



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10154/1
Permit Holder:	Shire of Esperance
Duration of Permit:	From 12 June 2024 to 12 June 2034

ADVICE NOTE

In relation to condition 13 of this permit

Offset Condition 9 of CPS 7188/2, required the permit holder to provide a copy of the executed change in purpose of the area cross-hatched red on Plan 7188/2c within Crown Reserve 26257 from 'agriculture general' to 'conservation'. A management order was issued by the Department of Planning, Lands and Heritage over Crown Reserve 26257 for the designated purpose of 'conservation' on 28 September 2017. The permit holder used 3.5 hectares of the banked offset to offset the residual environmental impacts identified under CPS 5330/3, six hectares under CPS 8608/1, and 1.67 hectares under CPS 8884/1. A banked offset of 74.33 hectares currently remains within Crown Reserve 26257 following the completion of offset requirements under CPS 7188/2, CPS 5330/3, CPS 8608/1 and CPS 8884/1. The permit holder will use an additional 35.37 hectares of the banked offset to offset the residual environmental impacts identified under CPS 10154/1. The offset areas for CPS 10154/1 occur within the area cross-hatched red in Figure 1 of Schedule 2 of this permit. The nominated 35.37 hectare areas are considered to provide foraging habitat for Carnaby's black cockatoo, contain native vegetation representative of the Kwongkan shrubland TEC and is representative of the highly cleared Beard vegetation association (BVA) 6048, in addition to other environmental values.

In relation to condition 14 of this permit

It is noted that 1.90 hectares of Crown Reserve 14301 will be attributed to offset this project. The remaining balance of the property may be used as a banked offset for other projects. The nominated 1.90-hectare area is considered to be representative of the highly cleared Beard vegetation association (BVA) 6048, in addition to other environmental values.

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of construction of a waste management facility and widening access roads for increased heavy rigid traffic activity and drainage.

2. Land on which clearing is to be done

Lot 1885 on Deposited Plan 171656 (Crown Reserve 51287), Myrup
Myrup Road Reserve (PIN 11431269), Myrup

3. Clearing authorised

The permit holder must not clear more than 6.40 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 12 June 2029.

PART II – MANAGEMENT CONDITIONS**5. 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.

6. Weed and dieback 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* and *dieback*, including but not limited to:

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

7. Directional clearing

The permit holder must:

- (a) conduct clearing authorised under this permit from one direction to the other towards adjacent *native vegetation*; and
- (b) allow a reasonable time for fauna present within the areas being cleared to move into adjacent *native vegetation* ahead of the clearing activity.

8. Threatened Ecological Community management

The permit holder must not clear more than 0.82 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1 which represents the 'Proteaceae Dominated Kwongkan Shrubland of the southeast coastal floristic province of Western Australia' Commonwealth listed Threatened Ecological Community.

9. Fauna management – black cockatoo habitat

The permit holder must not clear more than 6.40 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1 that provides foraging habitat for *Zanda latirostris* (Carnaby's cockatoo).

10. Priority flora management

- (a) The permit holder must ensure that:
- (i) the boundaries of the area to be cleared are identified and *demarcated* using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
 - (ii) *recorded priority flora* are identified within the clearing boundary using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA20), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (b) When undertaking any clearing authorised under this permit, the permit holder must not cause or allow the clearing of more than the *recorded priority flora* within the clearing boundary.

11. Vegetation management

The permit holder must not clear more than 6.40 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1 that is representative of Beard vegetation association 6048.

12. Wind erosion management

The permit holder must commence construction activities no later than three (3) months after undertaking the authorised clearing activities to reduce the potential for wind erosion.

13. Offsets – Weed control in Crown Reserve 26257

- (a) Within three (3) months of the commencement of clearing authorized under this permit, the permit holder must undertake *weed* control activities within the area cross-hatched red in Figure 2 of Schedule 2 within the Crown Reserve 26257 in accordance with the Weed Management Plan for Reserve 26257 (November 2023) prepared by the Shire of Esperance to achieve the performance targets specified in Schedule 3 of this permit.
- (b) Monitoring is undertaken every one year for up to five years after the commencement of the *weed* control activities by an *environmental specialist*.
- (i) where the *environmental specialist* has determined that the performance targets, outlined in Schedule 3, have not been met, further *weed* control

- activities must be taken until the performance targets are met.
- (ii) where the *environmental specialist* has determined that the performance targets outlined in Schedule 3 have been met, that report is to be provided to the CEO within three months of the determination being made by the *environmental specialist*.
 - (iii) if the CEO does not agree with the determinations made by the *environmental specialist* under condition 13(b)(ii) of this permit, the CEO may require the permit holder to repeat actions under conditions 13(a) of this permit.

14. Offsets – Crown Reserve 14301

Within 12 months of the commencement of clearing authorized under this permit and no later than 12 June 2030, the permit holder must provide to the CEO a copy of the executed change in purpose of Crown Reserve 14301 from ‘tourist, picnic and water supply’ to ‘environmental conservation’ within the area cross-hatched red in Figure 3 of Schedule 2.

PART III - RECORD KEEPING AND REPORTING

15. 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	<ul style="list-style-type: none"> (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 GDA2020, 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) the date that construction commenced; (f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; (g) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 6; (h) actions taken in accordance with condition 7; (i) area of Proteaceae Dominated Kwongkan Shrubland of the southeast coastal floristic province of Western Australia’ Commonwealth listed Threatened Ecological Community cleared in accordance with condition 8, recorded using a Global Positioning System (GPS) unit

No.	Relevant matter	Specifications
		<p>set to GDA2020, expressing the geographical coordinates in Eastings and Northings;</p> <p>(j) area of black cockatoo habitat cleared in accordance with condition 9, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings;</p> <p>(k) area of Beard vegetation association 6048 cleared in accordance with condition 11, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; and</p> <p>(l) actions taken in accordance with condition 14.</p>
2.	In relation to priority flora management pursuant to condition 10.	<p>(a) the name and location of each <i>priority flora</i> species, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings;</p> <p>(b) actions taken to demarcate each <i>priority flora species</i> recorded;</p> <p>(c) number and location, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings, of <i>priority flora</i> cleared in accordance with condition 10; and</p> <p>(d) actions taken to avoid the clearing of <i>priority flora</i> species.</p>
3.	In relation to <i>weed</i> control pursuant to condition 13.	<p>(a) a description of the <i>weed</i> control activities undertaken;</p> <p>(b) the size of the areas where the <i>weed</i> control was undertaken (in hectares);</p> <p>(c) the date that the <i>weed</i> control works began;</p> <p>(d) a copy of the <i>environmental specialist</i> reports;</p> <p>(e) a description of further <i>weed</i> control activities were undertaken, if required;</p> <p>(f) the date(s) in which further <i>weed</i> control activities were undertaken, if required; and</p> <p>(g) the date that performance targets were considered to be met.</p>

16. Reporting

The permit holder must provide to the *CEO* the records required under condition 15 of this permit when requested by the *CEO*.

DEFINITIONS

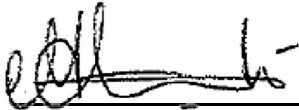
In this permit, the terms in Table 2 have the meanings defined.

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.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
demarcate	means the utilisation of flagging tape or using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the <i>CEO</i> as a suitable environmental specialist.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
fill	means material used to increase the ground level, or to fill a depression.
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.
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).
Recorded priority flora	means individuals of those <i>priority flora</i> species found within the area cross-hatched yellow in Figures 1 of Schedule 1 during the following survey: Shire of Esperance (2023) <i>Vegetation, Flora, Fauna and Environmental Considerations Report – Myrup Waste Facility</i> , received 19 April 2023 (IBSA number: IBSA-2023-0172).
threatened ecological community	means, under clause 2 of Schedule 5 of the EP Act — (a) a threatened ecological community as defined in the Biodiversity Conservation Act 2016 section 5(1), or (b) any other ecological community listed, designated or declared as threatened, endangered or vulnerable under or for the purposes of a written law, or (c) a listed threatened ecological community as defined in the Commonwealth Environment Act section 528.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and</i>

Term	Definition
	<p><i>Agriculture Management Act 2007</i>; or</p> <p>(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or</p> <p>(c) not indigenous to the area concerned.</p>

END OF CONDITIONS



Meenu Vitarana

MANAGER

NATIVE VEGETATION REGULATION

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

20 May 2024

Schedule 1

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

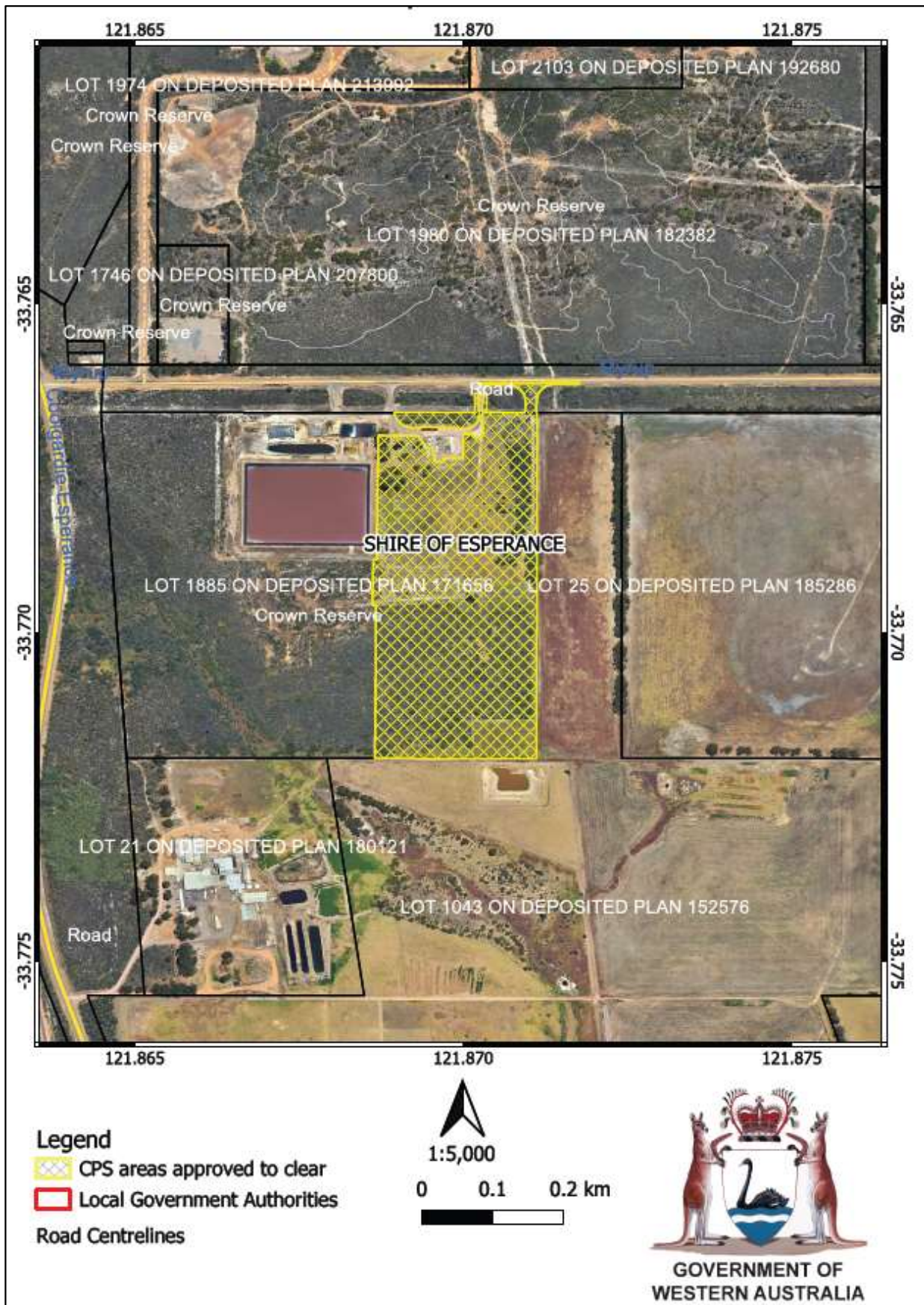


Figure 1: Map of the boundary of the area within which clearing may occur

Schedule 2

The boundary of the area where conditions apply is shown in the maps below (Figure 1-3).

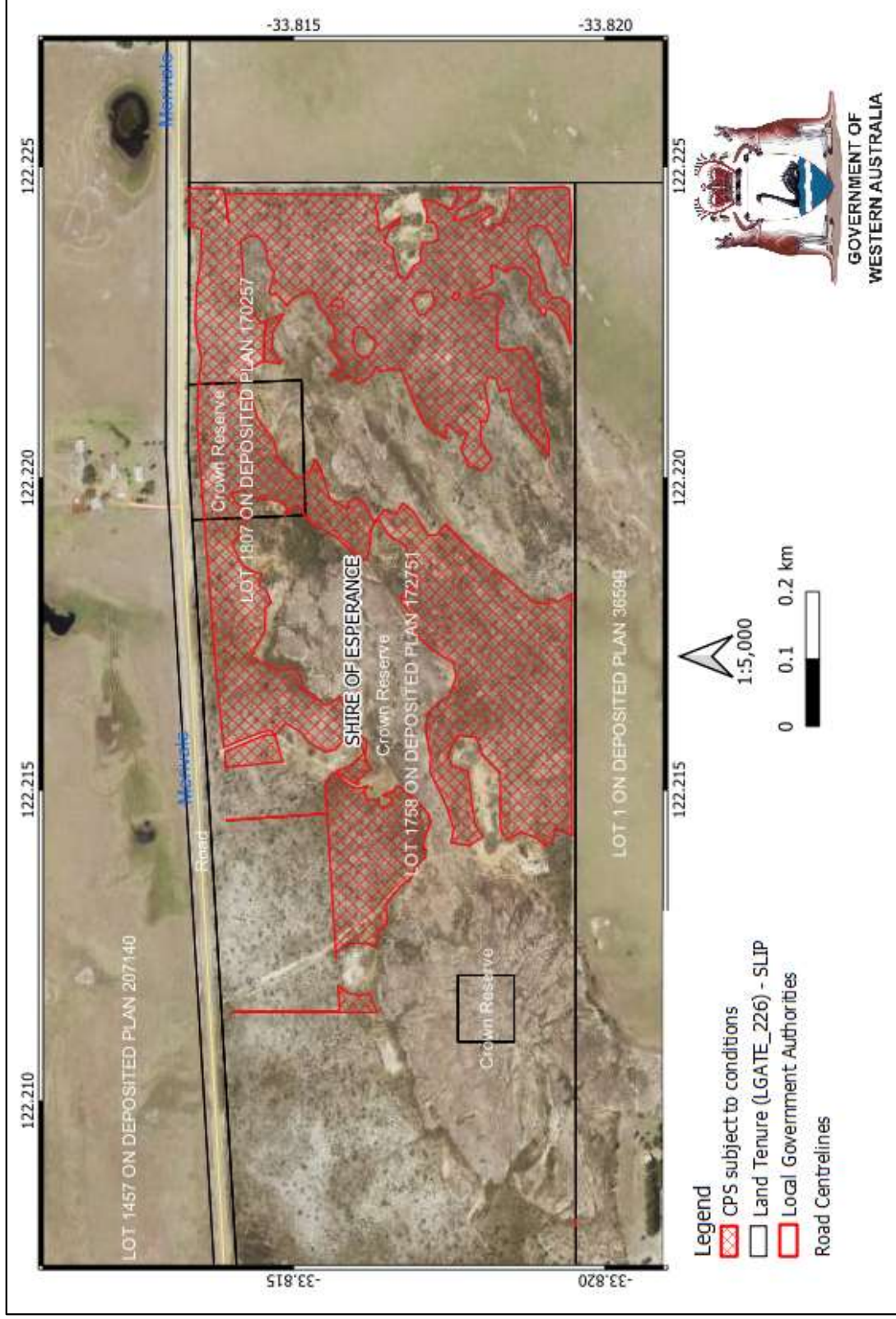


Figure 1: Map of the offset boundary area to be managed as an offset (within Reserve 26257).

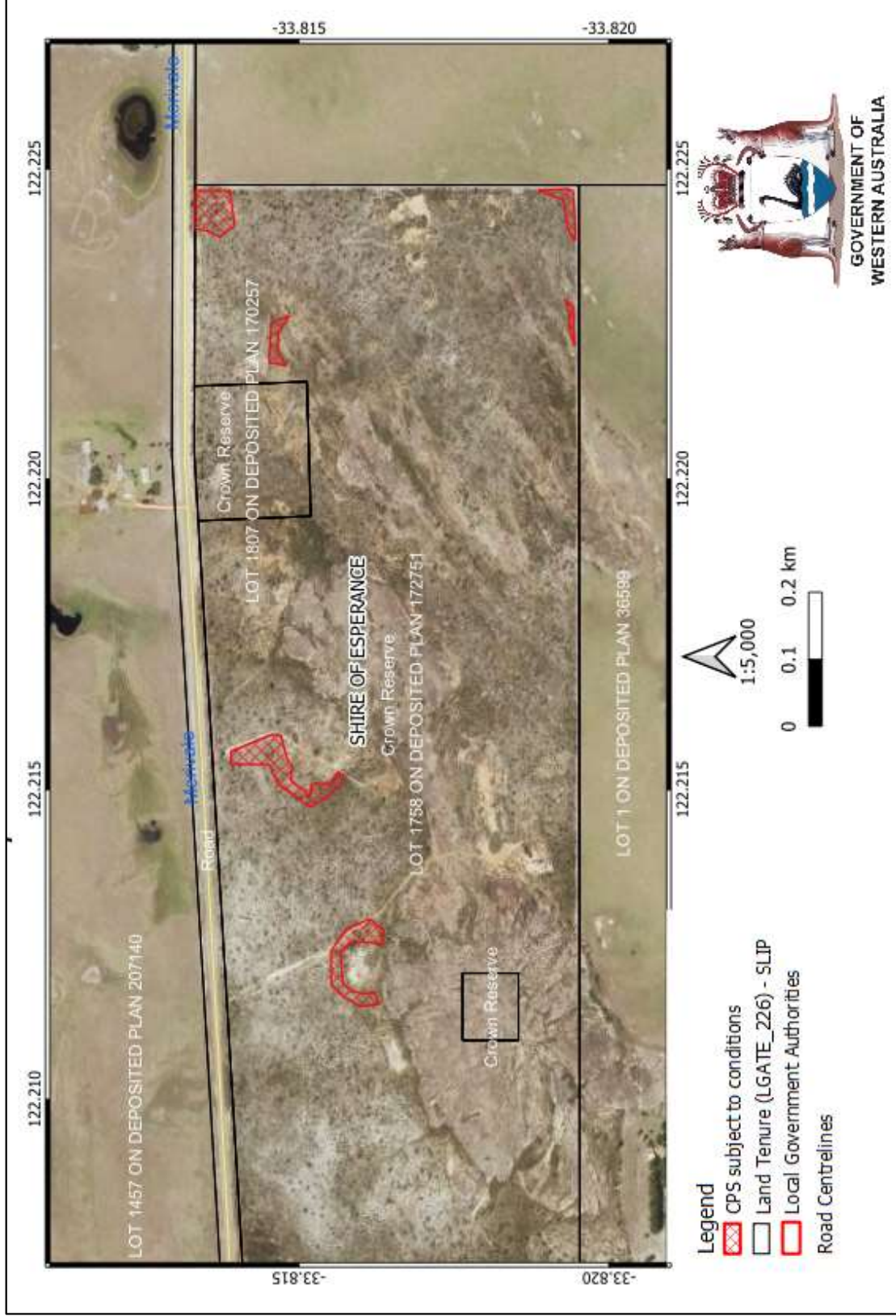


Figure 2: Map of the offset boundary area to be subject to condition 13 (within Reserve 26257).

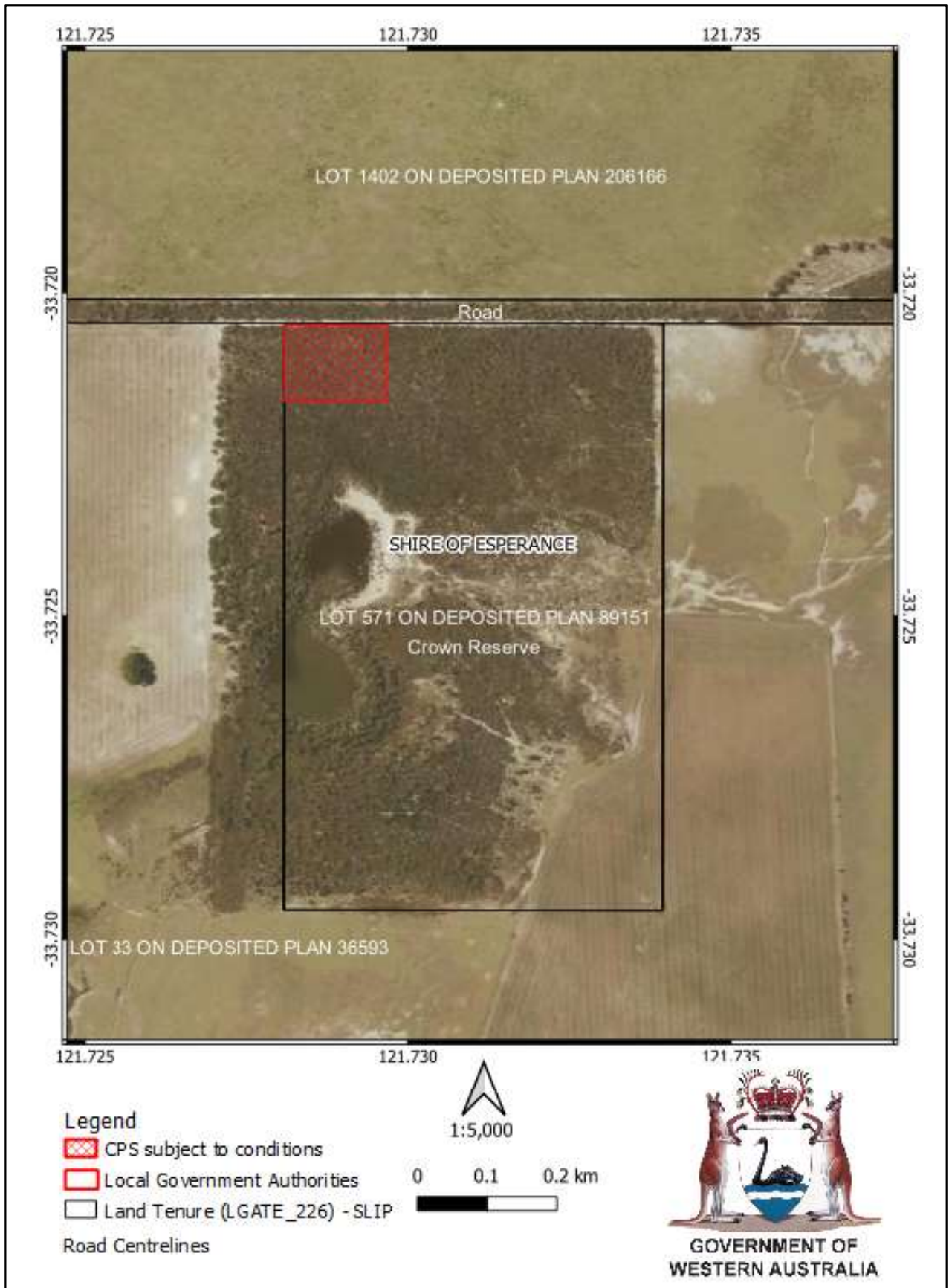


Figure 3: Map of the offset boundary area to be managed as an offset, subject to condition 14 (within Reserve 14301).

Schedule 3

Table 1: Performance targets for the weed control within the areas cross-hatched red in Figure 2 of Schedule 2

Item	Time frame	Performance target
1	Short-term (< 2 years)	Eradication of <i>*Agapanthus praecox</i> , <i>*Pelargonium capitatum</i> , and <i>*Freesia alba x leichtlinii</i> .
		Reduction of <i>*Gaudium laevigatum</i> population by approximately 80%.
		No new weed species identified within the reserve.
2	Medium term (2-5 years)	No new weed populations. Eradication of <i>*Ehrharta villosa</i> population in granite.
		Weed populations stabilised and/or reduced to less than 5% cover
		Presence of emerging native seedlings in brushed areas.
3	Long-term (> 5 years)	Achieve 'Excellent' or 'Pristine' condition in managed vegetation.
		Sustained suppression of <i>*Gaudium laevigatum</i> populations



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10154/1
Permit type:	Purpose permit
Applicant name:	Shire of Esperance
Application received:	19 April 2023
Application area:	6.40 hectares of native vegetation within an approximately 12.89-hectare footprint
Purpose of clearing:	Construction of a waste management facility and widening access roads for increased heavy rigid traffic activity and drainage
Method of clearing:	Mechanical
Property:	Lot 1885 on Deposited Plan 171656 and Myrup Road Reserve (PIN 11431269)
Location (LGA area/s):	Shire of Esperance
Localities (suburb/s):	Myrup

1.2. Description of clearing activities

The vegetation proposed to be cleared is distributed two separate areas but close to each other (see Figure 1, Section 1.5).

The initial application to clear 6.22 hectares of native vegetation within a 12.58-hectare footprint was for the purpose of constructing a waste management facility for the Shire of Esperance at Myrup. The proposed clearing area is adjacent to the existing liquid waste facility of the Shire (Shire of Esperance, 2023a).

The waste management facility is intended to comprise (Shire of Esperance, 2023a):

- Gatehouse and weighbridge;
- Administration area;
- Car parking;
- Tip shop and education facility;
- Recycling materials recovery facility;
- Community drop off;
- Green waste, metal and construction and demolition processing;
- Food and green waste organics processing;
- Biosecurity and medical waste incineration;
- Vehicle washdown bays;
- Liquid waste facility.

The Shire of Esperance (the Shire) advised that the construction of this waste management facility is following the closure of the current Wylie Bay Landfill site of the Shire, which is due to close in July 2025. Waste from Esperance townsite and the satellite towns within the Shire of Esperance will be sorted at the proposed Myrup waste management facility to be either composted, sorted/baled and transported to recycling facilities, or trucked to Coolgardie for landfill (Shire of Esperance, 2023a).

In December 2023, the Shire proposed to add an additional of 0.18 hectare of adjacent vegetation within an approximately 0.31-hectare footprint into this application, and the purpose of clearing additional area is for widening

existing access roads to facilitate increased heavy rigid vehicles and drainage (Shire of Esperance, 2023e). The proposed clearing will facilitate the widening of the entry road to approximately 15 metres to improve accessibility and ease of entering for heavy rigid vehicle traffic (Shire of Esperance, 2023e). The total area proposed to be cleared increases to 6.40 hectares of native vegetation within an approximately 12.89-hectare footprint.

1.3. Decision on application

Decision:	Granted
Decision date:	20 May 2024
Decision area:	6.40 hectares of native vegetation within an approximately 12.89-hectare footprint, as depicted in 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. After being amended, the revised application was re-advertised for seven days and no submission were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix G.1), the findings of a fauna and environmental considerations report (see Appendix F), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing will result in:

- loss of 6.40 hectares of native vegetation that provides suitable foraging habitat for Carnaby's black cockatoo;
- loss of 0.82 hectares of native vegetation that is representative of the Kwongkan shrubland TEC;
- loss of 6.40 hectares of native vegetation belonging to the highly cleared Beard vegetation association (BVA) 6048;
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values; and
- potential land degradation in the form of wind erosion.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that the land degradation risk and the potential to facilitate the introduction of weeds and dieback can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values through permit conditioning. However, impacts on foraging habitat for Carnaby's black cockatoos, Kwongkan shrubland TEC and BVA 6048 remained significant even after the application of minimisation and mitigation measures and constituted a significant residual impact.

In accordance with the Government of Western Australia's *Environmental Offsets Policy* (2011) and *Environmental Offsets Guidelines* (2014), the Delegated Officer determined that the following land acquisition and land management offsets are required to address the above significant residual impacts:

- **Offset area 1 (banked offset):** Crown Reserve 26257 – which vesting has been changed from 'agricultural general', to 'conservation', comprising:
 - the conservation of 33.97 hectares of the vegetation type Kwongkan shrublands with scattered *Nuytsia floribunda* (later referred Kwongkan shrublands) in Pristine condition;
 - the conservation of 1.40 hectares of the vegetation type Kwongkan shrublands in Excellent, Very Good, and Good condition;
 - the weed control of 1.82 hectares of the vegetation type Kwongkan shrublands in Excellent, Very Good, and Good condition.
- **Offset area 2:** the change in Crown Reserve 14301 from 'tourist, picnic and water supply' to 'environmental conservation', comprising the conservation of 1.90 hectares of the vegetation type *Nuytsia floribunda* and *Banksia speciosa* low woodland in Excellent condition.

The Delegated Officer determined that the above offset was sufficient to counterbalance the significant residual impacts associated with this project. Further information on the suitability of the offsets provided are summarised in Section 4.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback;
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- activities for which clearing is authorised to commence within three months of clearing to minimise wind erosion risks;
- ensure impacts to black cockatoo habitat, the Kwongkan shrubland TEC and Beard vegetation associate 6048 are limited to amounts (in hectares) of impact identified by the applicant;
- ensure no clearing of more than the recorded priority flora within the clearing boundary;
- provide offsets, as outlined above, to address significant residual impacts of the proposed clearing.

1.5. Site map

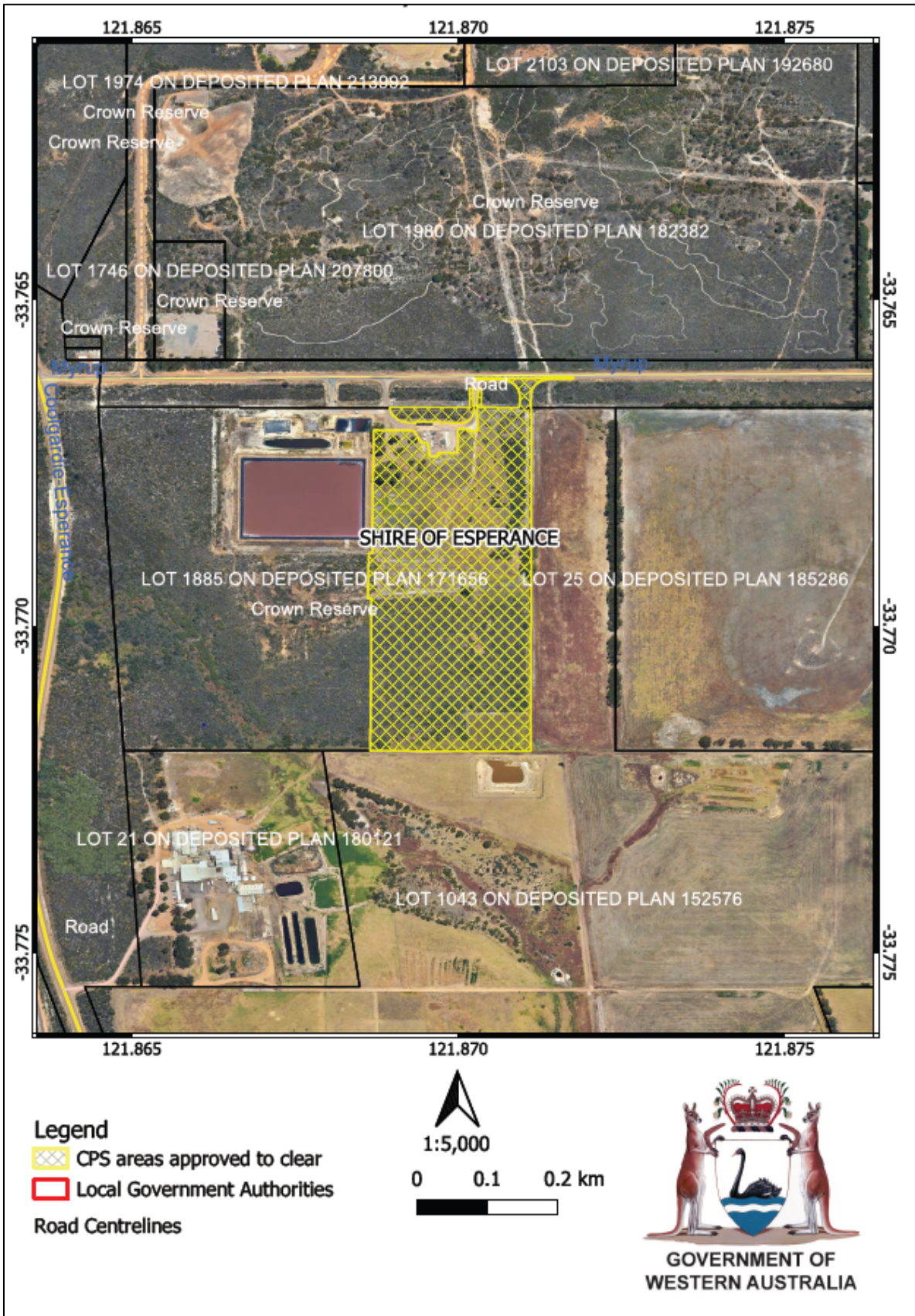


Figure 1 Map of the application area

The area crosshatched yellow indicates the area 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 1.4), 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
- the polluter pays principle
- 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)
- *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* (DER, 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)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Information submitted by the applicant indicated that in order to prepare for the closure of the Shire of Esperance's current landfill site (due to close in July 2025), three potential sites have been considered to locate the new waste management facility (Shire of Esperance, 2023a), including:

- Wylie Bay Waste Facility, Wylie Bay Rd (170), Bandy Creek.
- Myrup Liquid Waste and Truck Wash Facility, Reserve 51287, Myrup Rd (Lot 1885), Myrup.
- Shark Lake Industrial Park, Old Shark Lake Rd (Lot 9500), Monjingup.

After assessing each site's suitability against criteria including access to utilities, current use, planning considerations, impact on neighbours, environmental concerns and ability for the site to accommodate all waste streams, the Myrup Liquid Waste and Truck Wash Facility site (proposed clearing area) was chosen (Shire of Esperance, 2021). Another benefit for the Myrup site is the ability to house all waste streams at one location which not only acts as a cost recovery and income stream for the waste operations, but also ensures better scrutiny over what is going to landfill and provides greater opportunity to reduce waste (Shire of Esperance, 2021). In addition, approximately half of the footprint area is cleared land with completely degraded vegetation (Shire of Esperance, 2023a). And for the Myrup site, no new evaporation ponds are needed to be constructed for leachate from the composting facility, as this can be disposed of within the existing treatment ponds (Shire of Esperance, 2023b).

The design of the new waste management facility chose the section of the site that was already cleared as opposed to the rest of the areas on the site which are vegetated (Shire of Esperance, 2023b) (Figure 2).

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

After consideration of avoidance and mitigation measures, it was determined that offsets to counterbalance the significant residual impacts to fauna habitat, conservation significant ecological communities and significant remnant vegetation were necessary. In accordance with the Government of Western Australia's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offsets provided are summarised in Section 4.

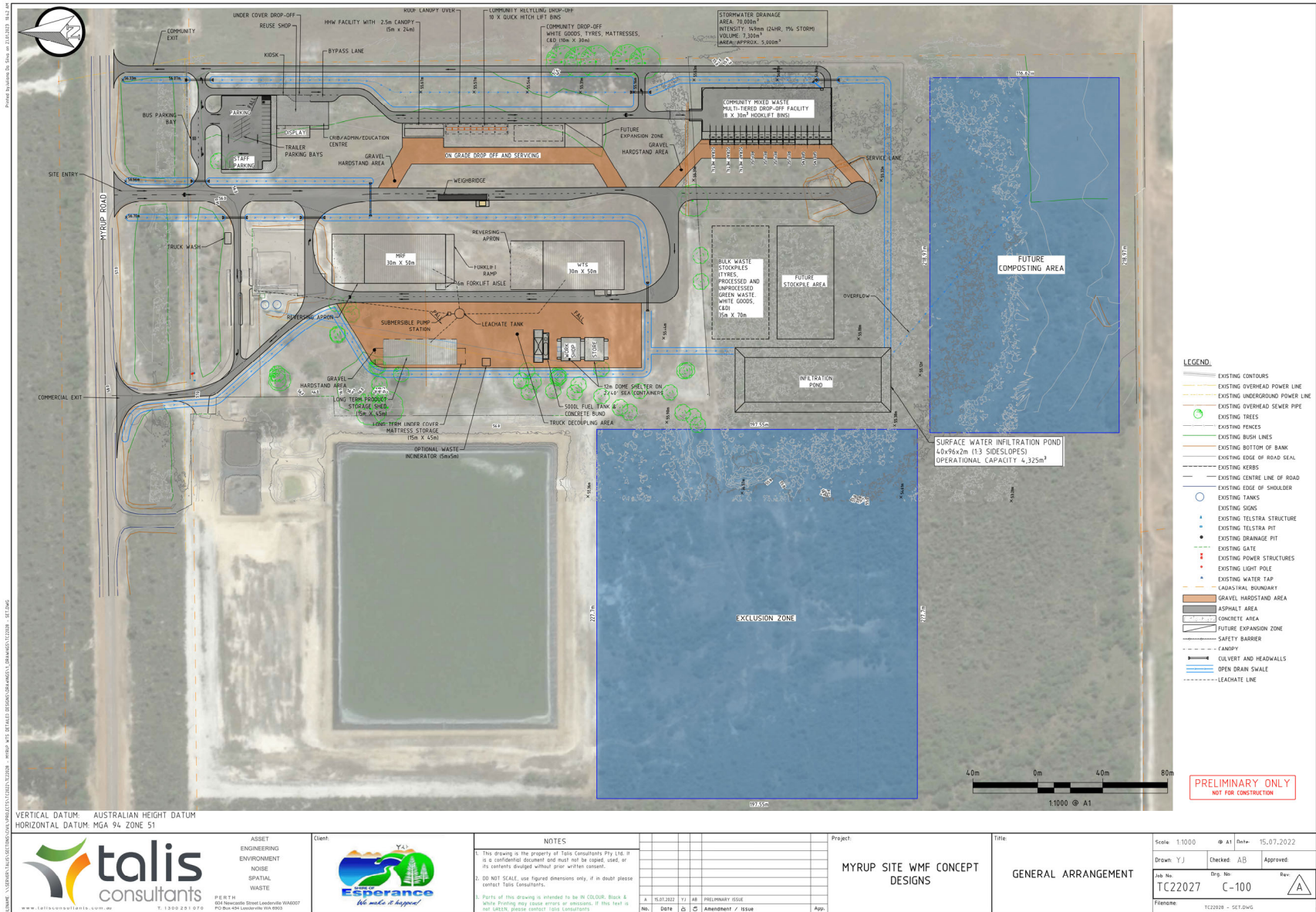


Figure 2: Concept design of the Myrup waste management facility (Shire of Esperance, 2023b)

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 (see Appendix C **Error! Reference source not found.**) identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora and threatened ecological community), significant remnant vegetation, and land and water resources. 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. Biological values (fauna) - Clearing Principles (a) and (b)

Assessment

The desktop assessment identified that there are 42 conservation significant fauna species recorded in the local area, including 34 bird species, five mammal species, two reptile species and one invertebrate species. Of which, 35 of these species are migratory bird species or shorebird species associated with coastal habitats not represented within the application area and an additional five species are species only found in marine or aquatic environments.

Based on the analysis on suitability on habitat, distance of closest mapped records, number of known records in the local area, three conservation significant fauna species possibly occur within the application area. (See B.3 for fauna analysis table).

Carnaby's cockatoo

Carnaby's cockatoo (*Zanda latirostris* – Endangered) was once abundant in Western Australia. Since the late 1940s, the species has suffered a 30 per cent contraction in range, a 50 per cent decline in population, and between 1968 and 1990 disappeared from more than a third of its breeding range (Saunders, 1990; Johnstone and Storr, 1998; Saunders and Ingram, 1998; Garnett et al. 2011). One of the major reasons of the declination of this species' population is the loss of nesting trees and foraging habitat (Commonwealth of Australia, 2012).

There are three key components of black cockatoo habitat: foraging habitat; roosting habitat; and breeding habitat. The quality of black cockatoo foraging habitat to support populations at breeding sites or night roosting sites varies depending upon how black cockatoos utilise the habitat in that particular location. Any tall trees, generally close to riparian environment, can be potential roosting habitat of black cockatoos (DSEWPC 2012). A tree suitable for a black cockatoo breeding is defined as a tree with a diameter of 50 centimetres or greater at a height of 1.5 metres above the ground. Carnaby's Cockatoo generally forages within six kilometres of a night roost site and, while nesting, within a 12 kilometres radius of their nest site (Commonwealth of Australia, 2012). Carnaby's cockatoo forages on the seeds, nuts and flowers of a large variety of plants including *Proteaceous* species (*Banksia*, *Hakea* and *Grevillea*), as well as *Allocasuarina* and *Eucalyptus* species, *Corymbia calophylla* and a range of introduced species (Valentine and Stock, 2008).

There are 159 records of Carnaby's cockatoo mapped within the local area (20-kilometre radius from the application area), with the closest record approximately 0.5 kilometres from the application area. There are several Tuart trees within the application area which were inspected and contained no hollows for breeding, but these trees may be used as roosting sites (Shire of Esperance, 2023a). The application area also contains several flora species which are suitable foraging habitat for the Carnaby's black cockatoo, such as *Mesomelaena stygia*, *Mesomelaena tetragona*, *Malaleuca striata*, *Acacia saligna*, *Eucalyptus occidentalis*, *Eucalyptus pleurocarpa*, *Eucalyptus gomphocephala*, *Banksia Obovata*, *Banksia nivea*, *Hakea ruscifolia*, *Hakea trifurcate*, *Lambertia inermis* var. *deummondii*, *Lambertia inermis* var. *inermis*, *Pinus pinaster*, *Xanthorrhoea platyphylla* (Shire of Esperance, 2023a, 2023e). Discarded foraging material (chewed *Pinus pinaster* cones) of Carnaby's cockatoo was also observed within the application area (Shire of Esperance, 2023e).

DBCA advised that noting the presence of dieback leading to the decline in Carnaby's foraging habitat within the application area, impacts resulting from the proposed clearing are therefore not expected to pose a significant risk to the species at a regional level. However, the area affected by dieback still provide food resources for Carnaby's cockatoos and due to cumulative impacts across the species range, all foraging habitats are considered important (DBCA, 2023).

The Tuart trees within the application area may not be native or 'naturalised' to the area (as clearly planted in a row) (Shire of Esperance, 2023c), however they still provide roosting habitat for the Carnaby's black cockatoos and therefore, DBCA advised that trees should be retained where possible (DBCA, 2023). The applicant has reviewed the design and could not commit to retain any of the Tuart trees within the application area as the trees may be hazards and obstacles for traffic and staff at the site (Shire of Esperance, 2023c). However, the Shire noted that

there are many alternative Carnaby's roosting sites in other large Tuarts and Pines within the surrounding area (Shire of Esperance, 2023c). Noting this, the clearing of Tuart trees within the application area unlikely to have significant impact on roosting habitat of Carnaby's black cockatoos in the local context.

Peregrine falcon

The peregrine falcon (*Falco peregrinus* - Other Specially Protected Fauna) is found Australia-wide and occurs in a range of habitats including woodlands, grasslands and coastal cliffs, usually near watercourses (DAWE, 2020). Preferred roosting and breeding habitat for the peregrine falcon includes granite outcrops and coastal cliffs, but in the absence of these habitats, the species has been known to utilise nests of other bird species or tree hollows for breeding (Marchant et al., 1993). It is considered that the habitat present within the application area may also provide suitable transient foraging habitat for this species as individuals migrate through the landscape. However, noting that the peregrine falcon is a highly mobile species with a large home range that does not rely on special niche habitats, the peregrine falcon is likely to be transient in the application area and it is unlikely that the application area represents significant habitat for the species, noting the availability of extensive suitable foraging habitat within the surrounding local area.

Quenda

Quendas (*Isoodon fusciventer* - Priority 4) are ground-dwelling marsupials, typically associated with forest or woodlands near watercourses, where understorey consists of dense scrub and leaf litter is abundant (DEC, 2012). Three records of quenda are mapped within the local area, with the closest record of 1.6 kilometres away from the application area. Some sections of the proposed clearing area contain suitable habitat for this species and quenda was recorded utilizing the application area previously through a survey in 2010 (Shire of Esperance, 2023a). The additional site inspection in December 2023 conducted by the applicant recorded diagnostic and conical quenda diggings within a section of the application area (Shire of Esperance, 2023e). This species was also observed at the nearby Shark Lake Nature Reserve, which is approximately 600 metres in the west of the application area (Shire of Esperance, 2023a). Noting the suitability of habitat and quenda record observed in the application area's vicinity, quendas are likely to utilize the proposed clearing area.

Given the above, the proposed clearing may impact quenda's habitat. However, DBCA advised that the level of impact is likely to be minor due to current disturbance factors impacting the application area, i.e. dieback (DBCA, 2023a).

The clearing activities may have direct impact on the quenda individuals if they are utilising the application area at the time of clearing.

Conclusion

Based on the above assessment, the proposed clearing is likely to have impact on foraging habitat for the Carnaby's black cockatoo. It may also impact the quenda's habitat, but the level of consequence is minor due to the presence of dieback, which has been reducing the habitat quality in the application area. However, clearing activities may result in impacts on fauna individuals if they present within the application area at the time of clearing.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Slow directional clearing to allow fauna to move into adjacent vegetation ahead of the clearing activity will minimise impact to individuals.
- Provision of offset to address the significant residual impact on Carnaby's black cockatoo foraging habitat.

3.2.2. Biological values (flora, biodiversity and threatened ecological community) - Clearing Principles (a), (c) and (d)

Assessment

Flora

No threatened flora species are mapped within the local area (GIS database). The desktop assessment identified 36 priority flora taxa within the local area. Based on the assessment on suitability of soil type, vegetation type and habitat, the species of *Dampiera sericantha* (Priority 3) is considered to likely occur within the application area.

The fauna and environmental considerations report (Shire of Esperance, 2023a) identified a population of 167 *Dampiera sericantha* individuals within an area including the application area and its surrounding area. The application area contains 35 *Dampiera sericantha* plants proposed to be removed.

DBCA advised that this flora species appears to be widely distributed from Bremer Bay to Shark Lake, Esperance with 30 collections (consisting of less than 400 individuals) in Florabase (DBCA, 2023). Therefore, the clearing of 35 out of 167 identified individuals of the local population (equivalent to 21 per cent) is not likely to be significant (DBCA, 2023).

Threatened ecological community (TEC)

There are two portions of the application area mapped within the threatened ecological community of Proteaceae dominated kwongkan shrublands of the southeast coastal floristic province of Western Australia (Kwongkan shrubland TEC), which is listed as endangered under the EPBC Act, with the total area of 4.567 hectares. However, due to the introduction and presence of *Phytophthora cinnamomi* dieback, the Proteaceous shrubs have been significantly impacted, leading to only small pockets of the application area retain Proteaceous overstory (Shire of Esperance, 2023a). The threshold of 30 per cent or greater of Proteaceous species across all layers where these shrubs occur is one of the key diagnostic characteristics of the Kwongkan shrubland TEC (TSSC, 2014). Based on the Proteaceous species cover, two patches of this TEC in very good condition were identified within the application area with the area of 0.82 hectares (Shire of Esperance, 2023a).

The proposed clearing will modify an occurrence of Kwongkan shrubland TEC which is protected under the BC Act. DBCA advised that the proposed clearing of 0.82 hectares of Kwongkan shrubland TEC is considered locally significant as it is potentially part of a much larger, intact patch of this TEC occurring to the north and west (DBCA, 2023). The applicant needs to obtain an authorisation from the Minister for Environment under section 45 of the BC Act of the Department of Biodiversity, Conservation and Attractions to modify an occurrence of this TEC. It is also the responsibility of the applicant to refer this proposed clearing action to the Commonwealth under the EPBC Act, noting the proposed clearing's impact on Kwongkan shrubland TEC.

Other issues: Weeds and dieback

Dieback (*Phytophthora cinnamomic*) was observed in the application area with numerous dead proteaceous shrubs. A majority of the proposed clearing area appears to be infected by dieback with small sections lacking symptoms of dieback (Shire of Esperance, 2023a).

The application area is also affected by invasive weeds with 18 species found within the proposed clearing area. Of which, the most extensive and serious concern is *Leptospermum laevigatum*, which is a priority environmental weed in the Shire of Esperance's Environmental Weed Strategy 2009-2018 (Shire of Esperance, 2023a).

The proposed clearing may result in the spreading of these weed species and dieback, and impact to the remnant vegetation including the adjacent Kwongkan shrubland TEC.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 0.82 hectares of Kwongkan shrubland TEC which is considered a significant residual impact. The clearing activities may increase the risk of introduction or spread of dieback and weeds into adjacent vegetation, leading to the impacts on the environmental values of the adjacent TEC.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Avoidance and minimisation to reduce the impacts and extent of clearing;
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback to adjacent vegetation;
- Provide offsets to address significant residual impacts on Kwongkan shrubland TEC.

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 clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The application area contains vegetation type consistent with the Beard vegetation association (BVA) 6048 which retains only 14.2 per cent of its pre-European extent within the IBRA bioregions. The proposed clearing will further reduce the extent of this BVA.

Conclusion

Based on the above assessment, the proposed clearing will result in loss of 6.40 hectares of the highly cleared BVA 6048. It is considered that the impacts of the proposed clearing on remnant vegetation constitutes a significant residual impact.

Conditions

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

- Provision of an offset to address significant residual impacts on the highly cleared BVA 6048.

3.2.4. Environmental value: land and resources - Clearing Principle (g)Assessment**Land**

The soil within the application area is mapped as Esperance 1b phase (245Es_1E1b), which is described as grey deep sandy duplex (gravelly) soils with associated duplex sandy gravels and minor pale deep sands and shallow gravels (DPIRD, 2022).

The mapped sandy soils outlined above are highly permeable, and therefore the proposed clearing is not likely to result in water erosion or waterlogging, particularly noting the absence of wetlands or watercourses within the application area.

The mapped soils are however prone to wind erosion and subsurface acidification. Subsurface acidification of the soil can be promoted by the degradation of additional organic material, including the debris associated with the clearing activities. However, this risk will be minimised if the cleared plant material is removed from the clearing area and disposed appropriately. Noting the extent of clearing proposed, there is the potential for wind erosion to cause land degradation should the surface soils within the application area be exposed post clearing for an extended duration. Given the above, the proposed clearing may result in appreciable land degradation through the risks of wind erosion.

To minimise the risk of wind erosion, the applicant will be required to undertake construction works over the cleared areas within three months of the date of clearing, which will prevent the prolonged exposure of bare sandy soils.

Water

Noting that no watercourses are mapped within the application area, the proposed clearing is unlikely to cause deterioration in the quality of surface or underground water.

The application area is in the Priority 2 zone of the Lake Warden Ramsar catchment. Although the clearing itself is unlikely to have direct impact on the water quality, the subsequent activities after clearing (waste facility operation) may cause potential surface and groundwater contamination downstream of the site (DBCA, 2023). To address this matter, a surface water and leachate management plan has been developed and submitted DWER and it is being assessed as a part of the Works Approval application (Shire of Esperance, 2023c).

DWER's Planning Advice team advised that the vegetation on the Crown Reserve at Lot 1885 forms part of a large vegetated buffer for natural drainage between Shark Lake wetland to the north-west and the Melijinup suite, including Melijinup palusplain and Melijinup swamp to the south of the site within the Melijinup Reserve; and the consideration of an alternative location for the Myrup Road waste transfer station is recommended (DWER, 2023). Recommended alternative location is at the Shark Lake Industrial Park (DWER, 2023). Considering that the above-mentioned natural drainage is on the other side of the Reserve at Lot 1885, the proposed clearing is unlikely to impact this drainage line. Moreover, the option at Shark Lake Industrial Park has been considered and not been selected by the applicant as described in Section 3.1.

Conclusion

Based on the above assessment, the proposed clearing may result in appreciable land degradation via wind erosion. It is considered that the impacts of the proposed clearing on land degradation due to wind erosion can be managed through a condition on the permit, requiring to undertake the works over the cleared area within three months of the date of clearing.

Conditions

To address the above impact, a condition has been imposed which requires activities for which clearing is authorised to commence within three months of clearing.

3.3. Relevant planning instruments and other matters

The Shire of Esperance (the Shire – applicant) has also applied to DWER for an *Environmental Protection Act 1986* works approval (reference number 2013/003950) for the proposed development. The works approval was granted on 9 May 2024 (Shire of Esperance, 2024c).

DWER's South Coast Region team informed that the applicant currently holds a groundwater license registered on the site (GWL 176916(2)) for the take of 15,000 kilolitres per year (expires in June 2033). Under existing licence, the applicant may spread take across the two new bores on Lot 1980 and the existing bore on Lot 1885. However, the applicant must apply for amendment to the existing licence before production from the new bores commences and if a volume increase to supply the waste facility or any other purpose (DWER, 2023). However, the applicant has yet to determine the annual volume required for operation of the facility. Therefore, a groundwater licence amendment application is not required at this stage (DWER, 2023).

No Aboriginal sites of significance have been mapped within the application area. The applicant has submitted a works application to the Esperance Tjaltjraak Native Title Aboriginal Corporation (ETNAC). As per the request of the ETNAC, the Shire has excised a section of the originally proposed development area and restrict the development in the section of land south of the existing evaporation pond to accommodate a sensitive cultural place (Shire of Esperance, 2023b). It is the permit holder's responsibility to ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

4 Suitability of offsets

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- loss of 6.40 hectares of native vegetation that provides suitable foraging habitat for Carnaby's black cockatoo (CBC);
- loss of 0.816 hectares of native vegetation that is representative of the Kwongkan shrubland TEC;
- loss of 6.40 hectares of native vegetation belonging to the highly cleared Beard vegetation association (BVA) 6048;

The applicant proposed following offset measures:

- Utilizing an existing banked offset at the Reserve 26257 – previous vesting was 'agricultural general', which has changed to 'conservation' (Shire of Esperance, 2023c).
- Controlling weeds affecting the BVA 6048 within the Reserve 26257.
- Changing the vesting of the of the Reserve 14301 and its neighbouring undeveloped road reserve from 'tourist, picnic and water supply' to 'environmental conservation'.



Figure 3. Context map showing the application area (yellow) and proposed offset sites (green and red)

Reserve 26257

Reserve 26257 is located approximately 32.6 km to the east from the application area (Figure 3), previous vesting was 'agricultural general', which has changed to 'conservation'. This reserve has an area of 59.75 hectares of the vegetation type Kwongkan shrublands with scattered *Nuytsia floribunda* which is identified as Kwongkan shrublands TEC; containing suitable foraging habitat for Carnaby's black cockatoo, with evidence of the Carnaby's foraging observed during the site assessment; and being mapped within the BVA 6048 (Shire of Esperance, 2023c). The vegetation structure of the proposed clearing area and offset site is mostly identical (Figure 4), with 32% and 43% of flora species in the application area and the offset site, respectively, are in common.



Figure 4: Photographs showing the similarity in vegetation structure between the application area (top) and the offset site Reserve 26257 (bottom) (Shire of Esperance, 2023c)

This reserve has been used for several previous clearing permits, including CPS 5330/3, CPS 8608/1, CPS 8884/1 and CPS 7188/1 to offset the impacts on CBC's habitat, BVA 4801 and BVA 6048. Approximately 37.36 hectares of the vegetation type Kwongkan shrublands with scattered *Nuytsia floribunda* within the reserve 26257 have not been used in other offsets (Figure 5), including 33.97 hectares in Pristine condition, 0.12 hectares in Excellent condition, 0.68 hectares in Very Good condition, 0.60 hectares in Good condition and 2.00 hectares in Degraded condition (Shire of Esperance, 2023c). Vegetation in Degraded condition is considered not suitable as an offset for the proposed clearing.

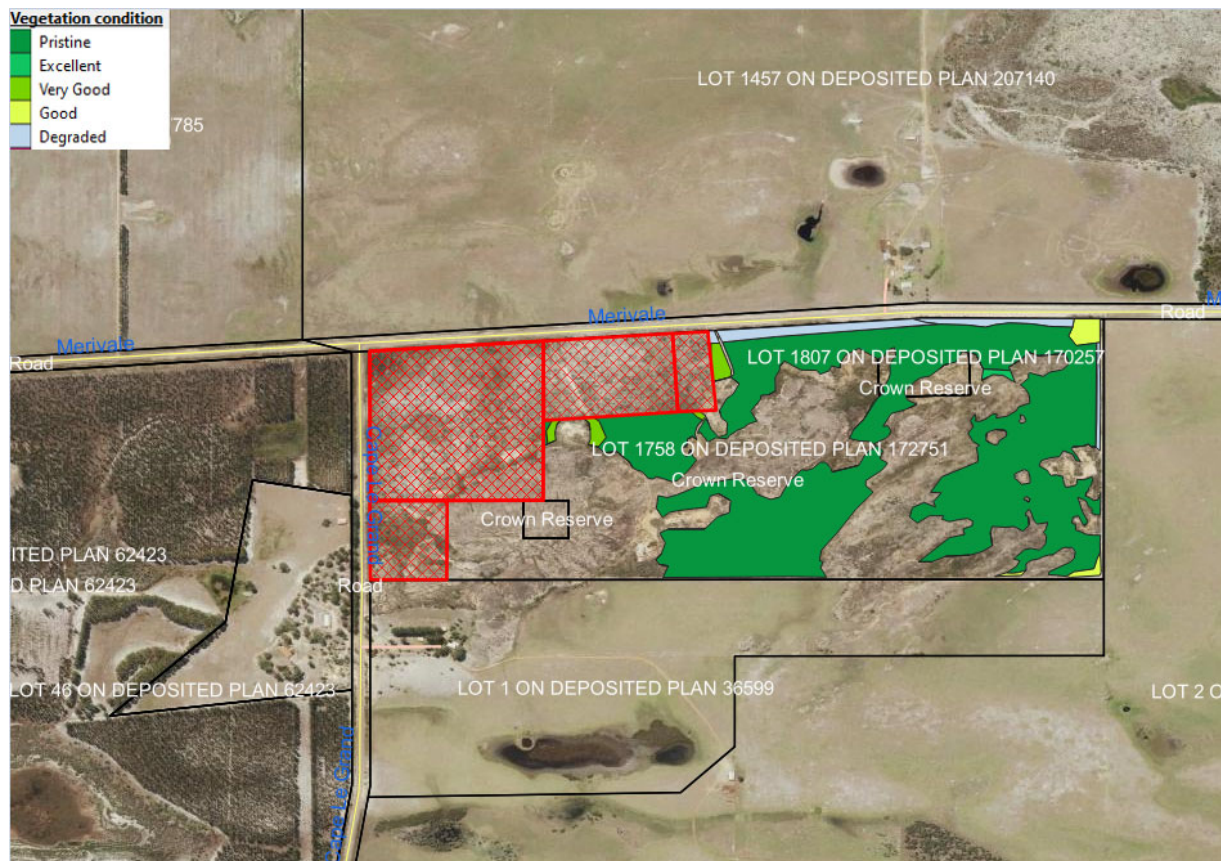


Figure 5. Map of vegetation condition of the vegetation type Kwongkan shrublands with scattered *Nuytsia floribunda* within the Reserve 26257 available for offset for this application. Red crosshatched polygons showing the areas have been utilized to offset for previous clearings (Shire of Esperance, 2023c).

Weed control within the Reserve 26257

Weed control is proposed as an additional offset measure for this proposed clearing. The weed management plan aims to restore areas of vegetation of BVA 6048 within the Reserve 26257 classed as 'Excellent', 'Very Good' and 'Good' to an 'Excellent' or 'Pristine' condition (Shire of Esperance, 2023d). Eight invasive flora species affecting the BVA 6048 are the subject of the WMP, including: Victorian tea tree (*Gaudium laevigatum*), Pyp grass (*Ehrharta villosa*), agapanthus (*Agapanthus praecox* subsp. *praecox*), Freesia (*Freesia alba x leichtlinii*), Rose pelargonium (*Pelargonium capitatum*), maritime pine (*Pinus pinaster*), Guildford grass (*Romulea rosea*), and Solar Fire (*Ursinia anthemoides*). Even though the *P. pinaster* provides foraging and roosting habitat for CBC, this invasive species is proposed to be removed under the weed control plan since the mature trees' thick leaf litter can inhibit native seedling recruitment and reduce biodiversity. Furthermore, this large tree species can alter groundwater and surface hydrology by lowering the water table (Shire of Esperance, 2023d). Noting the small population size and low density of *P. pinaster* within Reserve 26257 and the existing of large *P. pinaster* plantations for forestry in proximity to the reserve, scattered individuals of this invasive species are unlikely to be a significant foraging and roosting habitat for CBC in the local context (Shire of Esperance, 2023d).

The proposed weed control can improve the condition of vegetation of BVA 6048 and be considered as an appropriate additional offset for the proposed clearing. Total 1.82 hectares of the vegetation type Kwongkan shrublands with scattered *Nuytsia floribunda* in excellent, very good and good within the entire Reserve 26257 (including 1,40 hectares that is available as offset for this application) will be beneficial from the proposed weed control.

The weed control plan also proposed revegetation but not in detailed and without completion criteria. It is mentioned that approximately 2.87 hectares is available for planting but no specific area of vegetation of BVA 6048 to be planted is provided. The proposed revegetation is likely to assist the weed control plan and therefore is considered as not sufficient to separately contribute toward the offset.

Reserve 14301 and its neighbouring undeveloped road reserve

Reserve 14301 is located approximately 14.0 km to the northwest from the application area (Figure 3). This reserve is currently vested as 'tourist, picnic and water supply' purpose. Shire of Esperance proposed changing the vesting of this reserve and adjoining undeveloped road reserve to 'environmental conservation' under changing of Zoning with Local Planning Scheme 24 to additionally mitigate the remaining significant residual impacts on BVA 6048 of the proposed clearing (Shire of Esperance, 2024a). The applicant also committed to maintain and improve the vegetation condition within the Reserve 14301 and its adjoining road reserve by conservation management including follow up weed control, erosion control, planting, prescribed burning or fencing repairs (Shire of Esperance, 2024b).

The site assessment (Shire of Esperance, 2024a) indicates that the Reserve 14301 and its neighbouring undeveloped road reserve includes following environmental values:

- Five vegetation communities:
 - Approximately 21.310 hectares of *Nuytsia floribunda* and *Banksia speciosa* low woodland with *Myrtaceous* shrubland over *Anarthria laevis* and *Anarthria scabra* sedgeland.
 - Approximately 6.235 hectares of *Melaleuca cuticularis* closed forest with *Juncus* rushland.
 - Approximately 15.327 hectares of *Melaleuca cuticularis* low open woodland with *Melaleuca brevifolia* tall open shrubland with *Austrostipa juncifolia* grassland.
 - Approximately 16.220 hectares of *Nuytsia floribunda* low open woodland over open heathland with *Restiad* closed sedgeland.
 - Approximately 0.346 hectares of *Eucalyptus littorea* open woodland over *Melaleuca cuticularis*, *Melaleuca brevifolia* and *Melaleuca scabra* shrubland with *Gahnia ancistrophylla*.
- Three priority 3 flora species including *Austrobaecka uncinella*, *Dampiera sericantha* and *Kunzea salina*.
- Approximately 51.232 hectares of Carnaby's black cockatoo foraging habitat.

The area of the vegetation type *Nuytsia floribunda* and *Banksia speciosa* low woodland with *Myrtaceous* shrubland over *Anarthria laevis* and *Anarthria scabra* sedgeland (later referred as *Nuytsia floribunda* and *Banksia speciosa* low woodland) in Excellent (18.14 hectares) and Very Good (3.17 hectares) conditions is considered as an adequate offset for BVA 6048 of this application (Figure 6 and 7).



Figure 6. Representative photo of the vegetation type *Nuytsia floribunda* and *Banksia speciosa* low woodland within the Reserve 14301 (Shire of Esperance, 2024a)



Figure 7. Map of vegetation condition of the vegetation type *Nuytsia floribunda* and *Banksia speciosa* low woodland within the Reserve 14301 and adjoining undeveloped road reserve that suitable for offset for this application (Shire of Esperance, 2024a).

In assessing whether the proposed offset is adequately proportionate to the significance of the environmental values being impacted, DWER undertook a calculation using the WA Environmental Offsets Metric. The calculation indicated that:

- To offset the loss of 6.40 hectares of native vegetation that provides suitable foraging habitat for CBC, an area of 32.38 hectares of the vegetation type Kwongkan shrublands with scattered *Nuytsia floribunda* mapped to be in Pristine condition in Reserve 26257 is required;
- To offset the loss of 0.82 hectares of native vegetation that is representative of the Kwongkan shrubland TEC, an area of 5.19 hectares of the abovementioned vegetation type mapped to be in Pristine condition within Reserve 26257 is required;
- To offset the loss of 6.40 hectares of native vegetation native vegetation belonging to the BVA 6048:
 - The areas of the abovementioned vegetation type mapped as Pristine (33.97 hectares) within Reserve 26257 mitigate the impacts by 84.8%.
 - The areas of the abovementioned vegetation type mapped as Excellent, Very Good, and Good (1.40 hectares) within Reserve 26257 further mitigate the impacts by 3.1%.
 - Weed control of 1.82 hectares of the abovementioned vegetation type mapped as Excellent, Very Good, and Good condition within Reserve 26257 further mitigates the impacts by 4.9%.
 - An area of 1.90 hectares of the vegetation type *Nuytsia floribunda* and *Banksia speciosa* low woodland mapped as Excellent condition within Reserve 14301 mitigates the remaining impacts which is 7.2%.

In summary, to mitigate 100% significant residual impacts of the proposed clearing, the offset required includes:

- Conservation of 33.97 hectares of the vegetation type *Kwongkan shrublands with scattered Nuytsia floribunda* mapped as Pristine condition within Reserve 26257.
- Conservation of 1.40 hectares of the vegetation type *Kwongkan shrublands with scattered Nuytsia floribunda* mapped as Excellent, Very Good, and Good condition within Reserve 26257.
- Weed control of 1.82 hectares of the vegetation type *Kwongkan shrublands with scattered Nuytsia floribunda* mapped as Excellent, Very Good, and Good condition within Reserve 26257.
- Conservation of 1.90 hectares of the vegetation type *Nuytsia floribunda* and *Banksia speciosa* low woodland mapped as Excellent condition within Reserve 14301.

The Delegated Officer considers that this adequately counterbalances the significant residual impacts listed above. The justification for the values used in the offset calculation is provided in Appendix E.

End

Appendix A. Additional information provided by applicant

During the assessment, the applicant responded to requests for information and provided additional information as following.

Additional information provided	Consideration of provided information
Avoidance and mitigation measures regarding the site selection.	This information is presented in Section 3.1 of the Report.
The Shire could not commit to retain the Tuart trees	This information is presented in Section 3.2.1. of the Report.
Offset proposals including updated site assessment within Reserve 26257; Site assessment of Reserve 14301; Weed control plan for Reserve 26257	This information is utilized to determine the relevant offset values and presented in Section 4.
Proposal to amend the application area and site assessment of the additional area	The amended application had been re-advertised for seven days. Information of additional application area has been considered and incorporated in the Report.
Works Approval	Information of relevant works approval is presented in Section 3.3 of the Report.

Appendix B. Site characteristics

B.1. 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.

Characteristic	Details
Local context	<p>The area proposed to be cleared is part of an expansive tract of native vegetation in the intensive land use zone of Western Australia. It is adjacent to an existing liquid waste facility and remnant vegetation in the west, Myrup Road in the north and cleared lands in the south and east. A portion of the proposed clearing area is part of a large area of vegetation.</p> <p>Aerial imagery indicates the local area (20-kilometre radius from the centre of the area proposed to be cleared) retains approximately 29.3 per cent of the original native vegetation cover.</p>
Ecological linkage	The application area is not within any mapped linkages and is unlikely to be part of any local ecological linkage.
Conservation areas	The application area is not within a conservation area. The closest conservation area is the Shark Lake Nature Reserve which is located approximately 600 metres in the west of the application area.
Vegetation description	<p>Fauna and environmental considerations report (Shire of Esperance, 2023a) and amendment site inspection report (Shire of Esperance, 2023e) indicate the vegetation within the proposed clearing area consists of two types:</p> <ul style="list-style-type: none"> • Type A: Scattered <i>Nuytsia floribunda</i> and <i>Eucalyptus pleurocarpa</i> over mixed shrubland with Restionaceae and Cyperaceae sedges. • Type B: Failed revegetation and scattered remnant trees. <p>The mapping of vegetation types is available in Appendix F.</p> <p>Vegetation type A within the application area is consistent with the mapped vegetation type:</p> <ul style="list-style-type: none"> • Beard 6048, which is described as Mixed heath with scattered tall shrubs <i>Acacia</i> spp., Proteaceae and Myrtaceae (Shepherd et al, 2001). <p><i>The mapped vegetation type retains approximately 14.2 per cent of the original extent (Government of Western Australia, 2019).</i></p>

Characteristic	Details
Vegetation condition	<p>Fauna and environmental considerations report (Shire of Esperance, 2023) indicates the vegetation within the proposed clearing area is in varied from a very good to completely degraded (Keighery, 1994) conditions.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix D. The mapping of vegetation condition is available in Appendix F.</p>
Climate and landform	<p>Climate: Mean maximum temperature is 21.9 degrees Celsius. Mean minimum temperature is 12.1 degrees Celsius.</p> <p>Rainfall: Mean annual rainfall is 618.1 millimetres. (BOM, 2023)</p> <p>Landform: Gently undulating plain, 1-3% slope (DPIRD, 2022)</p>
Soil description	The soil is mapped as Esperance 1b phase (245Es_1E1b), Grey deep sandy duplex (gravelly) soils with associated duplex sandy gravels and minor pale deep sands and shallow gravels (DPIRD, 2022).
Land degradation risk	The soil types within the application area are mapped as having a low risk of land degradation resulting from water erosion, salinity, flooding, water logging and phosphorous export; but as having a high to extreme risk of wind erosion and subsurface acidification (DPIRD, 2021).
Waterbodies	The desktop assessment and aerial imagery indicated that no wetlands or waterbodies transecting the application area. The closest waterbody is a perennial swamp located approximately 500 metres from the proposed clearing area.
Hydrogeography	<p>The application area falls within the Esperance Groundwater Area, as proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act).</p> <p>Groundwater salinity within the application area is mapped as from 3000 to 7000 milligrams per litre total dissolved solids.</p>
Flora	<p>No threatened flora species are mapped and there are records of 36 priority flora species within the local area (excluding the ocean). None of these is recorded within the application area. There are two species found on the same soil type and 21 species found in the same vegetation type as the application area.</p> <p>The closest recorded priority species is <i>Dampiera sericantha</i>, located approximately 200 metres from the application area. The survey (Shire of Esperance, 2023a) observed 167 <i>Dampiera sericantha</i> plants within the application area and its surrounding area, of which 35 individuals are proposed to be cleared.</p>
Ecological communities	Portions of the application area are mapped within the threatened ecological community (EPBC Act) of Proteaceae dominated kwongan shrublands of the southeast coastal floristic province of Western Australia.
Fauna	<p>The desktop assessment identified that a total of 43 threatened or priority fauna species have been recorded within the local area (excluding the ocean), including 16 threatened fauna species, eight priority fauna species, and 19 specially protected fauna species.</p> <p>There are night roosting sites identified in the local area with the closest one recorded approximately 6.3 kilometres from the application area. The additional site inspection (Shire of Esperance, 2023e) observed evidence of Carnaby's black cockatoos using the application area for foraging.</p>

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Esperance Plains	2,899,941	1,494,451	51.5	55.1	28.4
Vegetation complex					
Beard vegetation association 6048	113,689	16,100	14.2	24.9	3.5
Local area					
20 km radius	105,738	31,005	29.3	-	-

*Government of Western Australia (2019)

B.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area	Most recent record in local area	Are surveys adequate to identify? [Y, N, N/A]
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	Y	0.5	159	2018	N/A
<i>Falco peregrinus</i> (Peregrine falcon)	OS	Y	6.6	16	2014	N/A
<i>Isoodon fusciventer</i> (Quenda)	P4	Y	1.6	3	2016	N/A

EN: endangered, OS: Other Specially Protected, P: priority

B.4. Land degradation risk table

Risk categories	Land Unit 1
Wind erosion	H2: >70% of the map unit has a high to extreme hazard
Water erosion	L1: <3% of the map unit has a very high to extreme hazard
Salinity	L1: <3% of the map unit has a moderate or high hazard or is presently saline
Subsurface Acidification	H2: >70% of the map unit has a high susceptibility
Flood risk	L1: <3% of the map unit has a moderate to high hazard
Water logging	L1: <3% of the map unit has a moderate to very high to risk
Phosphorus export risk	L1: <3% of the map unit has a high to extreme hazard

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): "Native vegetation should not be cleared if it comprises a high level of biodiversity." Assessment:	At variance	Yes Refer to Section 3.2.1

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>The area proposed to be cleared contains significant flora species of <i>Dampiera sericantha</i>, foraging habitat for Carnaby's black cockatoos and suitable habitat for quendas.</p> <p>The application area consists of the threatened ecological community (TEC) of Proteaceae dominated kwongan shrublands of the southeast coastal floristic province of Western Australia.</p>		and 3.2.2, above.
<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></p> <p>The area proposed to be cleared contains suitable habitat for conservation significant fauna.</p>	At variance	Yes Refer to Section 3.2.1, above.
<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></p> <p>The area proposed to be cleared is unlikely to contain threatened flora species.</p>	Not likely to be at variance	Yes Refer to Section 3.2.2, above.
<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></p> <p>The area proposed to be cleared contains species that can indicate the threatened ecological community of Proteaceae dominated kwongan shrublands of the southeast coastal floristic province of Western Australia.</p>	At variance	Yes Refer to Section 3.2.2, above.
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> "Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."</p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation complex is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	At variance	Yes Refer to Section 3.2.3, above.
<p><u>Principle (h):</u> "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."</p> <p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area, which is 600 metres away and separated from the application area by two main roads, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not likely to be at variance	No
Environmental value: land and water resources		
<p><u>Principle (f):</u> "Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."</p> <p><u>Assessment:</u></p>	Not likely to be at variance	Yes Refer to Section 3.2.4, above.

Assessment against the clearing principles	Variance level	Is further consideration required?
Given no water courses or wetlands are recorded within 500 metres of the application area, the proposed clearing is unlikely to be associated with a watercourse or wetland.		
<p><u>Principle (g):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</p> <p><u>Assessment:</u></p> <p>The mapped soil is highly susceptible to wind erosion and subsurface acidification.</p>	May be at variance	Yes <i>Refer to Section 3.2.4, above.</i>
<p><u>Principle (i):</u> “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.”</p> <p><u>Assessment:</u></p> <p>The application area is in the Priority 2 zone of the Lake Warden Ramsar catchment. Although the clearing itself is unlikely to have direct impact on the water quality, the subsequent activities after clearing (waste facility operation) may cause potential surface and groundwater contamination downstream of the site.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.4, above.</i>
<p><u>Principle (j):</u> “Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p> <p>Given no water courses are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.</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.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.

Condition	Description
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or 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 or shrubs.

Appendix E. Offset calculator value justification

**WA Environmental Offsets Calculators
Rationale for scores used in the offset calculators**

Calculation 1 - Carnaby's black cockatoo habitat

Environmental value (step 1)	6.40 hectares of native vegetation that provides suitable habitat for Carnaby's black cockatoo	Significant impact (step 2, part A)	6.40
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	2.56

Area (offset site)							
Offset calculation Area							
Offsets calculation	Description	Proposed offset (area in hectares)	32.38	Duration of offset implementation (maximum 20 years)	20.00	Offset value	2.56
		Current quality of offset site (scale)	8.00	Time until offset site secured (years)	1.00		What-if Analysis
		Future quality WITHOUT offset (scale)	8.00	Risk of future loss WITHOUT offset (%)	15.0%	What-if Analysis Reinstate Formula	
		Future quality WITH offset (scale)	8.00	Risk of future loss WITH offset (%)	5.0%		
		Time until ecological benefit (years)	1.00				
		Confidence in offset result (%)	90.0%	OFFSET ADEQUATE?		YES	

Calculation	Score (Area)	Rationale
Conservation significance		
Description	BC habitat	6.40 hectares of native vegetation that provides suitable habitat for Carnaby's black cockatoo
Type of environmental value	Species (flora/fauna)	BC species are listed as a threatened fauna species under the Commonwealth EPBC Act and state BC Act.
Conservation significance of environmental value	Endangered	Carnaby's cockatoo is listed as Endangered under both the EPBC Act and BC Act.
Landscape-level value impacted	yes/no	The impact is to an area of foraging habitat in area.
Significant impact		
Description	Clearing of native vegetation that provides suitable habitat for black cockatoos.	6.40 hectares of native vegetation that provides suitable habitat for Carnaby's black cockatoo
Significant impact (hectares) / Type of feature	6.40	Clearing of approximately 6.40 hectares of native vegetation that includes suitable habitat for Carnaby's black cockatoos.

Calculation	Score (Area)	Rationale
Quality (scale) / Number	4.00	Vegetation is in very good condition. While the closest Carnaby's BC roost is mapped 0.5 kilometres from the application area, the area consists of non-preferred foraging species with dieback infection. There are some Tuart trees without hollows.
Rehabilitation credit		
N/A	N/A	
Offset		
Description	Utilizing the banked offset site at the Reserve 26257	Applicant proposed using the banked offset site at Reserve 26257 to offset significant residual impacts to black cockatoo habitat.
Proposed offset (area in hectares)	32.38	The area required to mitigate the significant residual impacts by 100%.
Current quality of offset site	8.00	Proposed offset site is Crown Reserve 26257 in which the area with the vegetation type of Kwongan shrublands with scattered <i>Nuytsia floribunda</i> in pristine condition (with some possible dieback evident) is proposed to offset the SRI. Foraging evidence of Carnaby' BC was found within the site, with some primary foraging species recorded (including <i>Banksia nivea</i> , <i>Hakea obliqua</i> , <i>Pinus pinaster</i>). Assuming the areas mapped as 'Pristine' will be used which would provide high quality foraging habitat for black cockatoos.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	8.00	Assume that the native vegetation in offset site will not change without offset
Future quality WITH offset (scale) / Future number WITH offset	8.00	Assume that the native vegetation in offset site will not change with offset as no further management proposed at the time of calculation.
Time until ecological benefit (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Confidence in offset result (%)	0.9	As the proposed offset site has been changed to conservation, the confidence of 90% (very high) is applied.
Duration of offset implementation (maximum 20 years)	20.00	The offset site has been changed into conservation, the maximum time of 20 years is applied.
Time until offset site secured (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Risk of future loss WITHOUT offset (%)	15.0%	The offset site was in rural area (before changing into conservation). The Shire is not penalised for thinking ahead and banking areas for future offsets.
Risk of future loss WITH offset (%)	5%	The proposed offset site is a banked one, already changed into conservation. The scores have been kept consistent (where possible) with offset calculations for other applications within the banked offset site, and therefore may not represent contemporary practice.

Calculation 2 - Kwongkan TEC

Environmental value (step 1)	0.82 hectares of native vegetation that is representative of the Kwongkan shrubland TEC	Significant impact (step 2, part A)	0.82
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	0.41

Area (offset site)

Offset calculation Area							
Offsets calculation	Description	Proposed offset (area in hectares)	5.19	Duration of offset implementation (maximum 20 years)	20.00	Offset value	0.41
	Utilizing the banked offset site at the Reserve 26257	Current quality of offset site (scale)	8.00	Time until offset site secured (years)	1.00	What-if Analysis	100.0%
		Future quality WITHOUT offset (scale)	8.00	Risk of future loss WITHOUT offset (%)	15.0%	What-if Analysis Reinstate Formula	
		Future quality WITH offset (scale)	8.00	Risk of future loss WITH offset (%)	5.0%		
		Time until ecological benefit (years)	1.00				
	Confidence in offset result (%)	90.0%	OFFSET ADEQUATE? YES				

Calculation	Score (Area)	Rationale
Conservation significance		
Description	0.82 hectares of native vegetation that is representative of the Kwongkan shrubland TEC	Two patches of this TEC in very good condition within the application area with the area of 0.82 hectares
Type of environmental value	Ecological community	
Conservation significance of environmental value	Endangered	Kwongkan shrubland TEC is listed as endangered
Landscape-level value impacted	yes/no	
Significant impact		
Description		0.82 hectares of native vegetation that is representative of the Kwongkan shrubland TEC
Significant impact (hectares) / Type of feature	0.82	Two patches of this TEC in very good condition within the application area with the area of 0.82 hectares
Quality (scale) / Number	5.00	The TEC is being significantly impacted by the presence of <i>Phytophthora cinnamomi</i> dieback

Calculation	Score (Area)	Rationale
Rehabilitation credit		
N/A	N/A	
Offset		
Description	Utilizing the banked offset site at the Reserve 26257	Applicant proposed using the banked offset of Reserve 26257 to offset the residual significant impact on the Kwongkan shrubland TEC.
Proposed offset (area in hectares)	5.19	The area required to mitigate the significant residual impacts by 100%.
Current quality of offset site	8.00	Proposed offset site is Crown Reserve 26257 which is mapped as BVA 6048. The areas with the vegetation type Kwongkan shrublands with scattered <i>Nuytsia floribunda</i> in Pristine condition with some possible dieback evident is proposed to be used. A score of 8 has been applied noting the dieback status and assuming areas mapped as Pristine will be used.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	8.00	Assume that the native vegetation in offset site will not change without offset
Future quality WITH offset (scale) / Future number WITH offset	8.00	Assume that the native vegetation in offset site will not change with offset as no further management proposed at the time of calculation.
Time until ecological benefit (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Confidence in offset result (%)	0.9	As the proposed offset site has been changed to conservation, the confidence of 90% (very high) is applied.
Duration of offset implementation (maximum 20 years)	20.00	The offset site has been changed into conservation, the maximum time of 20 years is applied.
Time until offset site secured (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Risk of future loss WITHOUT offset (%)	15.0%	The offset site was in rural area (before changing into conservation). The Shire is not penalised for thinking ahead and banking areas for future offsets.
Risk of future loss WITH offset (%)	5%	The proposed offset site is a banked one, already changed into conservation. The scores have been kept consistent (where possible) with offset calculations for other applications within the banked offset site, and therefore may not represent contemporary practice.

Calculation 3.1 - BVA 6048 – Pristine vegetation in Reserve 26257 - 84.8%

Environmental value (step 1)	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	Significant impact (step 2, part A)	6.40
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	3.20

Area (offset site)

Offset calculation Area							
Offsets calculation	Description	Proposed offset (area in hectares)	33.97	Duration of offset implementation (maximum 20 years)	20.00	Offset value	2.71
	Utilizing the banked offset site at the Reserve 26257	Current quality of offset site (scale)	8.00	Time until offset site secured (years)	1.00		What-if Analysis
		Future quality WITHOUT offset (scale)	8.00	Risk of future loss WITHOUT offset (%)	15.0%	What-if Analysis Reinstate Formula	
		Future quality WITH offset (scale)	8.00	Risk of future loss WITH offset (%)	5.0%		
		Time until ecological benefit (years)	1.00				
	Confidence in offset result (%)	90.0%	OFFSET ADEQUATE?				NO

Calculation	Score (Area)	Rationale
Conservation significance		
Description	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	The application area is within the Beard vegetation association (BVA) 6048 (banksia scrub-heath), which retains only 14.2 percent of its pre-European extent
Type of environmental value	Vegetation/habitat	
Conservation significance of environmental value	Terrestrial native vegetation complex <30% extent remaining in the bioregion	
Landscape-level value impacted	yes/no	
Significant impact		
Description	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	
Significant impact (hectares) / Type of feature	6.40	The loss of 6.40 hectares of this highly cleared BVA.
Quality (scale) / Number	5.00	Majority of 6.40 hectares is in very good condition but with dieback infection.
Rehabilitation credit		

Calculation	Score (Area)	Rationale
N/A	N/A	
Offset		
Description	Utilizing the banked offset site at the Reserve 26257	Applicant proposed using the banked offset of Reserve 26257 to offset the residual significant impact on the highly cleared BVA 6048.
Proposed offset (area in hectares)	33.97	Using all areas mapped as 'Pristine' will mitigate the significant residual impacts by 84.8%.
Current quality of offset site	8.00	Proposed offset site is Crown Reserve 26257 which is mapped as BVA 6048. The area with the vegetation type Kwongan shrublands with scattered Nuytsia floribunda mapped as Pristine condition (with some possible dieback evident) is proposed to offset the RSI. The vegetation structure of the proposed clearing area and offset site is mostly identical, with 32% and 43% of flora species in the application area and the offset site, respectively, are in common. It is assumed areas mapped as 'Pristine' will be used for the offset, however a score of 8 was applied noting the evidence of dieback on the site.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	8.00	Assume that the native vegetation in offset site will not change without offset
Future quality WITH offset (scale) / Future number WITH offset	8.00	Assume that the native vegetation in offset site will not change with offset as no further management proposed at the time of calculation. The improvement due to weed control is taken into account in another calculation
Time until ecological benefit (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Confidence in offset result (%)	0.9	As the proposed offset site has been changed to conservation, the confidence of 90% (very high) is applied.
Duration of offset implementation (maximum 20 years)	20.00	The offset site has been changed into conservation, the maximum time of 20 years is applied.
Time until offset site secured (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Risk of future loss WITHOUT offset (%)	15.0%	The offset site was in rural area (before changing into conservation). The Shire is not penalised for thinking ahead and banking areas for future offsets.
Risk of future loss WITH offset (%)	5%	The proposed offset site is a banked one, already changed into conservation. The scores have been kept consistent (where possible) with offset calculations for other applications within the banked offset site, and therefore may not represent contemporary practice.

Calculation 3.2 - BVA 6048 – Excellent to Good vegetation within Reserve 26257 - 3.1%

Environmental value (step 1)	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	Significant impact (step 2, part A)	6.40
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	3.20

Area (offset site)

Offset calculation Area							
Offsets calculation	Description	Proposed offset (area in hectares)	1.40	Duration of offset implementation (maximum 20 years)	20.00	Offset value	0.10
	Utilizing the banked offset site at Reserve 26257	Current quality of offset site (scale)	7.00	Time until offset site secured (years)	1.00		What-if Analysis
		Future quality WITHOUT offset (scale)	7.00	Risk of future loss WITHOUT offset (%)	15.0%		
		Future quality WITH offset (scale)	7.00	Risk of future loss WITH offset (%)	5.0%	What-if Analysis Reinstate Formula	
		Time until ecological benefit (years)	1.00				
	Confidence in offset result (%)	90.0%	OFFSET ADEQUATE?				NO

Calculation	Score (Area)	Rationale
Conservation significance		
Description	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	The application area is within the Beard vegetation association (BVA) 6048 (banksia scrub-heath), which retains only 14.2 percent of its pre-European extent
Type of environmental value	Vegetation/habitat	
Conservation significance of environmental value	Terrestrial native vegetation complex <30% extent remaining in the bioregion	
Landscape-level value impacted	yes/no	
Significant impact		
Description	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	
Significant impact (hectares) / Type of feature	6.40	The loss of 6.40 hectares of this highly cleared BVA.
Quality (scale) / Number	5.00	Majority of 6.40 hectares is in very good condition but with dieback infection.
Rehabilitation credit		
N/A	N/A	

Calculation	Score (Area)	Rationale
Offset		
Description	Utilizing the banked offset site at the Reserve 26257	Applicant proposed using the banked offset of Reserve 26257 to offset the residual significant impact on the highly cleared BVA 6048.
Proposed offset (area in hectares)	1.40	Only 1.4 ha of areas mapped as Excellent (0.12 ha), Very Good (0.68 ha), and Good (0.6 ha) remain within the banked offset site. Offset calculation 3.1 identified using the areas mapped as Pristine (33.97 ha) would mitigate the impacts only by 84.8%. Combined with the 1.4 ha area, the proposed banked offset will mitigate significant residual impacts of the proposed clearing by only 87.9%.
Current quality of offset site	7.00	Proposed offset site is Crown Reserve 26257 which is mapped as BVA 6048. The area with the vegetation type Kwongan shrublands with scattered Nuytsia floribunda (with some possible dieback evident) is proposed to offset the RSI. The vegetation structure of the proposed clearing area and offset site is mostly identical, with 32% and 43% of flora species in the application area and the offset site, respectively, are in common. It is assumed areas mapped as Excellent to Good will be used for the offset, as such as score of 7 was applied as an average.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	7.00	Assume that the native vegetation in offset site will not change without offset
Future quality WITH offset (scale) / Future number WITH offset	7.00	Assume that the native vegetation in offset site will not change with offset as no further management proposed at the time of calculation. The improvement due to weed control is taken into account in another calculation
Time until ecological benefit (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Confidence in offset result (%)	0.9	As the proposed offset site has been changed to conservation, the confidence of 90% (very high) is applied.
Duration of offset implementation (maximum 20 years)	20.00	The offset site has been changed into conservation, the maximum time of 20 years is applied.
Time until offset site secured (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Risk of future loss WITHOUT offset (%)	15.0%	The offset site was in rural area (before changing into conservation). The Shire is not penalised for thinking ahead and banking areas for future offsets.
Risk of future loss WITH offset (%)	5%	The proposed offset site is a banked one, already changed into conservation. The scores have been kept consistent (where possible) with offset calculations for other applications within the banked offset site, and therefore may not represent contemporary practice.

Calculation 3.3 - BVA 6048 – Weed control of Reserve 26257 - 4.9%

Environmental value (step 1)	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	Significant impact (step 2, part A)	6.40
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	3.20

Area (offset site)

Offset calculation Area							
Offsets calculation	Description	Proposed offset (area in hectares)	1.82	Duration of offset implementation (maximum 20 years)	20.00	Offset value	0.16
	Weed control within the whole Reserve 26257	Current quality of offset site (scale)	7.00	Time until offset site secured (years)	1.00		What-if Analysis
		Future quality WITHOUT offset (scale)	7.00	Risk of future loss WITHOUT offset (%)	5.0%		
		Future quality WITH offset (scale)	8.00	Risk of future loss WITH offset (%)	5.0%	What-if Analysis Reinstate Formula	
		Time until ecological benefit (years)	2.00				
	Confidence in offset result (%)	90.0%	OFFSET ADEQUATE? NO				

Calculation	Score (Area)	Rationale
Conservation significance		
Description	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	The application area is within the Beard vegetation association (BVA) 6048 (banksia scrub-heath), which retains only 14.2 percent of its pre-European extent
Type of environmental value	Vegetation/habitat	
Conservation significance of environmental value	Terrestrial native vegetation complex <30% extent remaining in the bioregion	
Landscape-level value impacted	yes/no	
Significant impact		
Description	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	
Significant impact (hectares) / Type of feature	6.40	The loss of 6.40 hectares of this highly cleared BVA.
Quality (scale) / Number	5.00	Majority of 6.40 hectares is in very good condition but with dieback infection.
Rehabilitation credit		

Calculation	Score (Area)	Rationale
N/A	N/A	
Offset		
Description	Weed control within the whole Reserve 26257	Applicant proposed weed control as an additional offset measure to offset the significant residual impacts to the highly cleared BVA 6048 vegetation association. The weed control is proposed to be undertaken for the WHOLE Reserve
Proposed offset (area in hectares)	1.82	All areas of Excellent to Good vegetation of Kwongkan shrublands within the entire Reserve are assumed to be beneficial from weed control.
Current quality of offset site	7.00	It is assumed areas mapped as Excellent to Good will be used for the offset, as such as score of 7 was applied as an average.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	7.00	Assume that the native vegetation in offset site will not change without offset
Future quality WITH offset (scale) / Future number WITH offset	8.00	Assume that the native vegetation in offset site will improve with proposed weed control measures.
Time until ecological benefit (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Confidence in offset result (%)	0.9	As the proposed offset site has been changed to conservation, the confidence of 90% (very high) is applied.
Duration of offset implementation (maximum 20 years)	20.00	The offset site has been changed into conservation, the maximum time of 20 years is applied.
Time until offset site secured (years)	1.00	The proposed offset site is a banked one, vesting already changed to conservation.
Risk of future loss WITHOUT offset (%)	15.0%	The offset site was in rural area (before changing into conservation). The Shire is not penalised for thinking ahead and banking areas for future offsets.
Risk of future loss WITH offset (%)	5%	The proposed offset site is a banked one, already changed into conservation. The scores have been kept consistent (where possible) with offset calculations for other applications within the banked offset site, and therefore may not represent contemporary practice.

Calculation 3.4 - BVA 6048 – Reserve 14301 – 7.2%

Environmental value (step 1)	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	Significant impact (step 2, part A)	6.40
		Rehabilitation credit (step 2, part B)	0.00
		Significant residual impact (step 2, part C)	3.20

Area (offset site)

Offset calculation Area							
Offsets calculation	Description	Proposed offset (area in hectares)	1.90	Duration of offset implementation (maximum 20 years)	20.00	Offset value	0.23
	Utilizing the Reserve 14301 as additional offset	Current quality of offset site (scale)	8.00	Time until offset site secured (years)	2.00	What-if Analysis	7.2%
		Future quality WITHOUT offset (scale)	7.00	Risk of future loss WITHOUT offset (%)	10.0%	What-if Analysis Reinstate Formula	
		Future quality WITH offset (scale)	8.00	Risk of future loss WITH offset (%)	5.0%		
		Time until ecological benefit (years)	2.00				
		Confidence in offset result (%)	90.0%	OFFSET ADEQUATE?		NO	

Calculation	Score (Area)	Rationale
Conservation significance		
Description	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	The application area is within the Beard vegetation association (BVA) 6048 (banksia scrub-heath), which retains only 14.2 percent of its pre-European extent
Type of environmental value	Vegetation/habitat	
Conservation significance of environmental value	Terrestrial native vegetation complex <30% extent remaining in the bioregion	
Landscape-level value impacted	yes/no	
Significant impact		
Description	6.40 hectares of native vegetation within the highly cleared Beard vegetation association (BVA) 6048	
Significant impact (hectares) / Type of feature	6.40	The loss of 6.40 hectares of this highly cleared BVA.
Quality (scale) / Number	5.00	Majority of 6.40 hectares is in very good condition but with dieback infection.
Rehabilitation credit		

Calculation	Score (Area)	Rationale
N/A	N/A	
Offset		
Description	Utilizing the Reserve 14301 as additional offset	Applicant proposed changing vesting of the Reserve 14301 from "Tourist, picnic and water supply" to "environmental conservation" to offset the residual significant impact on the highly cleared BVA 6048. Vegetation type <i>Nuytsia floribunda</i> and <i>Banksia speciosa</i> low woodland within the Reserve 14301 is considered adequate to offset BVA 6048.
Proposed offset (area in hectares)	1.90	Area within vegetation type <i>Nuytsia floribunda</i> and <i>Banksia speciosa</i> low woodland mapped as 'Very good' condition will mitigate the remaining significant residual impacts (7.2%) on BVA 6048.
Current quality of offset site	8.00	Proposed offset site is Reserve 14301 which is mapped as BVA 6048. The area with the vegetation type <i>Nuytsia floribunda</i> and <i>Banksia speciosa</i> low woodland mapped as Excellent condition is proposed to offset the RSI. The vegetation structure of the proposed clearing area and offset site is fairly identical, with 26% and 59% of flora species in the application area and the offset site, respectively, are in common.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	7.00	Assume that the native vegetation in offset site will degrade without offset noting the current degrading process of the site due to grazing, unauthorized clearing and drainage
Future quality WITH offset (scale) / Future number WITH offset	8.00	Assume that the area(s) of native vegetation used for offset will be kept unchanged with offset with proposed management measures including fencing improvement, weed control, erosion control, planting and direct seeding.
Time until ecological benefit (years)	2.00	Assume that the time for changing vesting of the proposed offset site is 2 years.
Confidence in offset result (%)	0.9	The confidence of 90% (very high) is applied noting the Shire's experience on this vesting changing.
Duration of offset implementation (maximum 20 years)	20.00	The maximum time of 20 years is applied for land acquisition.
Time until offset site secured (years)	2.00	Assume that the time for changing vesting of the proposed offset site is 2 years.
Risk of future loss WITHOUT offset (%)	10.0%	The current vesting of Reserve 14301 is 'tourist, picnic and water supply' which has a lower risk of loss than 'rural zoned freehold land', the value of 10% is applied to represent the lower risk of development.
Risk of future loss WITH offset (%)	5%	The proposed offset site will be changed into conservation

Appendix F. Biological survey information excerpts

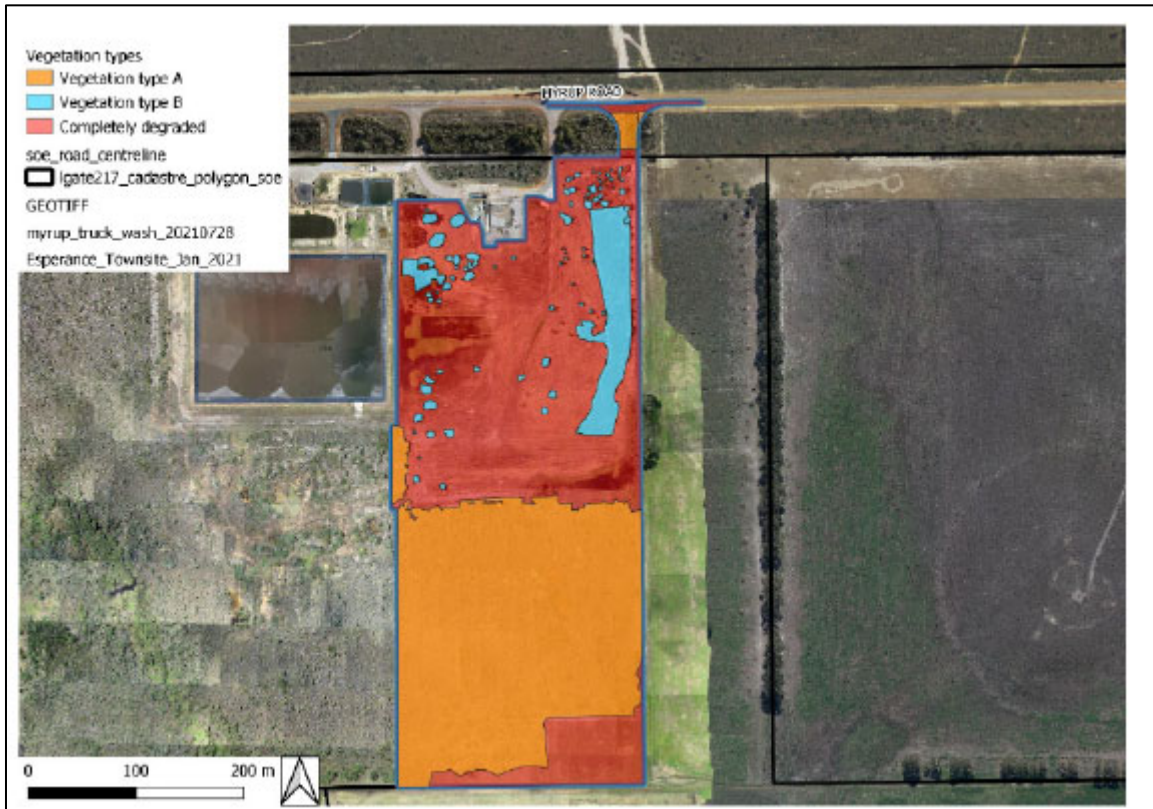


Figure F.1. Mapping of vegetation types in the application area (Shire of Esperance, 2023a)



Figure F.2. Representative photo of the vegetation type A (Shire of Esperance, 2023a).



Figure F.3. Representative photo of the vegetation type B (Shire of Esperance, 2023a).



Figure F.4. Mapping of vegetation conditions in the application area (Shire of Esperance, 2023a).

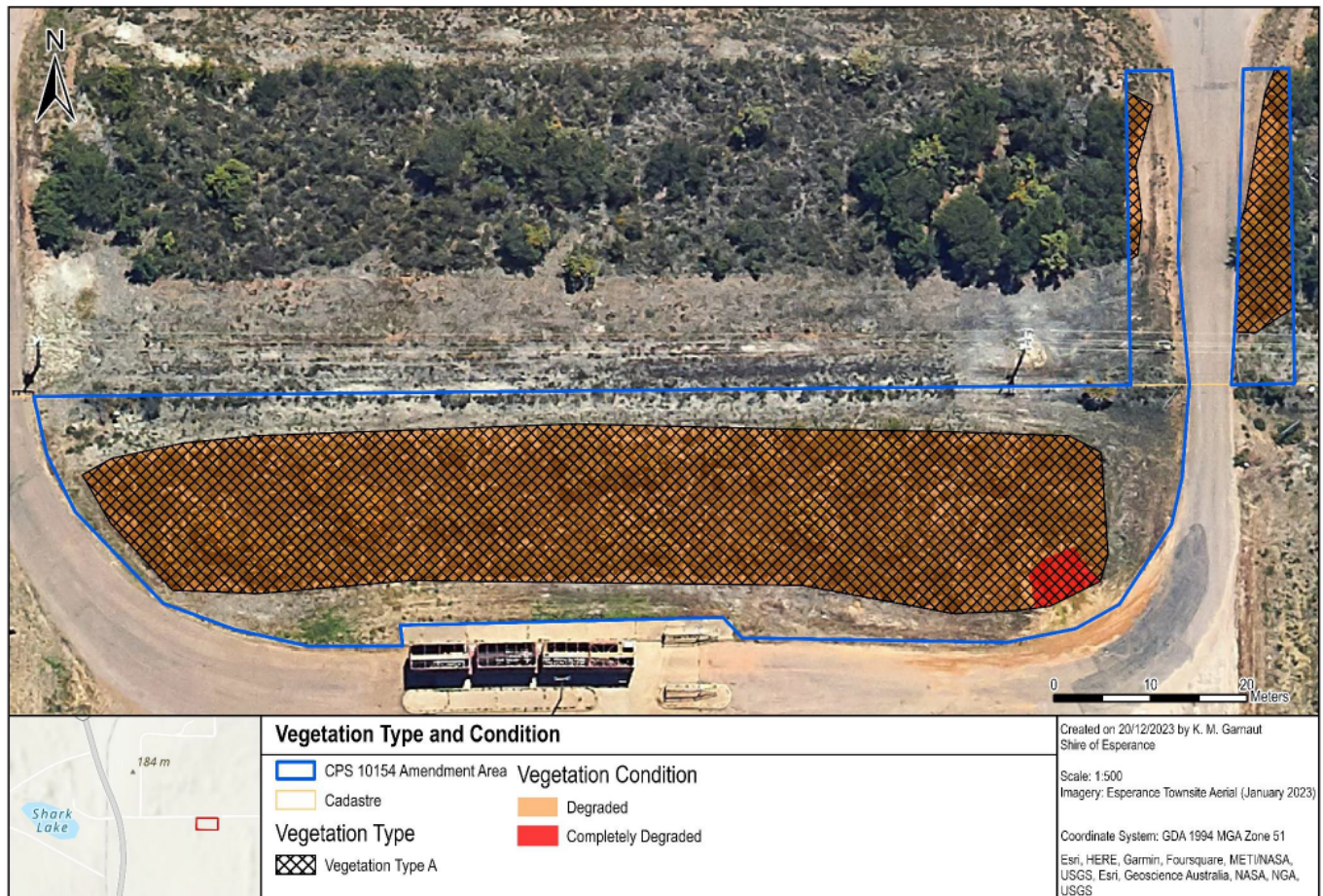


Figure F.5. Mapping of vegetation conditions in the additional application area (Shire of Esperance, 2023e).

Appendix G. Sources of information

G.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- 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:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

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