrel woodland and saltbush-bluebush-samphire flats.

Regional native vegetation mapping over the offset site, as described and mapped by Shepherd *et al*, (2001), confirms the two vegetation associations below (Table 1; Figure 3).

Table 1: Mapped vegetation associations within Reserve 16777

Assn.	Description	Area (ha)
352	Medium woodland; York gum, salmon gum etc. <i>Eucalyptus loxophleba</i> , <i>E. salmonophloia</i> . Goldfields; gimlet, redwood etc. <i>E. salubris</i> , <i>E. oleosa</i> . Riverine; rivergum <i>E. camaldulensis</i> .	46.2

Assn.	Description	Area (ha)
988	Samphire with thicket/scrub; <i>Tecticornia</i> spp. with <i>Melaleuca</i> spp. <i>Acacia</i> spp.	10.6

No wetlands or watercourses occur over the offset site. Association 988 of samphire with thicket/scrub is aligned with the area of Wallambin System in the east of the offset site (Figure 3) associated with salt pans and floodplain of Coonderoo River to the north (Figure 4). The offset site provided for CPS 7775/1 considers an area within Vegetation Association 352 which supports habitat structure as similar as possible to undisturbed examples of the vegetation type within the application area.

Approximately 41.8 hectares of the Eucalypt Woodlands of the Western Australian Wheatbelt TEC has been mapped over the offset site, in association with Vegetation Association 352 (medium woodlands) (Figure 3). However, representative photographs (Figure 5) indicate a low mallee woodland community on sandplains, and tall shrublands of *Allocasuarina* and *Acacia*, similar to that described by JB Botanical (2019) over the application area, rather than a eucalypt woodland community, and therefore not likely to be representative of the TEC.

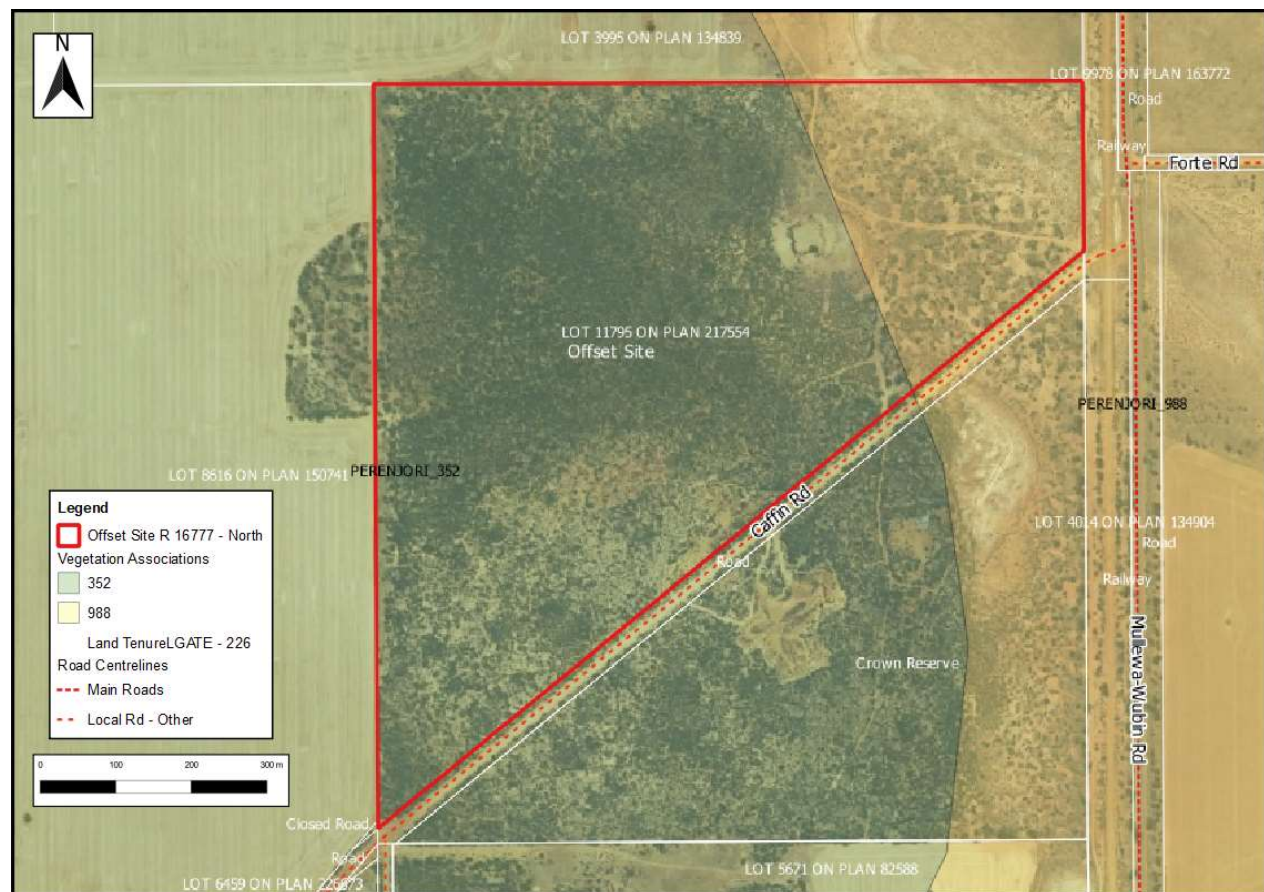


Figure 3. Offset site - northern portion of Reserve 16777

### Offset suitability

Principle 1 of the WA Environmental Offsets Policy (Government of Western Australia 2011) outlines that environmental offsets will only be considered after avoidance and mitigation options have been pursued. The applicant has limited ability to avoid or minimise impacts to native vegetation over the application area (Section 3.1), however, alternative options were considered and the considerations deemed to be adequate in addressing this requirement (Section 3.1).

The offset proposed is a land acquisition offset incorporating the protection of environmental values through improved security of tenure, or restricting the use of the land, consistent with the WA Environmental Offsets Guidelines September 2014 (Government of Western Australia 2014). The resultant output will provide approximately 56.8

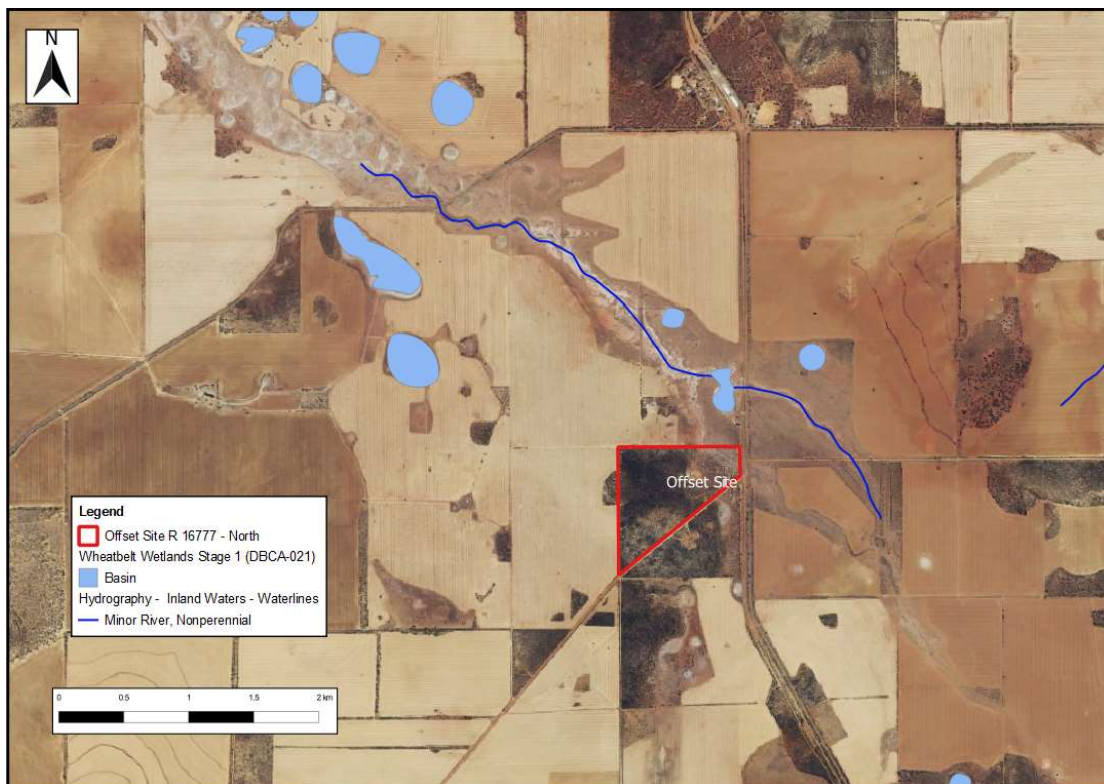
hectares of remnant vegetation in the Avon Wheatbelt bioregion in good to very good condition protected within a formal reserve vested in the Shire with a purpose of 'Conservation'.

The proposed offset is consistent with the WA State Government's Environmental Offsets Policy and Environmental Offsets Guidelines. In assessing whether the proposed offset is adequately proportionate to the significance of the environmental values being impacted, DWER undertook a calculation using the Department of Agriculture, Water and the Environment (DAWE) Offsets Assessment Guide 'calculator'. The calculator indicated that the allocation of 16.6 hectares of remnant vegetation in the Avon Wheatbelt bioregion in good to very good condition protected within a formal reserve with a purpose of conservation contributed to a 100 per cent counter-balance to the residual impact of the loss of 2.98 hectares of a significant remnant of native vegetation in good to very good condition in an area that has been extensively cleared. This is consistent with the WA Environmental Offsets Policy September 2011 (Government of Western Australia 2011). The justification for the values used in the offset calculation is provided in Appendix F. The remaining native vegetation (~40.2 hectares) within the Reserve may be banked for future authorised clearing.

The DPLH have advised DWER that the Shire has accepted management over the northern portion of Reserve 16777, and that no objections have been received as part of its due diligence referral process (DPLH 2021). DWER has provided support to the DPLH for the proposed amendment (DWER 2021).

When assessing the offset site in terms of the WA Environmental Offsets Guidelines the following points were considered. The offset site:

- provides native vegetation in at least equal condition and with less disturbance than the impacted environmental value;
- contains habitat structure as similar as possible to undisturbed examples of the vegetation type to be impacted;
- has a better area to perimeter ratio than the impacted site;
- is likely to contain additional numbers of significant species and communities compared with the impact site;
- is not contiguous with an existing conservation area, but is contiguous with remnant vegetation to the south and a vegetated road reserve, and forms a component of the upstream catchment of Coonderoo River and therefore enhances the ecological linkages of that system (Figure 4); and
- allows for secure tenure that will provide for long term conservation (but does not include any specific ongoing management measures).



**Figure 4. Landscape context of the offset site**



ID 46



ID 43



ID 41



ID 44

**Figure 5. Representative photographs of the offset site**

**Appendix A – Additional information provided by applicant**

Information	Description
Shire of Perenjori (2017)	Supporting information for clearing permit application CPS 7775/1 provided by the Shire of Perenjori.
Shire of Perenjori (2021a)	Supporting Information for clearing permit application CPS 7775/1 including avoidance and minimisation strategies provided by the Shire of Perenjori.
Shire of Perenjori (2021b)	Offset proposal provided by the Shire of Perenjori and summarised in section 4 and Appendix F.
JB Botanical (2019)	The report of a vegetation and flora survey of the application area was undertaken by Jenny Borger of JB Botanical Consulting on 25th April 2019 (see Appendix E2).
Bamford (2019)	The report of an assessment of application area for the Western Spiny-tailed Skink ( <i>Egernia stokesii badia</i> ) was undertaken by Mike Bamford and Mandy Bamford of Bamford Consulting Ecologists on 5th June 2019 (see Appendix E3).



## Appendix B – Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

### B.1 Site characteristics

Site characteristic	Details																				
<b>Local context</b>	<p>The application area is located within the South-West Botanical Province of Western Australia and within the Avon Wheatbelt (AVW) IBRA Bioregion of Thackway and Cresswell (1995), and the Merredin sub-region.</p> <p>The application area is located on a broad ridge within undulating sandplain with some areas of heavier soil. The West Perenjori Nature Reserve is located adjacent on the eastern boundary of the proposal and has extensive areas of the Wheatbelt Woodland TEC and sandplain. Areas of historical disturbance associated with the landfill are located on the southern boundary of the application area.</p>																				
<b>Regional vegetation description (Shepherd <i>et al</i>, 2001)</b>	<p>Two vegetation associations as described and mapped by Shepherd <i>et al</i>, (2001) occur over the application area:</p> <ul style="list-style-type: none"> <li>• Association 551 – Shrublands; <i>Allocasuarina campestris</i> thicket. Thickets of Wattle, <i>casuarina</i> and teatree <i>Acacia-Allocasuarina-Melaleuca</i> alliance.</li> <li>• Association 352 – Medium woodland of York gum, salmon gum etc. <i>Eucalyptus loxophleba</i>, <i>E. salmonophloia</i>. Goldfields; gimlet, redwood etc. <i>E. salubris</i>, <i>E. oleosa</i>. Riverine; rivergum <i>E. camaldulensis</i>.</li> </ul>																				
<b>Vegetation description (JB Botanical 2019)</b>	<p>Two vegetation communities were described and mapped by JB Botanical (2019), as well as disturbed areas. Areas of these communities are provided in the table below:</p> <ul style="list-style-type: none"> <li>• Vegetation 1: <i>Allocasuarina acutivalvis</i> subsp. <i>acutivalvis</i> tall shrubland over <i>Melaleuca cordata</i>, <i>Grevillea paradoxa</i>, <i>Cyathostemon heterantherus</i>, <i>Acacia longiphylloidea</i> and <i>Micromyrtus racemosa</i> shrubland to open shrubland on lateritic gravel.</li> <li>• Vegetation 2: <i>Eucalyptus leptopoda</i> and <i>E. eudesmioides</i> low mallee woodland to low open mallee woodland over <i>Ecdeiocolea monostachya</i>, <i>Rhagodia drummondii</i> and <i>Melaleuca fabri</i> sedgeland to open sedgeland with sparse shrubs on brownish yellow sandy loam.</li> <li>• Disturbed areas: Isolated shrubs and mallee over <i>*Avena fatua</i>, <i>Ptilotus polystachyus</i>, <i>Maireana brevifolia</i> mixed ground cover</li> </ul> <table border="1"> <thead> <tr> <th>ID</th> <th>Vegetation community</th> <th>Area (ha)</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Veg 1</td> <td>Allocasuarina tall shrubland</td> <td>0.98</td> <td>26.6</td> </tr> <tr> <td>Veg 2</td> <td>Eucalyptus low mallee woodland</td> <td>2.00</td> <td>54.3</td> </tr> <tr> <td>Disturbed</td> <td>Degraded areas</td> <td>0.70</td> <td>19.0</td> </tr> <tr> <td colspan="2"></td> <td>3.68</td> <td>100.0</td> </tr> </tbody> </table>	ID	Vegetation community	Area (ha)	Percentage	Veg 1	Allocasuarina tall shrubland	0.98	26.6	Veg 2	Eucalyptus low mallee woodland	2.00	54.3	Disturbed	Degraded areas	0.70	19.0			3.68	100.0
ID	Vegetation community	Area (ha)	Percentage																		
Veg 1	Allocasuarina tall shrubland	0.98	26.6																		
Veg 2	Eucalyptus low mallee woodland	2.00	54.3																		
Disturbed	Degraded areas	0.70	19.0																		
		3.68	100.0																		
<b>Vegetation condition (JB Botanical 2019)</b>	<p>The condition of the application area as assessed by JB Botanical (2019) ranged from degraded to very good (Keighery 1994), with the majority of the vegetation (2.98 hectares or over 80%) in good to very good condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix D.</p>																				

Site characteristic	Details												
<b>Soil description</b>	<p>The application area is mapped within the Pindar 1 Subsystem (271Pi) of:</p> <ul style="list-style-type: none"> <li>gently undulating sandplain and long gentle slopes; acidic yellow and brown deep sands and sandy earths (Schoknecht <i>et al.</i>, 2004).</li> </ul> <p>JB Botanical (2019) describe two types of soils;</p> <ul style="list-style-type: none"> <li>sandplain and</li> <li>sand over laterite.</li> </ul>												
<b>Land degradation risk</b>	<p>The land degradation risk categories that apply to the 271Pi land subsystem indicate the following:</p> <table border="1" data-bbox="435 562 1409 877"> <tr> <td>Wind Erosion:</td> <td>&gt;70% of map unit has a high to extreme wind erosion risk</td> </tr> <tr> <td>Salinity:</td> <td>30-50% of map unit has a moderate to high salinity risk or is presently saline</td> </tr> <tr> <td>Subsurface Acidification:</td> <td>&lt;3-% of map unit has a high subsurface acidification risk or is presently acid</td> </tr> <tr> <td>Water Erosion:</td> <td>&lt;3-% of map unit has a high to extreme water erosion risk.</td> </tr> <tr> <td>Water logging:</td> <td>&lt;3-% of map unit has a moderate to very high waterlogging risk</td> </tr> <tr> <td>Flood risk:</td> <td>&lt;3-% of the map unit has a moderate to high flood risk</td> </tr> </table>	Wind Erosion:	>70% of map unit has a high to extreme wind erosion risk	Salinity:	30-50% of map unit has a moderate to high salinity risk or is presently saline	Subsurface Acidification:	<3-% of map unit has a high subsurface acidification risk or is presently acid	Water Erosion:	<3-% of map unit has a high to extreme water erosion risk.	Water logging:	<3-% of map unit has a moderate to very high waterlogging risk	Flood risk:	<3-% of the map unit has a moderate to high flood risk
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Water Erosion:	<3-% of map unit has a high to extreme water erosion risk.												
Water logging:	<3-% of map unit has a moderate to very high waterlogging risk												
Flood risk:	<3-% of the map unit has a moderate to high flood risk												
<b>Waterbodies</b>	<p>No watercourses or wetlands occur within the application area with the closest mapped watercourse over 1.5 kilometres to the east. A geodata lake is located approximately 2.9 kilometres from the application area; a geomorphic wheatbelt wetland is located approximately 2.6 kilometres from the application area; and a minor river is located approximately 5 kilometres from the application area.</p>												
<b>Hydrogeography</b>	<p>The application area IS located within:</p> <ul style="list-style-type: none"> <li>the Gascoyne Groundwater Area proclaimed under the RIWI Act (UFI 37);</li> </ul> <p>The application area is <u>NOT</u> located within:</p> <ul style="list-style-type: none"> <li>any Surface Water Areas or Irrigation Districts proclaimed under the RIWI Act;</li> <li>any CAWS Act Clearing Control Catchments; and</li> <li>any Public Drinking Water Source Areas.</li> </ul> <p>Groundwater has been mapped at 14,000-35,0003 TDS mg / L (That is, saline)</p>												
<b>Conservation areas</b>	<p>The application area is located immediately adjacent to the West Perenjori Nature Reserve which adjoins the eastern section of the application area.</p>												
<b>Landform and climate</b>	<p>The application area is located within the Pindar System of gently undulating sandplain with long gentle slopes.</p> <p>The climate at Perenjori can be described as Mediterranean with hot dry summers with occasional thunderstorms and cool moist winters. Rainfall recorded at the Perenjori Bureau of Meteorology (BOM) Station 8107 indicates a mean annual rainfall of 327.4 mm, with the wettest months being May to August (BOM 2021; Commonwealth of Australia 2005)</p>												

## B.2 Ecosystem, flora and fauna analysis

With consideration for the site characteristics set out above, relevant datasets (Appendix G2), the following conservation significant flora and fauna species, and ecological communities may be impacted by the clearing.

### Significant ecosystems

The Eucalypt Woodlands of the Western Australian Wheatbelt with the status of P3 PEC under the BC Act, and as a Critically Endangered TEC under the EPBC Act have been mapped within 300 metres of the application area.

The flora and vegetation survey of JB Botanical (2019) concluded that the wheatbelt woodlands TEC was not present over the application area with the eucalypt species present not listed as the key dominant species of TEC (DoEE 2015).

Ecological Community	Distance of closest record to application area (kilometres)	Suitable soil type? (flora, ecological community)	Suitable vegetation type? (flora, ecological community)	Are surveys adequate to identify? (Y,N)
Eucalypt Woodlands of the Western Australian Wheatbelt	9.9	Yes	No	Yes.

### Significant flora

A site inspection of the application area was undertaken by DWER (2017), and a vegetation and flora survey undertaken by JB Botanical (2019).

An assessment of the likelihood of flora species of conservation significance recorded within 20 kilometres of the application area was undertaken by JB Botanical (2019) (Table below).

The condition of the application area ranged from degraded to very good, with most in good to very good condition. The P1 *Leptospermum exsertum* was previously recorded in the application area in 1994 but is no longer present. One Priority species was recorded, *Grevillea asparagoides* (P3) with three plants located near the south-eastern boundary.

No additional Threatened or Priority taxa were recorded, nor any taxa that could be considered range extensions (JB Botanical 2019). It is also highly unlikely that any conservation-listed annual flora would occur, with no taxa apart from *Grevillea asparagoides* of particular importance (JB Botanical 2019).

Scientific Name	Status (WA)	Status (EPBC)	Habitat present
<i>Gyrostemon reticulatus</i>	CR	CR	Yes; requires disturbance (fire or mechanical); gravel; short lived perennial
<i>Dasymalla axillaris</i>	CR	CR	Yes; yellow sand, gravel
<i>Eremophila nivea</i>	CR	EN	No; York gum, Melaleuca and Acacia on sandy-clay, clay loam
<i>Eremophila rostrata</i> subsp. <i>trifida</i>	CR	CR	Unlikely; light brown loam; granite; under open Mallee and Acacia
<i>Eremophila viscida</i>	EN	EN	Unlikely; probably prefers heavier soils
<i>Acacia nigripilosa</i> subsp. <i>latifolia</i>	P1		Yes; yellow sand
<i>Babingtonia minutifolia</i>	P1		No, rocky outcrops
<i>Leptospermum exsertum</i>	P1		Yes, sandplain
<i>Verticordia dasystylis</i> subsp. <i>oestopoia</i>	P1		No; gritty soils over granite, outcrops
<i>Eremophila sericea</i>	P1		Unlikely
<i>Baeckea</i> sp. <i>Perenjori</i> (J.W. Green 1516)	P2		Unlikely; banded ironstone formation; gravel; granite
<i>Acacia isoneura</i> subsp. <i>nimia</i>	P3		Yes; sandplains and sand ridges
<i>Mirbelia ferricola</i>	P3		No; banded ironstone formation
<i>Urodon capitatus</i>	P3		Potential; Sandy gravelly soils
<i>Grevillea asparagoides</i>	P3		Yes; gravelly loam; sandy soils
<i>Grevillea granulosa</i>	P3		Yes; gravelly sand; sandplains; several records in Perenjori area
<i>Persoonia pentasticha</i>	P3		Unlikely; usually on heavier soils; often associated with York gum

Scientific Name	Status (WA)	Status (EPBC)	Habitat present
<i>Enekbatus longistylus</i>	P3		Yes; sandplains
<i>Eucalyptus arachnaea</i> subsp. <i>arrecta</i>	P3		No; clay loam on granite; breakaways, gullies
<i>Melaleuca barlowii</i>	P3		Potential; gravelly soils
<i>Verticordia muelleriana</i> subsp. <i>muelleriana</i>	P3		Yes, sandplains
<i>Verticordia venusta</i>	P3		Yes; yellow sandplain
<i>Banksia benthamiana</i>	P4		Yes; sandplain; gravelly soils

Two fauna species of conservation significance have been recorded from within 10 kilometres of the application area; the Western Spiny-tailed Skink (*Egernia stokesii badia*) and the Peregrine Falcon (*Falco peregrinus*) (Table below). Fauna survey by Bamford (2019) did not record any conservation significant fauna.

Scientific name	Common name	Status (WA)	Status (EPBC)	Year	Count	Locality	Dist. (m)
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	VU	EN	1998	1	West Perenjori NR	684
* <i>Egernia stokesii badia</i>	*Western Spiny-tailed Skink	VU	EN	2008	*9	West Perenjori NR	758
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	VU	EN	1998	1	Perenjori	4,100
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	VU	EN	1998	1	Perenjori	7,129
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	VU	EN	1998	5	Perenjori	7,311
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	VU	EN	-	1	Perenjori	8,107
<i>Egernia stokesii badia</i>	Western Spiny-tailed Skink	VU	EN	2008	9	Perenjori	8,194
<i>Falco peregrinus</i>	Peregrine Falcon	OS		1999	0	West Perenjori NR	1,001
<i>Falco peregrinus</i>	Peregrine Falcon	OS		1983	2	West Perenjori NR	1,255
<i>Falco peregrinus</i>	Peregrine Falcon	OS		1984	2	West Perenjori NR	1,255
<i>Falco peregrinus</i>	Peregrine Falcon	OS		1998	0	West Perenjori NR	2,310
<i>Falco peregrinus</i>	Peregrine Falcon	OS		1999	0	West Perenjori NR	2,496

\* *Translocated individuals*

### B.3 Vegetation extent

Government of WA (2019)	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Current Extent in DCBA Managed Lands	
				(ha)	(%)
<b>IBRA Bioregion*</b>					
Avon Wheatbelt	9,517,109	1,763,070	15.5	174,960	10
<b>Beard vegetation association</b>					
Assn 352 in total	724,269	142,012	19.61	12,673	8.9
Assn 352 in the Avon Wheatbelt	630,577	108,888	17.27	10,191	9.4
Assn 551 in total	302,424	83,685	27.67	19,697	23.5
Assn 551 in the Avon Wheatbelt	257,692	50,715	19.68	3,469	6.8
<b>Remnant vegetation</b>					
Remnant vegetation (10 km radius)	32,278	2,823	8.75		

## Appendix C – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u> Two vegetation communities were described and mapped by JB Botanical (2019) over the application area, with the majority of the vegetation in good to very good condition. A total of fifty-two taxa were recorded from 21 families and 38 genera with three identifiable weeds. The Priority 1 species <i>Leptospermum exsertum</i> has previously been recorded from the application area, and the Priority 3 species <i>Grevillea asparagoides</i> was recorded during a recent survey. Native vegetation proposed to be cleared may comprise a high level of biodiversity.</p>	May be at variance	Yes (Section 3.2.1)
<p><u>Principle (b):</u> “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.”</p> <p><u>Assessment:</u> Two fauna species of conservation significance have been recorded from within 10 kilometres of the application area; the Threatened Western Spiny-tailed Skink (<i>Egernia stokesii badia</i>) and the Peregrine Falcon (<i>Falco peregrinus</i>) (specially protected fauna). A survey for the Western Spiny-tailed Skink was undertaken by Bamford (2019). Trees present over the application area are likely too small to provide the range and abundance of hollows favoured by the Spiny-tailed Skink. Habitat is marginal, however, the sub-species is known from the adjacent West Perenjori Nature Reserve and it is likely that individuals will occasionally move into the application area.</p>	Not likely to be at variance	Yes (Section 3.2.2)
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u> According to available databases, four Threatened flora species have been recorded within the local area. DBCA (2018) advice suggests that there is a low likelihood of these taxa being found within the application area. The flora survey of JB Botanical (2019) and the site assessment of DWER (2017) did not identify <i>Dasymalla axillaris</i> or any other Threatened flora species and the soil profile of the application area appears unlikely to support the Threatened flora species identified within the local area. The application area is unlikely to include, or be necessary for, the continued existence of Threatened flora.</p>	Not likely to be at variance	Yes (Section 3.2.1)
<p><u>Principle (d):</u> “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.”</p> <p><u>Assessment:</u> No TECs endorsed by the Western Australian Minister for Environment have been mapped over the application area, nor within the local area of a 10 kilometre radius of the application area. Vegetation over the application area does not align with any TECs endorsed by the Western Australian Minister for Environment and the application area does not comprise the whole or a part of, nor is it necessary for, the maintenance of a TEC.</p>	Not at variance	No
<b>Environmental values: significant remnant vegetation and conservation areas</b>		

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> The national objectives and targets for biodiversity conservation in Australia has a target to prevent the clearance of ecological communities with an extent below 30 per cent of that present prior to the year 1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia 2001). The remaining extent of native vegetation within the Avon Wheatbelt bioregion is at 15.5 per cent, mapped vegetation association 352 at 19.61 per cent, and mapped vegetation association 551 at 27.67 per cent of their original extent. Approximately 2,823 hectares of native vegetation has been retained within 10 kilometres of the application area representing 8.75 per cent of the original native vegetation extent. The Avon Bioregion, mapped regional vegetation associations over the application area, and native vegetation extent within the local area are all below the 30 per cent threshold. Native vegetation within the application area is significant as a remnant of native vegetation in an area that has been extensively cleared.</p>	At variance	Yes (Section 3.2.3)
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u> The West Perenjori Nature Reserve is immediately adjacent to the application area and adjoins the eastern section. The West Perenjori Nature Reserve covers an area of approximately 347 hectares with a linear length of approximately 200 metres adjoining the application area. The site inspection of DWER (2017) identified rubbish and debris originating from the waste facility within the nature reserve with no fencing separating or defining the two land uses. Proposed clearing has the potential to exacerbate this impact, and have an additional impact on the reserve’s environmental values through edges affects and increasing the risk of the introduction or spread of weeds.</p>	May be at variance	Yes (Section 3.2.4)
<b>Environmental values: land and water resources</b>		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> No mapped watercourses or wetlands occur within the application area, with the closest mapped watercourse over 1.5 kilometres to the east, and mapped wetlands further afield (Appendix B1). The site inspection of DWER (2017), vegetation survey of JB Botanical (2019), and fauna survey of Bamford (2019) confirmed the lack of watercourses, wetlands, or riparian vegetation over the application area. Native vegetation within the application area is not growing in, or in association with, an environment associated with a watercourse or wetland.</p>	Not at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The application area is mapped as unit 271Pi. That is, an undulating sandplain with long gentle slopes, acidic yellow and brown deep sands and sandy earths (Schoknecht <i>et al.</i>, 2004) (Appendix B1). The land degradation risk categories that apply to this subsystem (Appendix B1) indicate that the soil unit 271Pi has a high to extreme wind erosion risk. The proposed removal of vegetation has the potential to further expose the soils and increase the risk of wind erosion impacting adjacent vegetation including within the adjacent West Perenjori Nature Reserve.</p>	May be at variance	Yes (Section 3.2.5)

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u> No watercourses or wetlands occur within the application area (Appendix B1) or surrounds, with groundwater mapped as saline at 14,000-35,000 TDS mg / L. Noting the extent of the proposed clearing and the absence of watercourses or wetlands, the proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> There are no mapped annual exceedance probability (AEP) floodplains within the vicinity of the application area. The landform consists of undulating sandplain with permeable yellow and brown deep sands. Given the extent of clearing, the local topography and soil type, the proposed clearing is unlikely to cause, or exacerbate, the incidence or intensity of flooding.</p>	Not likely to be at variance	No

## Appendix D – Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

### Vegetation Condition scale adapted from Keighery (1994) (EPA 2016) as described by JB Botanical (2019)

Condition	Description
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 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.



**Appendix E –Biological survey information excerpts / Photographs of the vegetation**

**E.1 Site photographs (JB Botanical 2019)**



Quadrat 1:



Quadrat 2:



Quadrat 3:



Quadrat 4:



Relevé 1:



Relevé 2:



Relevé 3:



Relevé 4:



Relevé 3:



Degraded areas

## E.2 Flora and vegetation (JB Botanical 2019)

### 3. Results

#### 3.1 Summary

The site was surveyed on the 25<sup>th</sup> April at the beginning of autumn. The vegetation was in a reasonable condition, although some plants appeared slightly water stressed. Reproductive structures (mostly fruit) were present on most perennial taxa, particularly within the Myrtaceae, Cyperaceae and Poaceae families. Herbs, excepting *Borya sphaerocephala*, had died off but most were still recognisable (*Waitzia*, *Podolepis*, *Actinobole* and *Angianthus*). The *Acacia* species were identified based on phyllode and habit characteristics. Three *Grevillea* species were present and were able to be identified by fruit and leaf characteristics. A total of fifty two taxa were recorded from 21 families and 38 genera, including 3 identifiable weeds. Other weeds are likely to be present in the winter and spring. The most diverse families were Myrtaceae (11 species, 7 genera); Fabaceae (8 species, 1 genus); Poaceae (5 species, 5 genera including 2 weeds) and Asteraceae (5 genera, 5 species). One priority species – *Grevillea asparagoides* P3 was recorded. The list of species is presented in Appendix 1.

The site had various levels of disturbance from minor to high. Four quadrats were established in the vegetation in better condition, and five relevés were described – three within the more disturbed areas and two in vegetation similar to quadrats 3 and 4. Two likely vegetation types were identified from the field interpretation and these were supported by the statistical analysis.

#### 3.2 Conservation listed flora

One species – *Grevillea asparagoides* – was recorded (3 plants) in the south east of the survey area near the change in soil type from sandplain to sand over laterite. Two other species of *Grevillea* with pinnately divided leaves (*G. paradoxa* and *G. levis*) were also present. Leaf characteristics (such as width and length of lobes) and fruit characteristics were used to distinguish the plants.



Figure 3: *Grevillea asparagoides* flowering shrub (August) and dehiscent fruit (April).

The GPS locations of *G. asparagoides* are presented in Appendix 2.



Figure 4: Locations of description sites and of the priority species – *Grevillea asparagoides*. Pre-European vegetation is also mapped and will be discussed in section 3.3.

### 3.3 Vegetation

Two vegetation communities were mapped from the survey results in the proposal (2.98 ha) as well as 0.7 ha of degraded vegetation. The description of the quadrats and relevés is presented in Appendix 2. (Google Earth Pro 2019)



Figure 5: Vegetation communities occurring within the proposal

Vegetation 1 (0.98 ha): *Allocasuarina acutivalvis* subsp. *acutivalvis* tall shrubland over *Melaleuca cordata*, *Grevillea paradoxa*, *Cyathostemon heteranthus*, *Acacia longiphylloidea* and *Micromyrtus racemosa* shrubland to open shrubland on lateritic gravel

Vegetation 2 (2 ha): *Eucalyptus leptopoda* and *E. eudesmioides* low mallee woodland to low open mallee woodland over *Ecteiocolea monostachya*, *Rhagodia drummondii* and *Melaleuca fabri* sedgeland to open sedgeland with sparse shrubs on brownish yellow sandy loam

Disturbed areas – degraded (0.7 ha): Isolated shrubs and mallee over *Avena fatua*\*, *Ptilotus polystachyus*, *Maireana brevifolia* mixed ground cover

The dendrogram produced from the statistical analysis (Figure 6) shows that Q1 and R2 are quite similar, and the remaining sites are similar, with the exception of R1 which is located in a more disturbed area, but has more affinities with the second group. Q1 and R2 are located within the *Allocasuarina acutivalvis* tall shrubland on laterite, while Q2 – Q4 and R3 – R5 are located within *Eucalyptus* low mallee woodland.

#### 4. Discussion

The vegetation within the proposal is representative of the sandplain vegetation within the adjacent reserve, and tall shrubland on laterite which also occurs in the reserve. No areas of the Wheatbelt woodlands TEC were present, although it is present within the reserve, 300 m to the east, and 550 m south of the waste facility. The *Eucalyptus* species present in the proposal are not listed as key dominant species in the description of the TEC. No species which would be considered range extensions were recorded.

The structure of the vegetation was mostly intact in the northern and eastern areas, with well-established mallees, shrubs and sedges. *Melaleuca cordata* and *M. fabri* were present as well as a number of shrubs which were hybrids of the 2 species. Due to the timing of the survey the diversity of annuals was low. It is highly unlikely that any conservation listed annual flora would occur at the site.

The statistical analysis supported two remnant vegetation associations (VA) – 1) *Allocasuarina acutivalvis* subsp. *acutivalvis* tall shrubland over *Melaleuca cordata*, *Grevillea paradoxa*, *Cyathostemon heteranthus*, *Acacia longiphylloidea* and *Micromyrtus racemosa* shrubland to open shrubland on lateritic gravel and 2) *Eucalyptus leptopoda* and *E. eudesmioides* low mallee woodland to low open mallee woodland over *Ecdeiocolea monostachya*, *Rhagodia drummondii* and *Melaleuca fabri* sedgeland to open sedgeland with sparse shrubs on brownish yellow sandy loam. Description sites Q1 (low disturbance) and R2 (moderate disturbances) were placed in VA 1 with a similarity of 53%. Sites Q3, Q4, (~90 % similarity), R4 and R5 (~ 80 %) and R3 (68 % with Q3 & 4; R4 & 5) were included in VA2. Q2 was included in VA2, but had a much lower similarity at 38 %. Q2 was located on sandplain near the change in soil type to shallower sand on laterite. R1 was a highly disturbed area and would have been within VA 1 pre-disturbance. R4 and R5 were both located in the north western area and had a moderate level of disturbance – mostly with the removal of mallee and some taller shrubs.

#### 5. Conclusions

The condition of the site ranged from degraded to very good, with most of the remnant vegetation (3 ha) in the good to very good category. One priority species was recorded, *Grevillea asparagoides* P3 (3 plants), located near Quadrat 2 (Figure 4) near the eastern boundary. These were healthy and had dehisced fruit, so the seeds will be present in the soil below the shrubs. Due to the location near the eastern boundary it may be possible to avoid clearing these plants and include the area within the proposed buffer zone. No plants were observed which could be *Leptospermum exsertum* P1 which was recorded in the area in 1994. Under clearing principle (c) Vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora – the proposed clearing may be at variance.

#### RESULTS

While vegetation in the adjacent Nature Reserve includes large York Gums, the vegetation in the proposed clearing area consists of heath and sedgeland with scattered mallee eucalypts (Figure 3). These trees are small, with maximum stem diameters in the order of 20-25cm, and occasional small hollows. These mallee eucalypts are close to the Carnamah to Perenjori Road in the north of the area, and along the boundary with the Nature Reserve in the east. The trees were probably too small to provide the range and abundance of hollows favoured by the Spiny-tailed Skink, but they were checked for latrines and hollows were examined to look for skinks; no latrines or skinks were found. *Eremophila* spp. were not noted and may either be absent or only a minor component of the understorey.

While no skinks were found, it was noted that there was abundant Echidna activity (Figure 4).

#### CONCLUSIONS

The environment in the proposed clearing area appears to be of marginal value as habitat for the Spiny-tailed Skink, lacking large trees with a range of hollow sizes and with an apparent scarcity of some of the understorey plant species that have been found where the skinks are present at nearby sites. There was also no evidence of the skinks. This suggests that the skinks are not present, but as they are known from the adjacent Nature Reserve, it is likely that individuals will occasionally move into the project area. These may take temporary shelter in the small mallee eucalypts, and therefore it is recommended that these trees be retained where possible. This may be possible as most occur along the northern edge of the project area, adjacent to the Carnamah to Perenjori Road. Retaining the mallee along the northern and eastern boundaries of the project area would be consistent with the suggestion from the DWER to provide a vegetated buffer particularly between the landfill site and the Nature Reserve.

The Echidna is not a listed conservation significant species, but it has declined dramatically across the Wheatbelt due to land-clearing, and therefore its presence in the project area is of at least local interest. The level of foraging activity suggests that several individuals could be present, and it is recommended that shire staff watch out for these during operations to avoid mortality. Directional clearing as suggested in advice from the DWER would further reduce the risk of killing Echidnas, providing them with an opportunity to move into the Nature Reserve.

## Appendix F – Offset calculator value justification

Field Name	Description	Justification for value used
<i>IUCN Criteria</i>	The IUCN criteria for the value being impacted	(Other) value assigned based on the residual impact consisting of the loss of 2.98 hectares of a significant remnant of native vegetation in an area that has been extensively cleared.
<i>Area of impact (habitat/ community) or Quantum of impact (features/individuals)</i>	The area of habitat/community impacted or number of features/individuals impacted	(2.98) hectares has been assigned based on the proposed clearing resulting in the permanent loss of 2.98 hectares of significant remnant of native vegetation in an area that has been extensively cleared.
<i>Quality of impacted area (habitat/ community)</i>	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	A quality score of (5) has been assigned based on the vegetation within the application area being in predominantly good to very good condition based upon the vegetation condition scale of Keighery (1994) as presented within the report of JB Botanical (2019).
<i>Time over which loss is averted (habitat/ community)</i>	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	(20) years has been assigned based on the offset site being protected in perpetuity based on a change of purpose to 'conservation'. Twenty years is the maximum value associated with this field.
<i>Time until ecological benefit (habitat/ community) or Time horizon (features/ individuals)</i>	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	(1) year has been assigned being the timeframe it will take for the main benefit of the proposed offset to be realised due to the offset being a land acquisition.
<i>Start area (habitat/ community) or Start value (features/ individuals)</i>	The area of habitat/community or number of features/individuals proposed to offset the impacts	(16.6) hectares has been assigned based on the land acquisition offset providing 100% of the offset requirement.
<i>Start quality (habitat/ community)</i>	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	A start quality score of (5) has been assigned based on the offset vegetation condition being in predominantly good to very good condition based upon the vegetation condition scale of Keighery (1994) as assessed by representative photographs of the offset site.
<i>Future quality without offset (habitat/ community) or Future value without offset (features/individuals)</i>	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	A future quality score of (5) has been assigned based on the offset vegetation condition remaining in predominantly good to very good condition based upon the vegetation condition scale of Keighery (1994) with no management intervention.
<i>Future quality with offset (habitat/ community) or Future value with offset (features/individuals)</i>	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	A future quality score of (5) has been assigned based on the offset vegetation condition remaining in predominantly good to very good condition based upon the vegetation condition scale of Keighery (1994) with no management intervention.
<i>Risk of loss (%) without offset (habitat/ community)</i>	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	A risk of loss percentage without offset of (30%) has been assigned due to the offset site (Reserve 16777) currently zoned 'Parks and recreation' (Zone no. 954) under the Shire of Perenjori Local Planning Scheme No. 2



<b>Field Name</b>	<b>Description</b>	<b>Justification for value used</b>
<i>Risk of loss (%) with offset (habitat/ community)</i>	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	A risk of loss percentage with offset of (10%) has been assigned due to an amendment to the purpose of the northern portion of Reserve 16777 (Lot 11795 on Plan 217554) to 'Conservation'.
<i>Confidence in result (%) – risk of loss (habitat/community)</i>	The capacity of measures to mitigate risk of loss of the proposed offset site	A confidence in result percentage of (90%) for the risk of loss has been assigned as there is a high level of confidence that the amendment to the purpose of the northern portion of Reserve 16777 (Lot 11795 on Plan 217554) to 'Conservation' will provide adequate long-term protection.
<i>Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)</i>	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	A confidence in result percentage of (80%) for no change in quality has been assigned as there is a high level of confidence that the amendment to the purpose of the northern portion of Reserve 16777 (Lot 11795 on Plan 217554) to 'Conservation' will provide adequate long-term protection, but without active management intervention the vegetation condition will not improve.
<i>% of impact offset</i>	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	A percentage of impact offset of (100%) has been assigned based upon the protection of 16.6 hectares of remnant vegetation in the Avon Wheatbelt bioregion in good to very good condition within a formal reserve with a purpose of 'Conservation' contributes to a 100 per cent counterbalance to the residual impact of the loss of 2.98 hectares of a significant remnant of native vegetation in good to very good condition in an area that has been extensively cleared.
<i>Other comments</i>	Include here any relevant additional comments	The Department of Planning, Lands and Heritage (DPLH) have advised DWER that the Shire has accepted management over the northern portion of Reserve 16777, and that no objections have been received as part of its due diligence referral process (DPLH 2021). DWER has provided support to the DPLH for the proposal (DWER 2021).

## Appendix G – References and databases

### G.1 References

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## G.2 GIS databases

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems

Restricted GIS Databases used:

- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities