GOVERNMENT OF WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8884/1
Permit holder:	Shire of Esperance
Duration of Permit:	13 January 2021 – 13 January 2031

ADVICE NOTE - OFFSETS

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 an additional 3.5 hectares of the banked offset to offset the residual environmental impacts identified under CPS 5330/3, and six hectares under CPS 8608/1. A banked offset of 76 hectares currently remains within Crown Reserve 26257 following the completion of offset requirements under CPS 7188/2, CPS 5330/3 and CPS 8608/1. The Permit holder will use an additional 1.67 hectares of the banked offset to offset the residual environmental impacts identified under CPS 8884/1. The offset site occurs within the area cross-hatched red in Figure 1i of Schedule 1 within Crown Reserve 26257.

Offset Condition 17 of CPS 8608/1, required the permit holder to provide a copy of the executed change in purpose of the area cross-hatched red on Plan 8608/1i within Crown Reserve 26912 from 'parkland and recreation' to 'conservation'. A banked offset of 1,507.6 hectares currently remains within Crown Reserve 26257 following the completion of offset requirements under CPS 8608/1. The permit holder will use an additional 91.1 hectares of the banked offset to offset the residual environmental impacts identified under CPS 8884/1. The offset site occurs within the area cross-hatched red in Figure 1j of Schedule 1 within Crown Reserve 26912.

Offset Condition 18 of CPS 8608/1, required the permit holder to provide a copy of the executed change in purpose of the area cross-hatched red on Plan 8608/1j within Crown Reserve 27365 from 'aerial landing ground' to 'conservation'. A banked offset of 20.16 hectares currently remains within Crown Reserve 27365 following the completion of offset requirements under CPS 8608/1. The permit holder will use an additional 16.14 hectares of the banked offset to offset the residual environmental impacts identified under CPS 8884/1. The offset site occurs within the area cross-hatched red in Figure 1k of Schedule 1 within Crown Reserve 27365.

Offset Condition 13 of CPS 8400/1, required the permit holder to provide a copy of the executed change in purpose of the area cross-hatched red on Plan 8400/1j within Crown Reserve 4181 from 'common reserve' to 'conservation'. A banked offset of 64.91 hectares currently remains within Crown Reserve 4181 following the completion of offset requirements under CPS 8400/1. The permit holder will use all of the remaining banked offset to offset the residual environmental impacts identified under CPS 8884/1. The offset site occurs within the area cross-hatched red in Figure 1l of Schedule 1 within Crown Reserve 4181.

The reserves referred to in conditions 15, 16 and 17 of this Permit are intended to offset the remaining residual environmental impacts identified under CPS 8884/1.

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

PART I –CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purposes of gravel extraction, sand extraction and road widening and upgrades.

2. Land on which clearing is to be done

Shao Lu Road reserve (PIN 11645171), Boyatup
Fisheries Road reserve (PIN 11648537), Condingup
Richardson Street Road reserve (PINs 1191219, 1191217, 1191220 and 1191216), Grass Patch
Grass Patch Road reserve (PIN 11642767), Lort River
Neds Corner Road reserve (PINs 11642047 and 11466805), Cascade

3. Area of clearing

The permit holder must not clear more than:

(a) 3.61 hectares of native vegetation within the area cross-hatched yellow in Figure 1a of Schedule 1
(b) 4.49 hectares of native vegetation within the area cross-hatched yellow in Figure 1b of Schedule 1
(c) 0.22 hectares of native vegetation within the area cross-hatched yellow in Figure 1c of Schedule 1
(d) 0.82 hectares of native vegetation within the areas cross-hatched yellow and red in Figure 1d of Schedule 1
(e) 5.19 hectares of native vegetation within the area cross-hatched red in Figure 1e of Schedule 1.

4. Application

This Permit allows the permit holder to authorise persons, including employees, contractors and agents of the permit holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the permit holder.

5. Type of clearing authorised

This Permit authorises the permit holder to clear native vegetation for the activities described in condition 1 of this Permit to the extent that the Permit holder has the power to carry out work involving clearing for those activities under the *Local Government Act 1995* or any other written law.

6. Duration of clearing

This permit does not authorise the permit holder to clear native vegetation after 13 January 2026.

PART II –MANAGEMENT CONDITIONS

7. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the permit holder must have regard to the following principles, set out in order of preference:

(a) avoid the clearing of native vegetation
(b) minimise the amount of native vegetation to be cleared
(c) reduce the impact of clearing on any environmental value.

8. Dieback and weed control

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

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

9. Fauna management - direction of clearing

The permit holder shall conduct clearing in a slow progressive manner from one direction to the other (e.g. east to west) to allow fauna to move into adjacent native vegetation ahead of the clearing activity.

10. Threatened ecological community management

The permit holder shall not clear more than 4.497 hectares of vegetation representative of the 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia' ecological community.

11. Carnaby's cockatoo habitat management

The permit holder shall not clear more than 8.301 hectares of vegetation that provides suitable habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*).

12. Vegetation management

The permit holder shall not clear more than:

(a) 4.783 hectares of vegetation that is representative of Beard vegetation association 512; and

(b) 0.82 hectares of vegetation that is representative of Beard vegetation association 6048.

13. Soil erosion management

The permit holder must ensure that road widening and upgrade activities occur within three months of the authorised clearing being undertaken.

14. Revegetation and rehabilitation

The permit holder shall, within the area cross-hatched red on Figures 1d and 1e of Schedule 1:

(a) Retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.

(b) At an *optimal time* within 12 months following completion of material extraction, *revegetate* and *rehabilitate* the areas cleared for temporary works, by:

(i) ripping the ground on the contour to remove soil compaction;

(ii) laying the vegetative material and topsoil retained under condition 14(a) on the cleared areas that are no longer required for the purpose for which they were cleared under the Permit; and

(iii) undertake additional *planting* as required, ensuring only *local provenance* propagating materials are used to revegetate the area.

(c) achieve the following completion criteria after the five year monitoring period for areas *revegetated* and *rehabilitated* under this Permit:

Table 1: Completion criteria for rehabilitation within the areas cross-hatched yellow and red in Figure 1d of Schedule 1

Criterion	Baseline Floristic data	Completion target	Completion Criteria
1	57% of the Site meets the Key diagnostic characteristics and condition thresholds for Kwongkan TEC. A total of eight Proteaceous species were recorded within the application area.	20% of the Site meets the Key diagnostic characteristics and condition thresholds for Kwongkan TEC using criterion 2b of the Approved Conservation advice for Kwongkan TEC. Note criterion 2b is used due to the disturbance.	20% of the revegetation site has two or more diagnostic Proteaceae species present, that are likely to form a significant vegetative component.
2	Bare areas within the site account for up to 0.6ha.	There are no bare areas within the site (a bare area is greater than 2m x 2m with no native plants in it)	There is native vegetation cover over the entire site with bare areas limited to less than 4m2
3	*Acacia pycnatha* and Victorian Tea tree (*Leptospermum laevigatum*) are present at the site but in low density	Significant Environmental weed species are absent from the revegetation site.	No *Leptospermum laevigatum* or *Acacia pychnatha* plants are found in

			the rehabilitation area

Table 2: Completion criteria for rehabilitation within the area cross-hatched red in Figure 1e of Schedule 1

Criterion	Baseline Floristic data	Completion target	Completion Criteria
1	39% of the site area meets the key diagnostic characteristics and condition thresholds for Kwongkan TEC. A total of 15 Proteaceous species were recorded within the application area	30% of the Site meets the Key diagnostic characteristics and condition thresholds for Kwongkan TEC, using criterion 2b of the Approved Conservation advice for Kwongkan TEC.	30% of the revegetation site has two or more diagnostic Proteaceae species present that are likely to form a significant vegetative component.
2	A total of 15 Proteaceous species were recorded within the application area	66% of Proteaceous species return to the site	A total of at least 10 Proteaceous species present throughout the site.
3	*Eucalyptus angulosa* is present as the dominant tree species although at low density	Return of dominant tree species	*Eucalyptus angulosa* is present in the rehabilitation area scattered throughout at a density of one plant per 400m2
4	*Acacia pycnantha* is present at the site but in low density	Significant Environmental weed species are absent from the revegetation site.	No *Acacia pycnantha* plants are found in the rehabilitation area

(d) undertake remedial actions for areas *revegetated* and *rehabilitated* where monitoring by an *environmental specialist* indicate that revegetation has not met the completion criteria, outlined in 14(c); including

(iv) revegetate the area by deliberately *planting* native vegetation that will result in the minimum target in 14(c) and ensuring only *local provenance* seeds and propagating material are used;

(v) undertake further weed control activities;

(vi) undertake further watering activities; and

(vii) annual monitoring of each *revegetated* and *rehabilitated* site, until the completion criteria, outline in 14(c) are met.

15. Offset – Crown Reserve 35808

By 13 January 2022, the permit holder shall provide to the *CEO* a copy of the executed change in purpose of the area cross-hatched red in Figure 1f of Schedule 1 within Crown Reserve 35808 from 'municipal purposes' to 'conservation'.

16. Offset – Washpool road reserve

By 13 January 2022, the permit holder shall provide to the *CEO* a copy of the executed change in purpose of the area cross-hatched red in Figure 1g of Schedule 1 within undeveloped Washpool road reserve to 'conservation'.

17. Offset – Wells and Crisps road reserves

By 13 January 2022, the permit holder shall provide to the *CEO* a copy of the executed change in purpose of the area cross-hatched red in Figure 1h of Schedule 1 within undeveloped Wells and Crisps road reserves to 'conservation'.

PART III - RECORD KEEPING AND REPORTING

18. Records must be kept

The permit holder must maintain the following records for activities done pursuant to this Permit:

(a) In relation to the clearing of native vegetation authorised under this Permit:
   (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
   (ii) the date that the area was cleared;
   (iii) the size of the area cleared (in hectares);
   (iv) purpose for which clearing was undertaken;
   (v) direction of clearing;
   (vi) the date that road widening and upgrade activities commence;
   (vii) total area of 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia' ecological community cleared under this permit;
   (viii) total area of Carnaby's cockatoo (*Calyptorhynchus latirostris*) foraging habitat cleared under this permit;
   (ix) total area of Beard vegetation associations 512 and 6048 cleared under this permit;
   (x) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 6 of this Permit;
   (xi) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 7 of this Permit.

(b) In relation to the *revegetation* and *rehabilitation* of areas pursuant to condition 14 of this 9ermit:
   (i) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
   (ii) a description of the *revegetation* and *rehabilitation* activities undertaken;
   (iii) the size of the area(s) *revegetated* and *rehabilitated* (in hectares);
   (iv) the date that the area(s) was *revegetated* and *rehabilitated*; and
   (v) action and timing of remedial actions undertaken within the area(s) that was *revegetated* and *rehabilitated* where the *revegetation* will not result in a similar species composition, structure and density to that of pre-clearing vegetation type in that area(s).

19. Reporting

(a) The permit holder must provide to the *CEO* on or before 30 June of each year, a written report:
   (i) of records required under condition 18 of this Permit; and
   (ii) concerning activities done by the permit holder under this Permit between 1 January to 31 December of the preceding calendar year.

(b) If no clearing authorised under this Permit has been undertaken, a written report confirming that no clearing under this Permit has been undertaken, must be provided to the *CEO* on or before 30 June of each year.

(c) Prior to 13 October 2030, the permit holder must provide to the *CEO* a written report of records required under condition 18 of this Permit where these records have not already been provided under condition 19(a) of this Permit.

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

CEO means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*

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

environmental specialist means a person who holds a tertiary qualification in environmental science or equivalent, and has a minimum of 2 years work experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist;

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

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

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

optimal time means the period April to May for undertaking *planting* (for the Goldfields/Esperance region)

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

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

revegetate/ed/ion means the re-establishment of a cover of local provenance native vegetation in an area using planting methods

weed/s means any plant -

(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
(c) not indigenous to the area concerned.

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

18 December 2020

Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (Figures 1a-e).

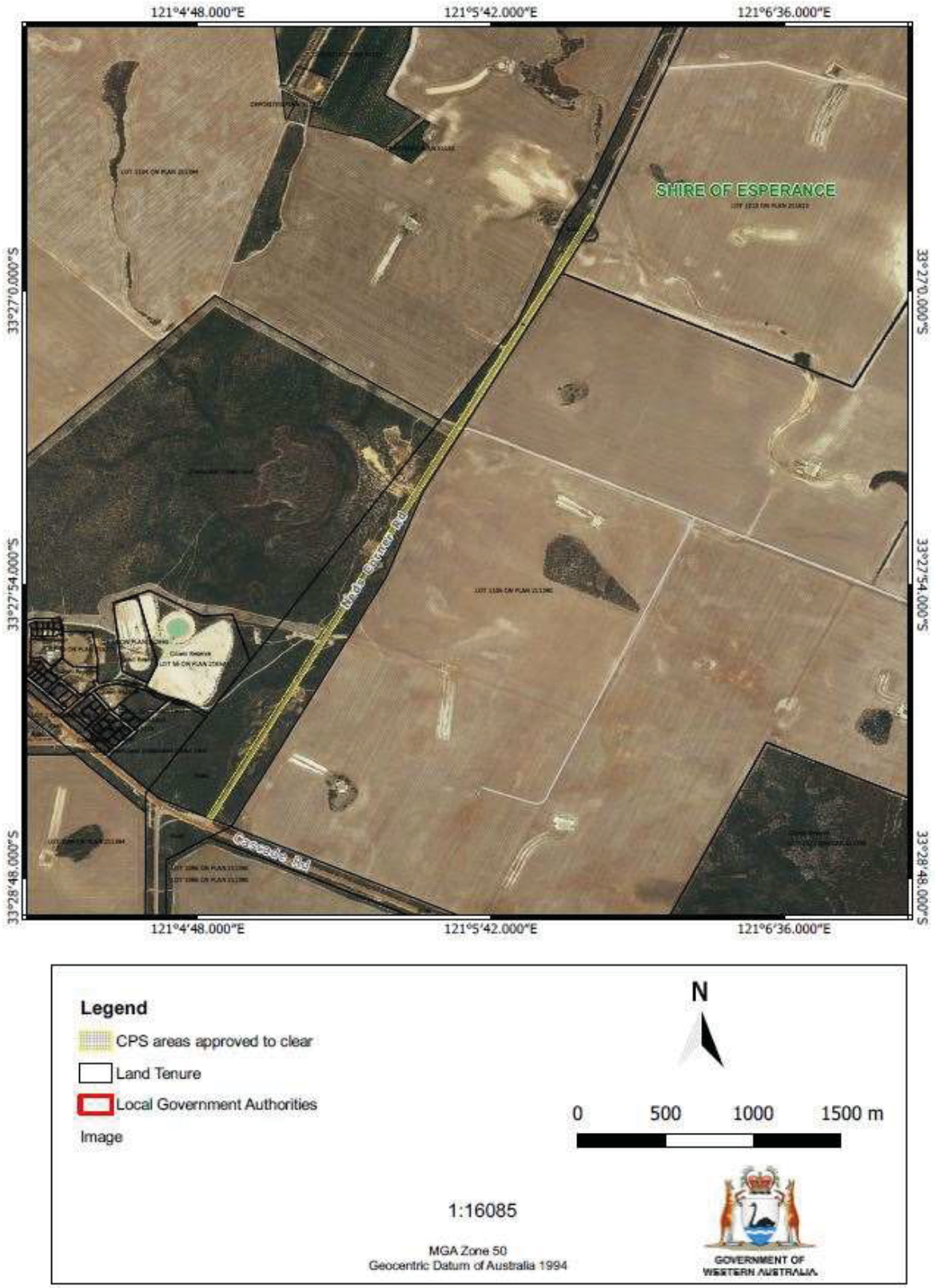


Figure 1a: Map of the boundary of the area within which clearing may occur

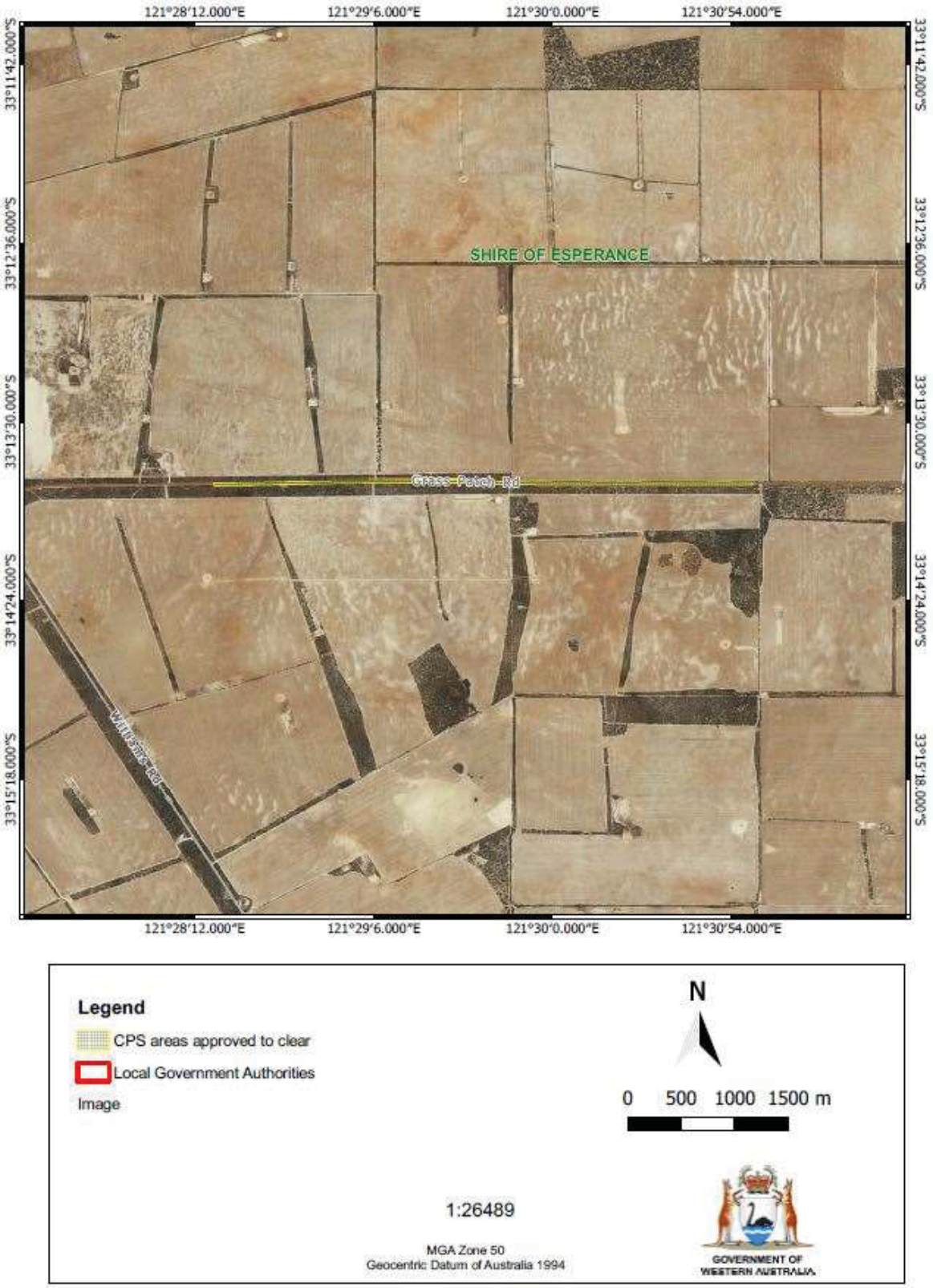


Figure 1b: Map of the boundary of the area within which clearing may occur

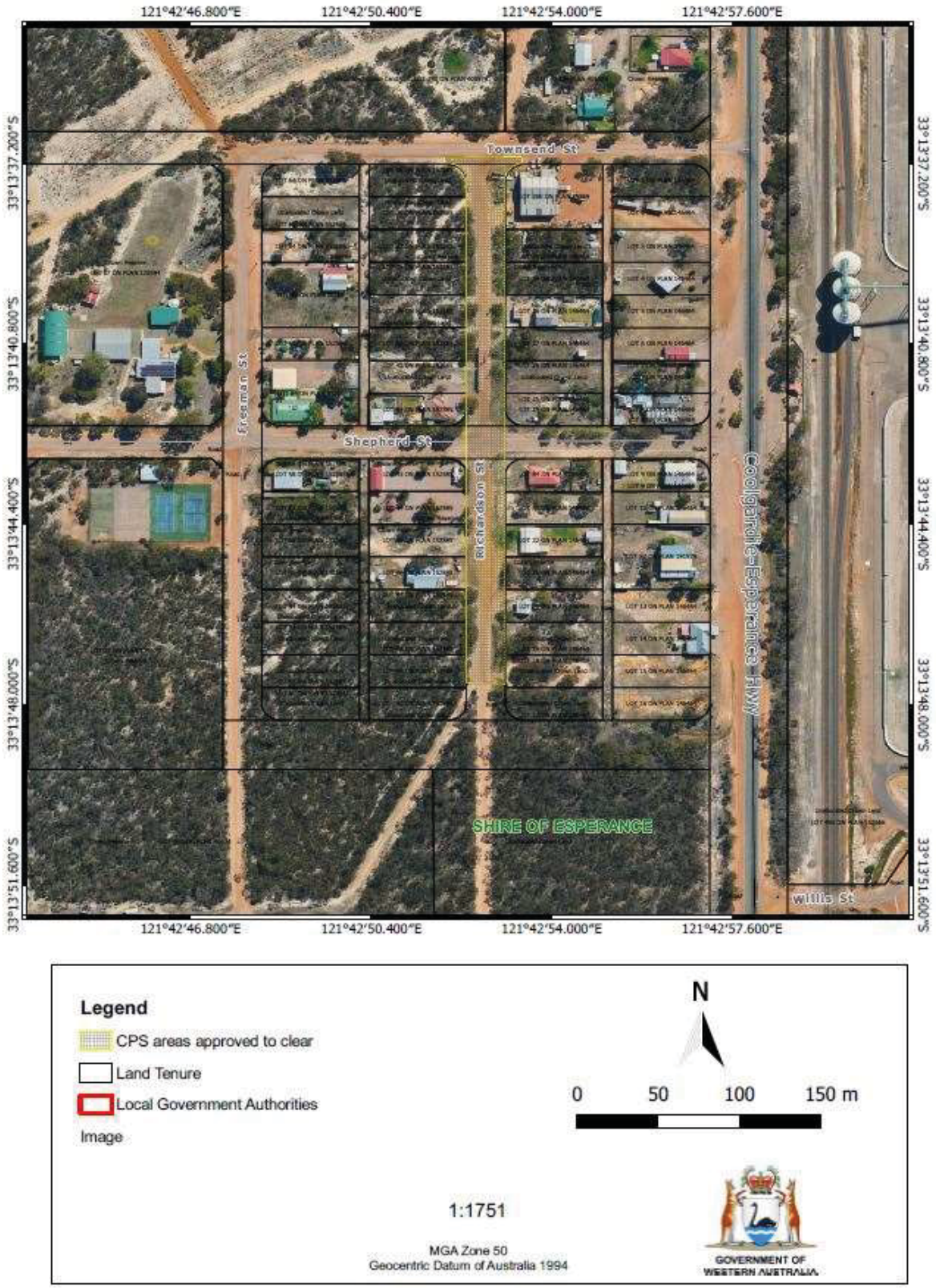
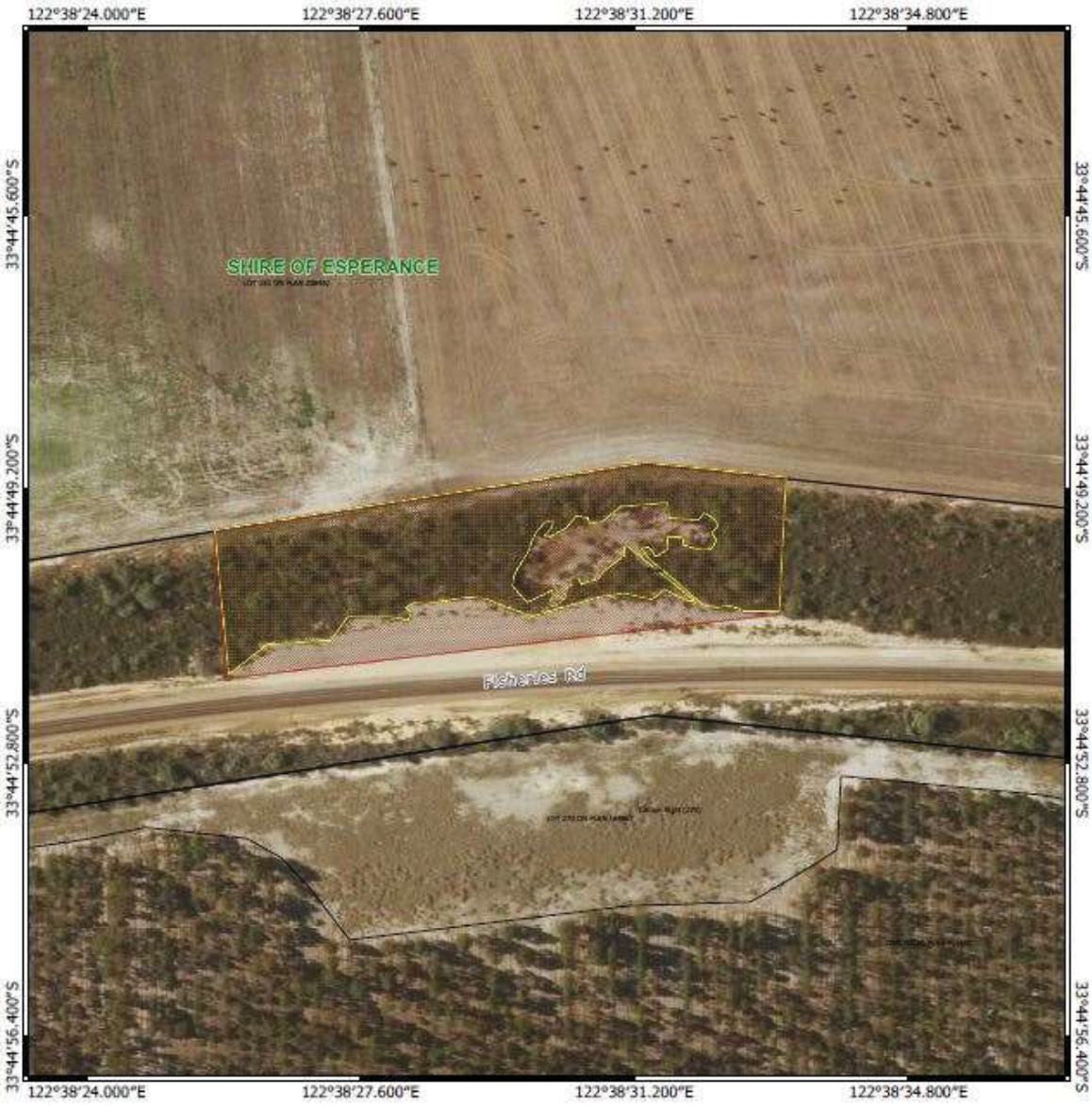


Figure 1c: Map of the boundary of the area within which clearing may occur



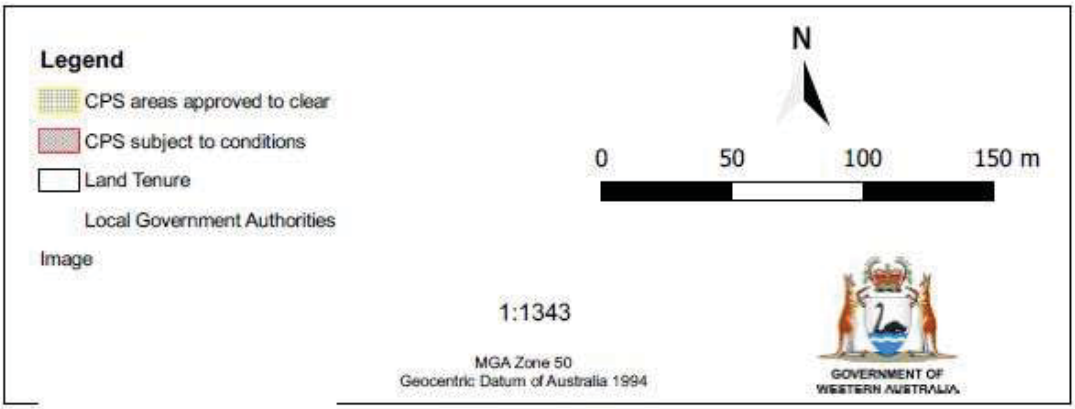


Figure 1d: Map of the boundary of the area within which clearing may occur

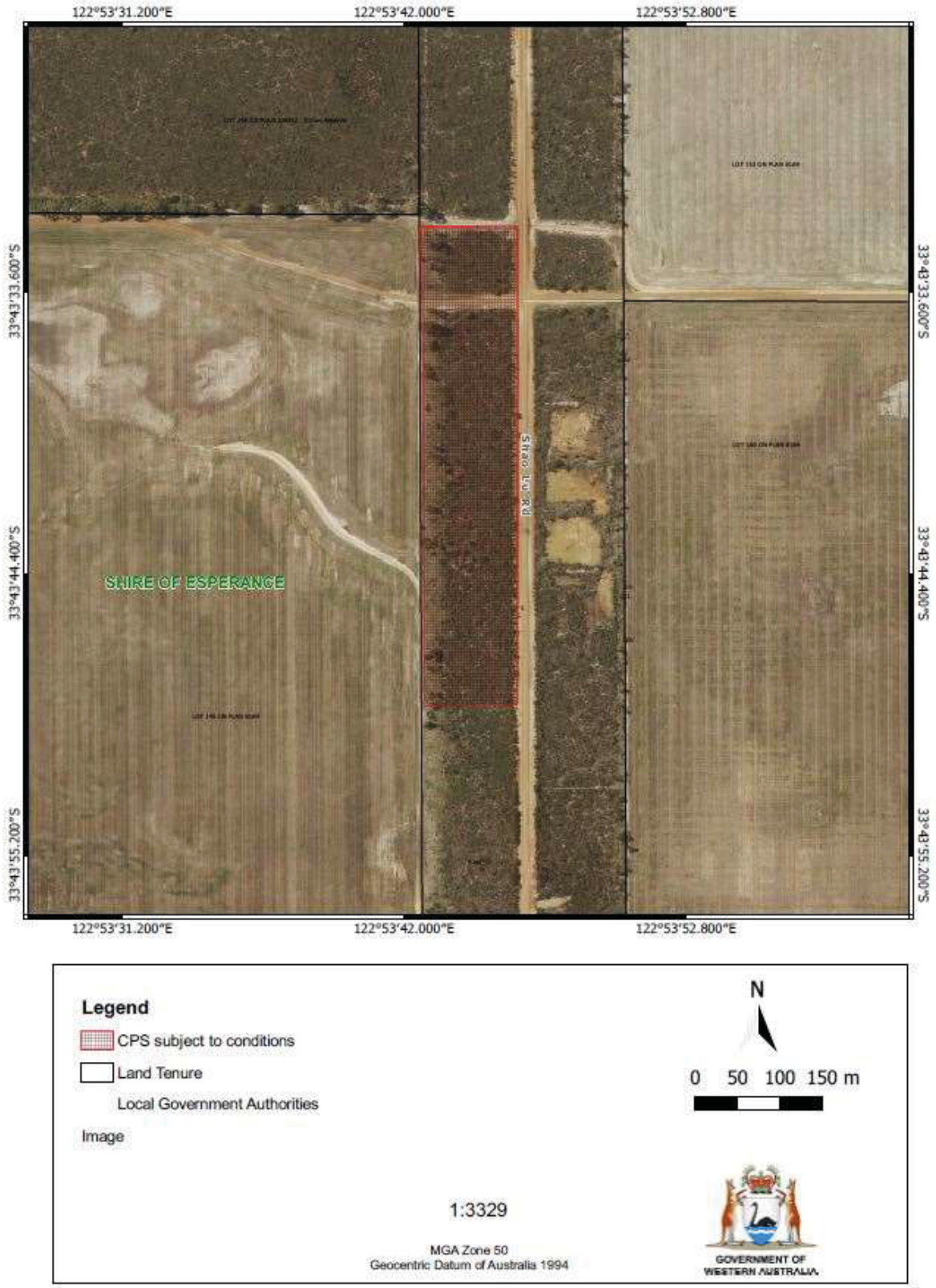


Figure 1e: Map of the boundary of the area within which clearing may occur

Figure 1f: Map of the approved offset

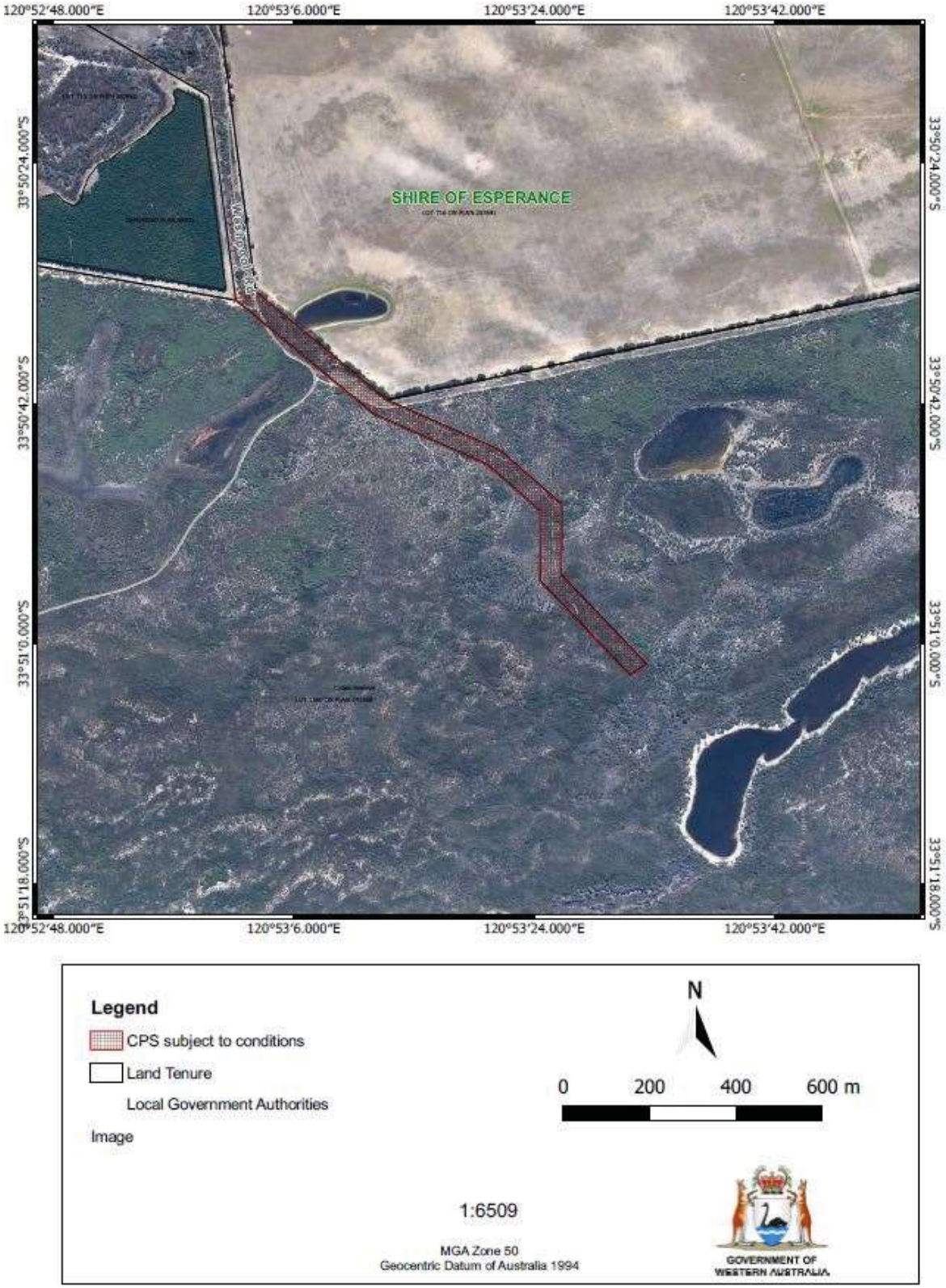


Figure 1g: Map of the approved offset

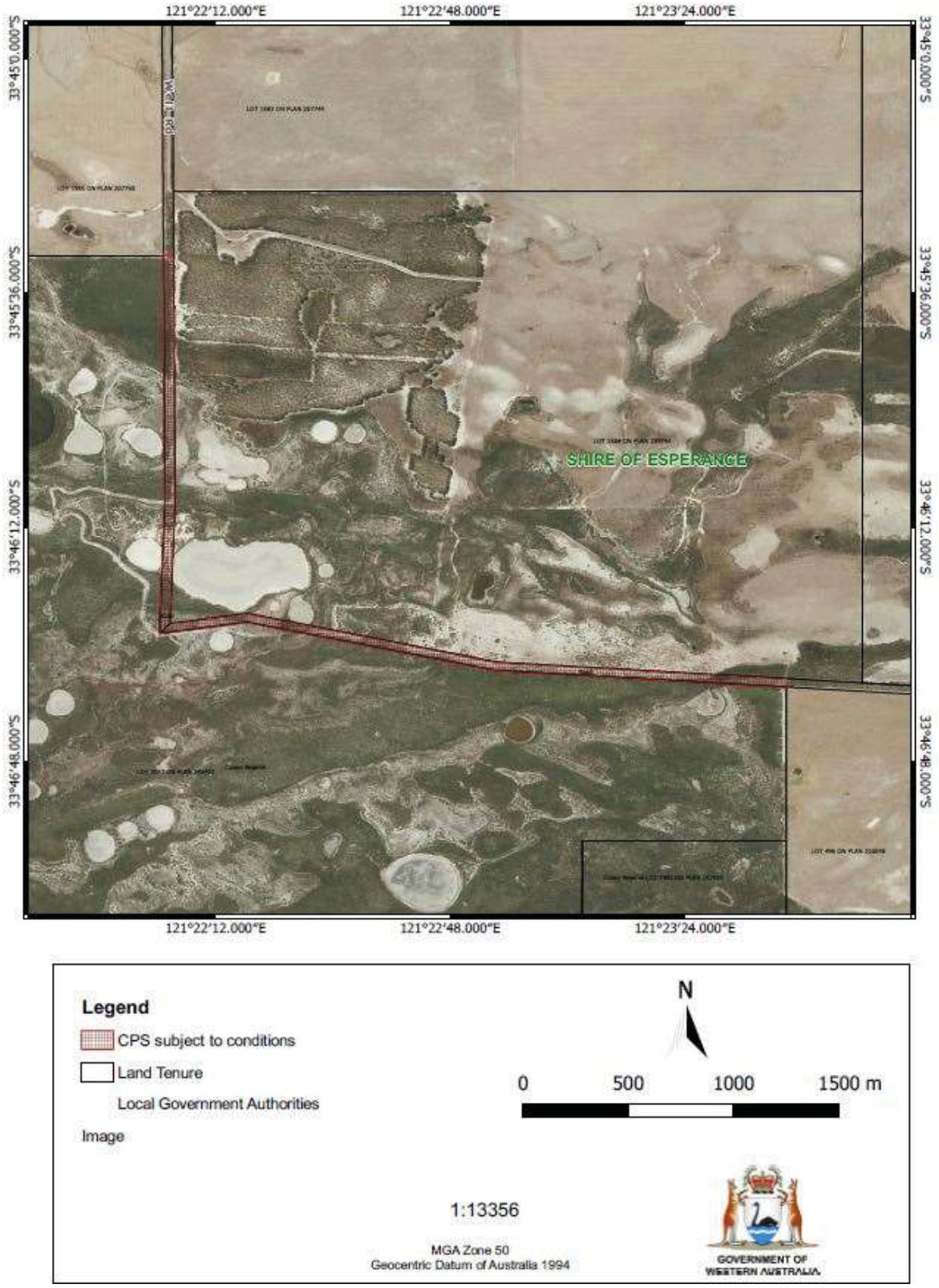


Figure 1h: Map of the approved offset

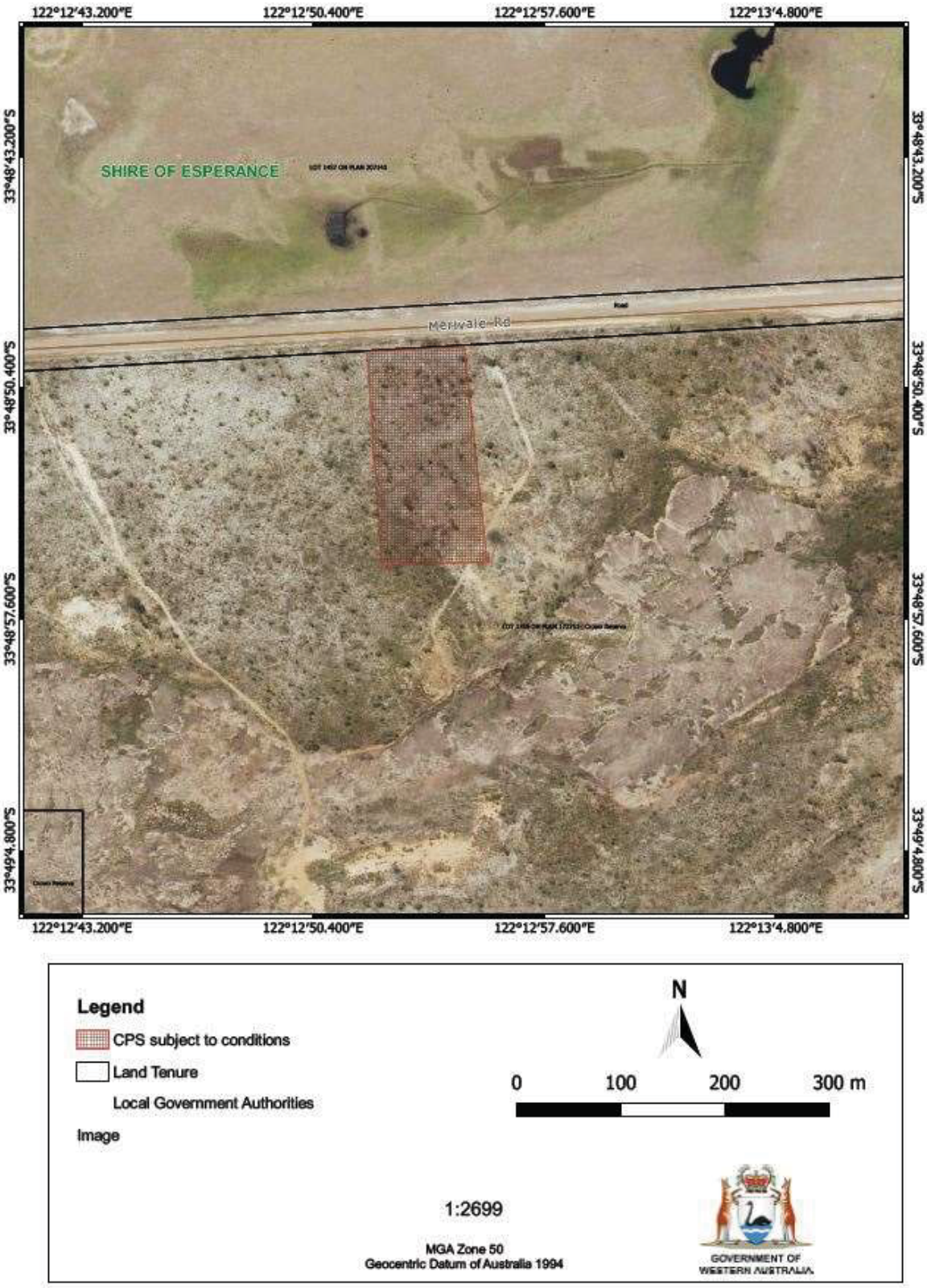


Figure 1i: Map of the approved offset

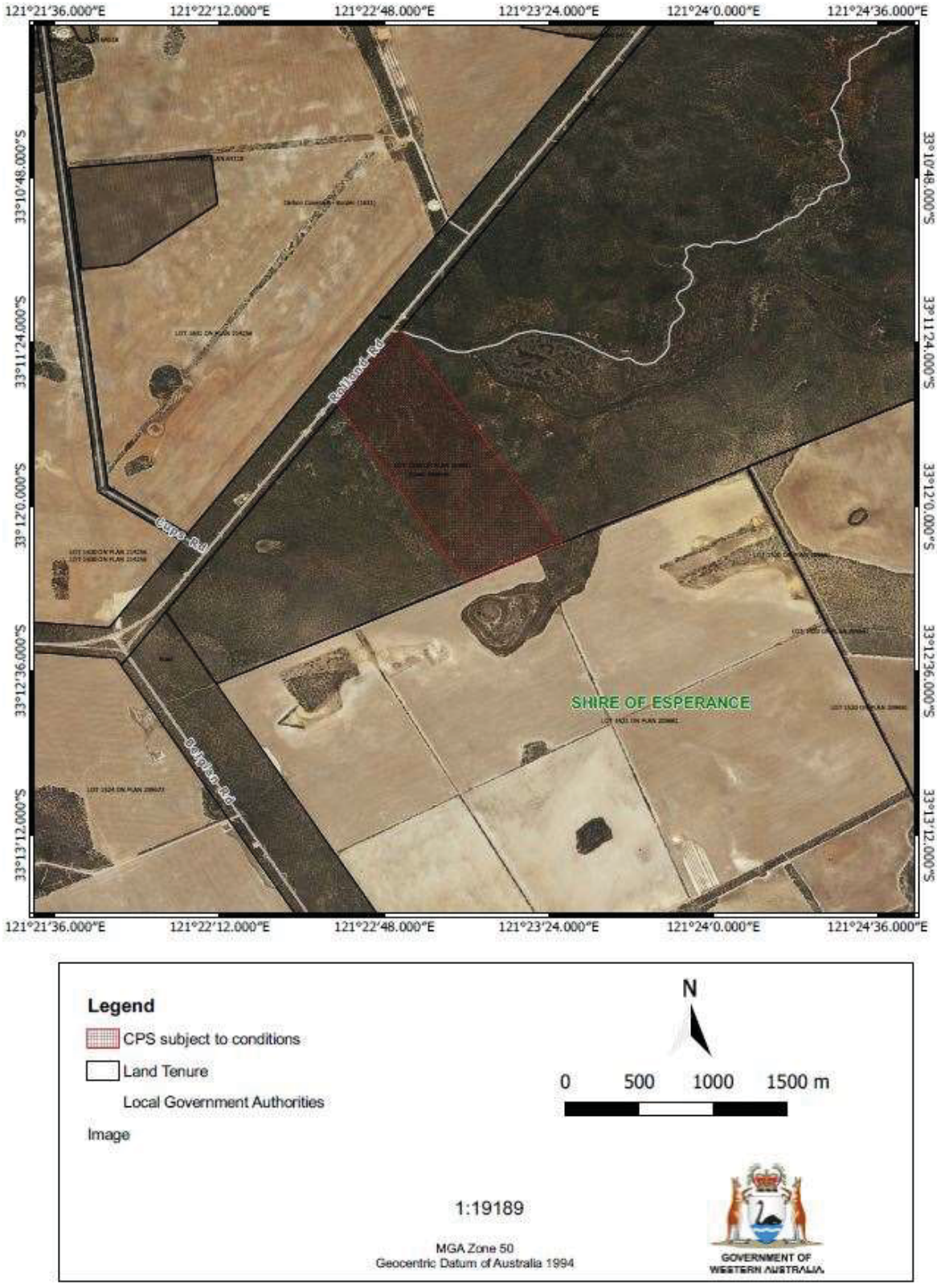


Figure 1j: Map of the approved offset

Figure 1k: Map of the approved offset

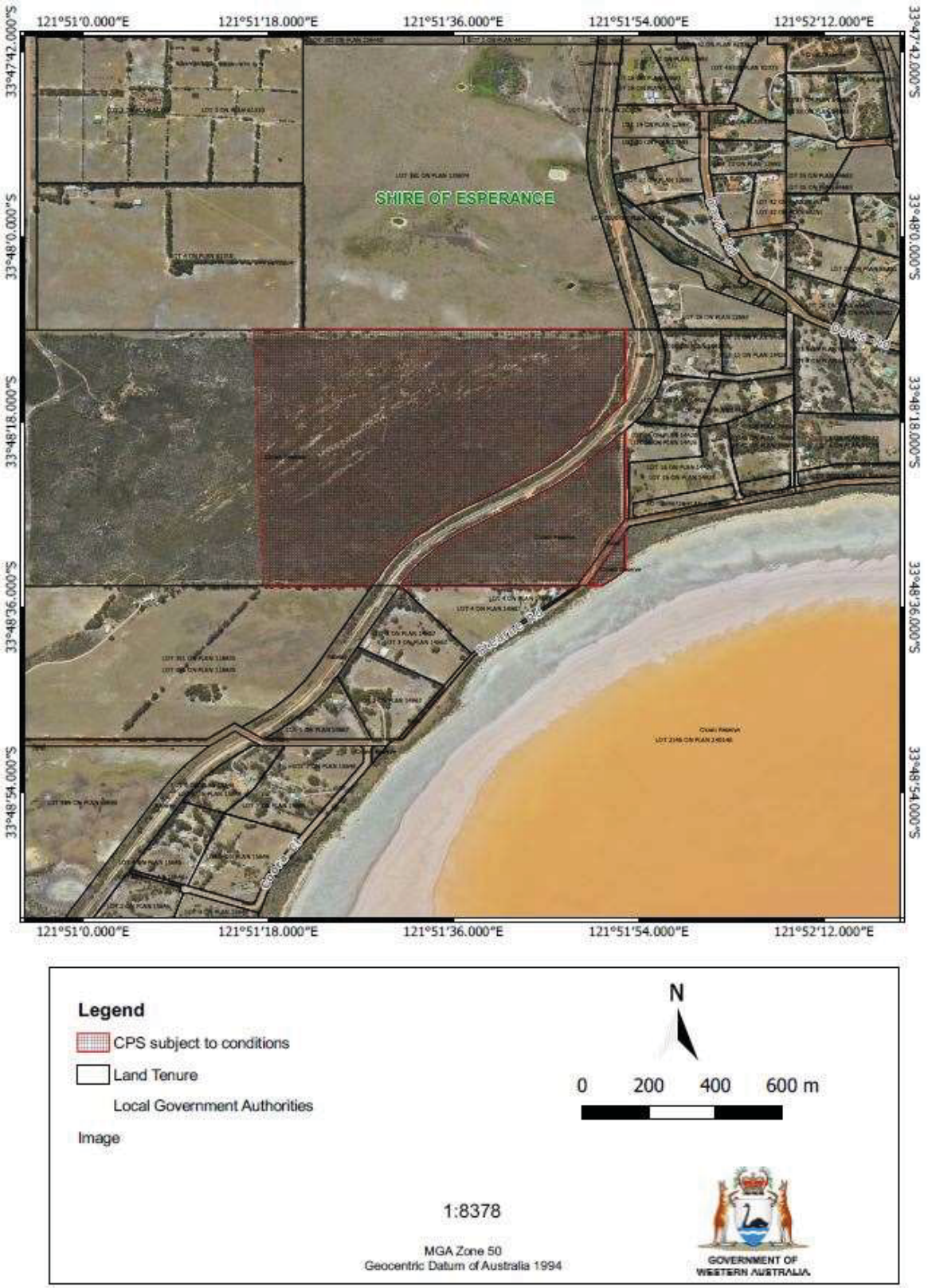


Figure 1l: Map of the approved offset

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 8884/1
Permit type:	Purpose permit
Applicant name:	Shire of Esperance (the Shire)
Application received:	21 April 2020
Application area:	14.33 hectares
Purpose of clearing:	Road construction or upgrades, sand extraction and gravel extraction
Method of clearing:	Mechanical removal
Property:	Shao Lu Road reserve (PIN 11645171), Boyatup Fisheries Road reserve (PIN 11648537), Condingup Richardson Road reserve (PINs 1191219, 1191217, 1191220 and 1191216), Grass Patch Grass Patch Road reserve (PIN 11642767), Lort River Neds Corner Road reserve (PINs 11642047 and 11466805), Cascade
Location (LGA area/s):	Shire of Esperance
Localities (suburb/s):	Boyatup, Cascade, Condingup and Lort River

1.2. Description of clearing activities

The vegetation proposed to be cleared is distributed across five road reserves within the Shire of Esperance (see Figure 1, Section 1.5).

Grass Patch Road and Neds Corner Road
The proposed clearing within Grass Patch and Neds Corner road reserves is to increase the width of the roads from a single lane to double-lane bitumen. These roads form major rural roads connecting main transport routes to grain delivery points in Cascade and Grass Patch town sites. Throughout the harvest season, these roads service numerous farms transporting grain in large heavy-haulage vehicles (Shire of Esperance, 2020a). The proposed clearing is to safely accommodate road train traffic as the roads do not meet current safety standards.

The Shire proposes to clear 3.61 hectares of native vegetation immediately adjacent to the running road surface of up to five metres on either side of the current cleared footprint of Neds Corner Road. Specifically, it is located on Neds Corner Road, from the intersection to 3.8 kilometres north of Cascade Road. This extends from straight line kilometre (SLK) 32.97 to 36.85. The total road footprint along this section will then become a width of 28 metres.

The proposed clearing within Grass Patch road reserve involves clearing 4.49 hectares of native vegetation. The proposed clearing is to occur immediately adjacent to the running road surface of up to two metres on either side of the current cleared footprint. Specifically, it is located from SLK 18.92 to 23.12. The total road footprint along this section will then become a width of 26 metres.

Richardson Street
The proposed clearing within Richardson Street road reserve is to widen the street for sealing. Richardson Street is a seven metre wide road that services the small satellite Grass Patch township. It has been identified as needing a

reseal, and thus road reconstruction, due to the large number of re-occurring potholes (Shire of Esperance, 2020a). The proposed sealing of a 290 metre section of Richardson Street involves clearing of 0.22 hectares of native vegetation.

Fisheries Road and Shao Lu Road
The proposed clearing of 0.82 hectares of native vegetation within Fisheries road reserve is for sand extraction. The sand extracted will be used for the Shire's road reconstruction activities.

The Shire proposes to clear 5.19 hectares of native vegetation within Shao Lu road reserve to extract gravel materials. A continual supply of gravel is required by the Shire for routine maintenance to ensure the running surface of unsealed roads are safe.

Another road reserve, Cape Le Grand Road, was originally included in the application. However, this area was removed during the assessment process to further avoid clearing impacts (see Section 3.1 for further details). This reduced the amount of clearing from 18.12 hectares to 14.33 hectares.

1.3. Decision on application

Decision:	Granted
Decision date:	18 December 2020
Decision area:	14.33 hectares of native vegetation, 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 one submission was received. Consideration of matters raised in the public submission is summarised in Appendix B.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix C), relevant datasets (see Appendix H.1), the findings of flora and vegetation surveys (see Appendix G), the clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that the road upgrades are required to improve road safety and to align with current road safety standards.

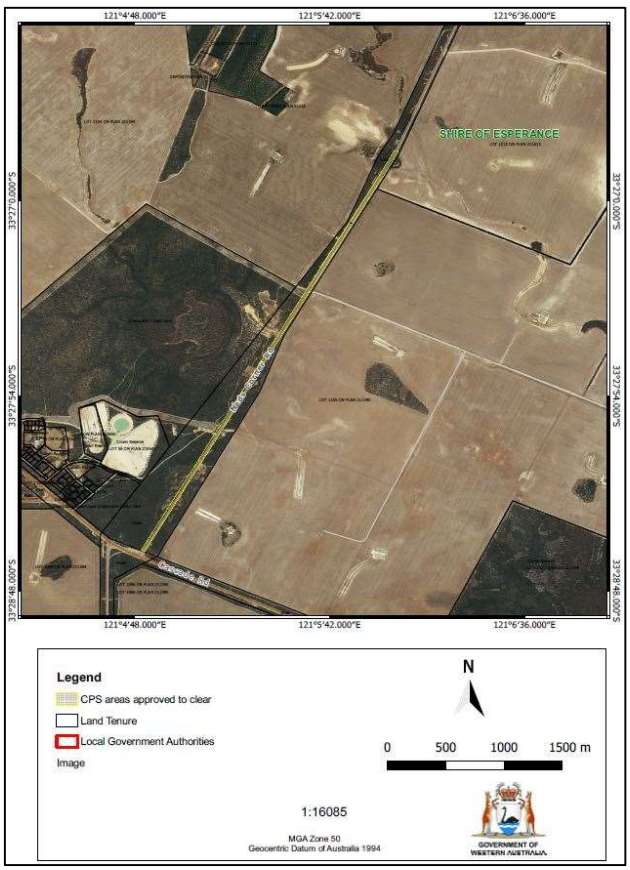
The assessment identified that the proposed clearing will result in:
- the loss of native vegetation that provides foraging habitat for Carnaby's cockatoo and is significant as a remnant of native vegetation in an area that has been extensively cleared
- the loss of native vegetation that is representative of the Australian Government listed threatened ecological community (TEC) 'Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia'
- the reduction of highly cleared Beard Vegetation Associations (BVAs) 512 and 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.

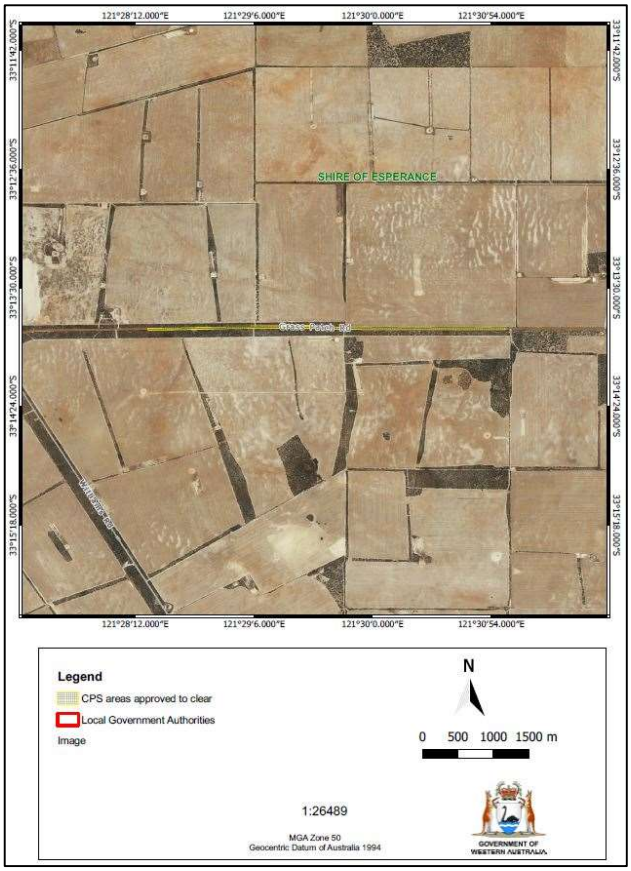
After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to lead to appreciable land degradation and the implementation of a suitable weed and dieback management condition is appropriate to mitigate the impact of spreading weeds and dieback into adjacent vegetation. The applicant has suitably demonstrated avoidance and minimisation measures, the offsets provided counterbalance the significant residual impacts to Carnaby's cockatoo foraging habitat, Kwongkan Shrublands, highly cleared BVAs and significant remnant vegetation in an extensively cleared landscape (see Section 4).

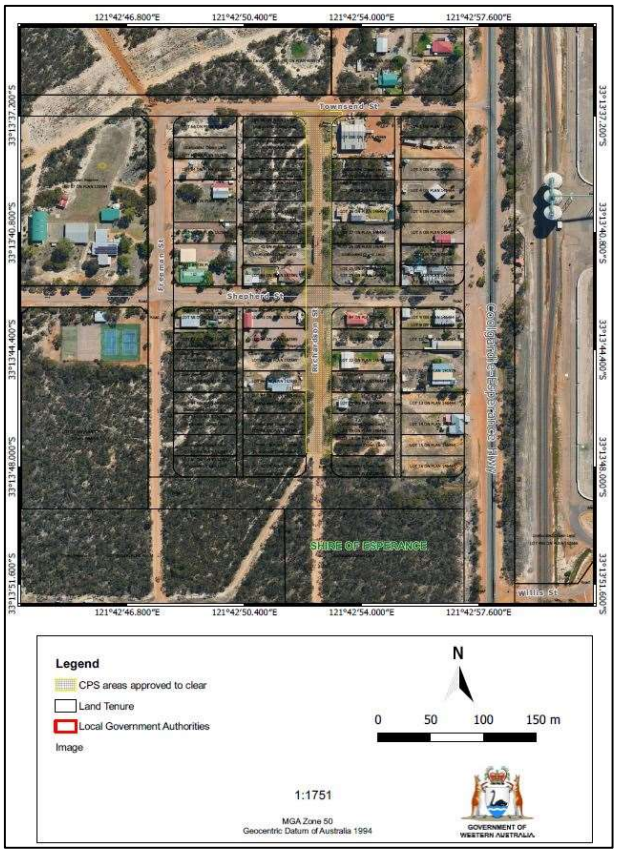
The Delegated Officer decided to grant a clearing permit subject to conditions to:
- avoid, minimise to reduce the impacts and extent of clearing
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback
- staged clearing to minimise wind erosion

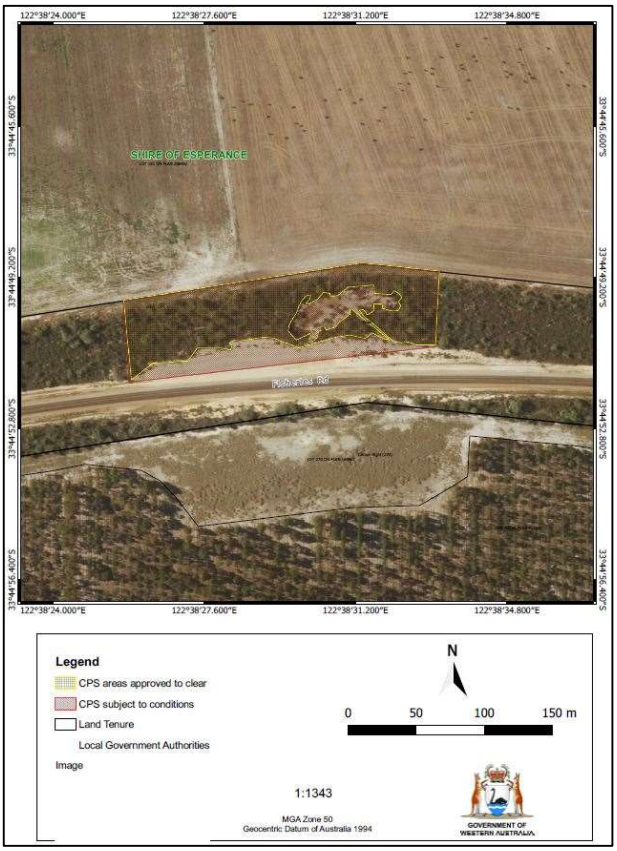
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity
- retain cleared vegetation and topsoil and respread this on a cleared area of equivalent size within the adjacent existing gravel extraction area within 12 months of clearing to ensure fauna habitat is not permanently lost
- provide offsets to address significant residual impacts of the proposed clearing.

1.5. Site maps









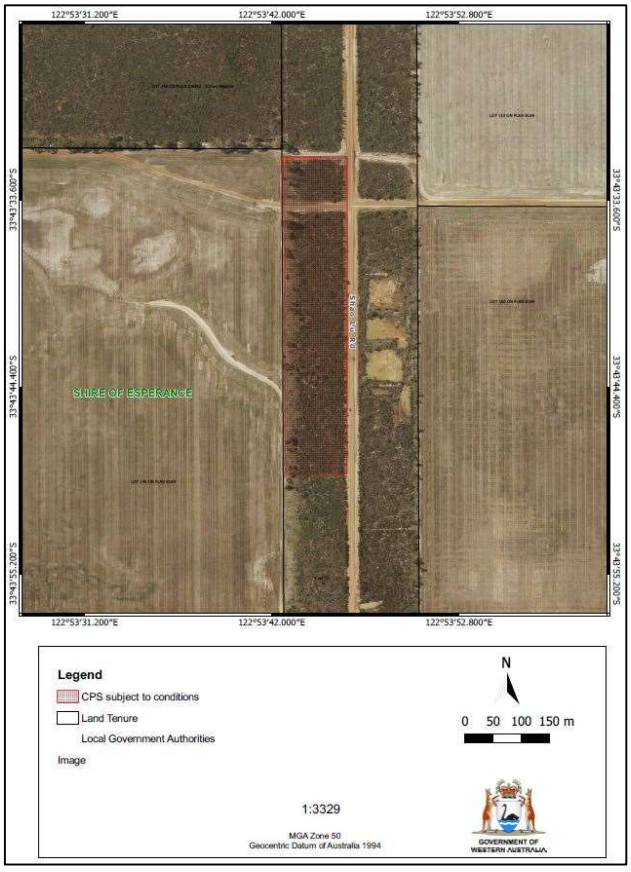


Figure 1 Maps of the separate application areas

The areas cross-hatched yellow indicate the areas 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)
- *Conservation and Land Management Act 1984* (WA) (CALM 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

Evidence was submitted by the applicant, demonstrating that avoidance and mitigation measures have been considered:

- applicant has attempted to source gravel and sand from previously cleared areas. However, was unsuccessful in finding areas within economical cartage distance to project areas
- roads will only be widened to the minimum clearing width for a local distributor road (Grass Patch road) and regional distributor road (Neds Corner road)
- extraction areas will be revegetated once activities have been completed
- application area was further reduced from the removal of proposed clearing area within Cape Le Grand road reserve
- additional care and focus on dieback hygiene and integrated weed management will be undertaken during proposed works to prevent degradation of vegetation communities.

The applicant advised that while further clearing of native vegetation to extract materials is not preferred, the region has largely been exhausted for gravel supplies within existing cleared areas (Shire of Esperance, 2020).

The applicant had initially proposed clearing of 3.79 hectares within Cape Le Grand road reserve for road widening. The clearing included potential impacts to Priority two flora species *Aldrovanda vesiculosa*. DBCA advised that there are three records of its location in Western Australia, two in the Kimberley and one in proximity to Cape Le Grand road. This species is now only known in WA from the Esperance population, and due to its sensitive nature, successional species are likely to be impacted greatly by adverse water quality and eutrophication. Threats to this species include altered hydrology (road works), changes in water quality and weed encroachment. Given that this is the only persisting natural population in WA, there was potential for this species to be significantly impacted by the proposed clearing (DBCA, 2020). DWER requested further avoidance and minimisation measures for this species. The Shire advised that the road design was altered for Cape Le Grand road so that no clearing has to occur and all works can be completed in the existing cleared footprint.

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 the following environmental values were necessary:

- loss of 8.301 hectares of foraging habitat for *Calyptorhynchus latirostris* (Carnaby's cockatoo)
- loss of 4.497 hectares of native vegetation that is representative of the Australian Government listed threatened ecological community 'Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia'
- loss of 4.783 hectares of the highly cleared BVA 512
- loss of 0.82 hectares of the highly cleared BVA 6048
- loss of 14.33 hectares of native vegetation that is a significant remnant within an extensively cleared landscape.

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.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix C) 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 D) identified that the impacts of the proposed clearing present a risk to biological values of flora and fauna, and significant remnant vegetation in an extensively cleared landscape. 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 of flora and vegetation - Clearing Principles (a) and (c)

Assessment

Flora and vegetation surveys recorded a total of 14 different vegetation communities across the application area with the majority of the vegetation within the application area being in Excellent condition (Shire of Esperance, 2020b-f).

Biological values of flora and vegetation of each project area are discussed below.

Neds Corner road

Eight vegetation communities were recorded within the Neds Corner road project area, all in Very Good to Excellent condition (Shire of Esperance, 2020b). Of the 5.36 hectares of native vegetation surveyed within the project area, 1.64 hectares is consistent with the Kwongkan Shrublands which also provides foraging habitat for Carnaby's cockatoo. Fauna are further discussed in section 3.2.2.

Vegetation type seven is similar to the description of Priority 3 priority ecological community (PEC) 'Swamp Yate (*Eucalyptus occidentalis*) woodlands in seasonally inundated clay basins (South Coast)'. However, a road dissecting the middle of the swamp has resulted in a lack of understorey and presence of weed infestation. It is unlikely to meet the criteria for this PEC (Shire of Esperance, 2020b).

Four priority flora species were recorded within the project area, these are discussed below.

Fourteen individuals of *Scaevola archeriana* (Priority 1) were recorded within the project area, occurring within existing spoon drains (Shire of Esperance, 2020). These are an extension of a known population of approximately 40 plants occurring 2.3 kilometres north of Cascade road intersection. *S. archeriana* is widely geographically distributed, with records spanning 300 kilometres (east to west distribution) and is present across a wide range of soil types, from salt lakes to deep sand (Shire of Esperance, 2020b). DBCA advised that provided the known population of approximately 40 plants are retained, the potential impacts of the proposed clearing are unlikely to be significant to the conservation of this species (DBCA, 2020).

Melaleuca similis (Priority 1) was recorded growing on both sides of the road within the project area (Shire of Esperance, 2020b). An estimate of 168 plants were observed, of which 99 were within the proposed clearing footprint. The species was found to be locally common, with substantial suitable habitat in the adjacent unallocated crown land reserve and road reserve. The survey was limited to what was observable within the project area. Therefore, more individuals may be present in the adjacent areas. During the survey it was noted that numerous *M.*

similis plants were re-spouting following disturbance from grading of road shoulders, indicating a tolerance of the species to disturbance (Shire of Esperance, 2020b). *M. similis* is restricted geographically to an area in the vicinity of Cascades and is known from six populations over a range 110 kilometres (north to south) by 60 kilometres (east to west). DBCA advised that this species appears to be inadequately surveyed in the region (DBCA, 2020) and proposed clearing is not likely to have a significant impact to the conservation of the species.

Two new populations of *Goodenia laevis* subsp. *laevis* (Priority 3) were recorded within project area. One population consisted of two plants within the clearing footprint, and the second population consisted of 82 individuals. Ninety per cent of the individuals in the second population were located within the existing disturbed area of roads and will be impacted by routine grading activity (Shire of Esperance, 2020). *G. laevis* subsp. *laevis* has a range of 210 kilometres (east to west, Mount Beaumont to Griffiths Nature Reserve) and 150 kilometres (north to south, Norseman to Scadden), and is known from approximately 10 locations (DBCA, 2020). DBCA noted that the Shire completed surveys for this species in 2019, which may result in additional populations. There are approximately 2,500 plants recorded in total, with population numbers ranging from two to over 200 (DBCA, 2020). The proposed clearing is not likely to be significant to the conservation of this species.

Two new populations of *Persoonia cymbifolia* (Priority 3) were recorded from the survey. Fourteen plants were recorded within vegetation type eight. Within this population, six plants are proposed to be cleared. The second population was recorded in a historical gravel pit just outside of the clearing footprint. This population contains three plants and will not be impacted by the proposed clearing (Shire of Esperance, 2020b). *P. cymbifolia* is known from 31 populations over a geographic range of 400 kilometres (east to west) and is recorded across a vast array of soil types (sand, clay, loams and gravels) and landscapes (salt lakes, granite, coastal plains, sand dunes and valley floors). There is likely to be extensive suitable habitat throughout the 400 kilometres recorded distribution range. Noting this and the individuals that will remain within the recorded populations, the proposed clearing is not likely to have a significant impact on this species.

Richardson street

Vegetation structure and composition within the project area was identified as a single continuous unit, described as being dominated by *Eucalyptus eremophila*, over Melaleuca shrubland with an understorey of chenopod shrubland and weeds (Shire of Esperance, 2020c). Vegetation condition was recorded to be mostly in poor to degraded condition. A small area of 0.05 hectares in the southern portion of the road reconstruction is in good condition. The disturbed nature of the roadside vegetation is likely due to being present within a town-site. Degradation of vegetation is due to the high number of weeds in the area, mostly *Gazania linearis* (Treasure flower). One of the weeds, *Lycium ferocissimum* (African Boxthorn) is a weed of national significance and the Shire has advised that it will undertake control of this species prior to works commencing (Shire of Esperance, 2020c).

There were 21 flora species recorded from the survey of the project area, indicating low diversity (Shire of Esperance, 2020). One species of conservation significance was present, *Eucalyptus dolichorhyincha* (Priority 4). The proposed clearing will impact on three plants of this species. There were at least an additional six plants observable in the immediate vicinity that will not be impacted upon (Shire of Esperance, 2020c). The nearest known record is approximately 650 metres south-east of site, in the road reserve of Coolgardie-Esperance Highway. It is likely scattered plants are present between this record and the project area, and the plants recorded from the survey are an extension of a known population (Shire of Esperance, 2020c).

The Shire advised that extensive flora surveys have been completed in the past few years for the 'State Barrier Fence Extension Public Environmental Review' (Strategen, 2017) where 10 populations consisting of approximately 435 plants were recorded. These specimens have not been lodged and therefore not captured during database searches. In addition, the Shire's discussions with DBCA's District Flora Conservation Officer found that there are other populations of *E. dolichorhyncha* in Truslove Nature reserve. The Shire has also observed, but not formally surveyed, large populations on Williams road, within the Grass Patch Townsite, Swan Lagoon road, and Coolgardie-Esperance Highway and Reserve 19967 (Shire of Esperance, 2020c).

Noting the above, the proposed clearing of three *E. dolichorhyncha* individuals is unlikely to have a significant impact to this species.

Fisheries road

One vegetation community was recorded within the project area, which was in excellent condition (Shire of Esperance, 2020d). The targeted flora survey recorded a total of 83 species within an area of 0.82 hectares,

indicating high diversity. The entire project area is consistent with the Kwongkan Shrublands which also provides foraging habitat for Carnaby's cockatoo.

Ten individuals of *Daviesia pauciflora* (Priority 3) were recorded within the project area, all to be impacted from the proposed clearing. This species is described as growing over a vast array of sandplain habitats and vegetation communities. This is supported by personal experience of surveyors, where plants have been observed in Mallee shrub-land to thick Banksia coastal shrubland (Shire of Esperance, 2020d). DBCA advised that this species has a range of 430 kilometres (east to west, Condingup to Tarin Rock), and that the nearest population is nine kilometres west of the project area with a population estimate of 100 (DBCA, 2020). DBCA advised that while removal of the population recorded within the project area may reduce the known range of this species, the proposed clearing is not likely to be significant to the conservation of this species (DBCA, 2020).

Shao Lu road

Two vegetation communities were identified within the project area. Of the 5.201 hectares of vegetation proposed to be cleared, 3.533 hectares was identified as being in excellent condition (Shire of Esperance, 2020e). The survey determined that the vegetation community described as '*Eucalyptus incrassata* mallee, with mixed Proteaceae dominated heathland, dominant understorey of *Banksia repens* and *Anarthria laevis'* within the project area (2.037 hectares) was consistent with the Kwongkan Shrublands and provides foraging habitat for Carnaby's cockatoos.

No flora species of conservation significance was recorded within the project area.

Grass Patch road

Two vegetation communities were identified within the project area, all in excellent condition. A total of 76 flora species was recorded across both vegetation communities. The Shire noted that this is relatively low, as expected of mallee and mallet communities of the area (Shire of Esperance, 2020f).

A single plant of threatened flora *Eremophila lactea* was recorded within the project area. An 'Authorisation to take threatened flora' from DBCA was obtained by the Shire for the removal of this plant and the Shire is to adhere to conditions under the Authorisation.

Six plants of *Eremophila chamaephila* (Priority 3) were recorded within the project area, of which five are proposed to be impacted. This species has a range of 300 kilometres (east to west, Clyde Hill to Fitzgerald River national park) and there are 10 records within 40 kilometres of the project area (DBCA, 2020). DBCA advised that a survey for the State Barrier Fence recorded 11 populations, 10 being new, with approximately 10,000 individuals. The proposed clearing of five *E. chamaephila* plants is considered unlikely have a significant impact to this species.

More than 50 plants of *Goodenia laevis* subsp. *laevis* (Priority 3) were identified within the project area. All plants were located within the disturbed active road footprint, along a recently graded road shoulder (Shire of Esperance, 2020f) and will be impacted by routine maintenance activities. As with the assessment for the Neds Corner road project area, the proposed clearing is not likely to be significant to the conservation of this species.

Priority four flora species *Eucalyptus dolichorhyncha* was found scattered along the project area. A total of 35 *E. dolichorhyncha* will be impacted by the proposed clearing. The Shire advised that an additional 25 plants were observed outside of the project area, and only plants that could be seen from the road edge were counted therefore it is likely that the total population within this location would extend into other properties and reserves (Shire of Esperance, 2020f). As with the assessment for the Richardson street project area, the proposed clearing is not likely to be significant to the conservation of this species.

Conclusion

In summary, the application area comprises the following biodiversity values:

- Seven priority flora species, as indicated in Table 1. No significant impacts on the conservation status of the priority flora species is expected.

Table 1: Priority flora species recorded within project areas

Priority flora species recorded	Total individuals / population recorded	Number of impacted individuals
Scaevola archeriana (Priority 1)	14	14
Melaleuca similis (Priority 1)	168	99
Goodenia laevis subsp. *laevis* (Priority 3)	>134	>134

Priority flora species recorded	Total individuals / population recorded	Number of impacted individuals
Persoonia cymbifolia (Priority 3)	17	6
Daviesia pauciflora (Priority 3)	10	10
Eremophila chamaephila (Priority 3)	6	5
Eucalyptus dolichorhyincha (Priority 4)	69	38

- One threatened flora species within the Grass Patch Road project area. The Shire has obtained the necessary approval for the removal of this plant and is to adhere to the conditions associated with the approval.
- 4.497 hectares of the Kwongkan Shrublands.
- Significant habitat for indigenous fauna including 8.301 hectares of Carnaby's cockatoo foraging habitat.
- 4.783 hectares of BVA 512 and 0.82 hectares of BVA 6048, both of which are extensively cleared.

Based on the assessment, it is considered that the impacts of the proposed clearing on flora and vegetation constitutes a significant residual impact.

The applicant may have notification responsibilities under the EPBC Act for impacts to Kwongkan Shrublands and Carnaby's cockatoo, as set out in the EPBC Act (Commonwealth of Australia, 2012; 2014). The applicant has been advised to contact the federal Department of Water, Agriculture and the Environment (DAWE) to discuss EPBC Act referral requirements.

Conditions

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

- Provision of an offset to address significant residual impacts of the proposed clearing (Section 4).
- Weed and dieback management to manage potential impacts to adjacent vegetation as a result of the proposed clearing.

3.2.2. Biological values of fauna - Clearing Principle (b)

Assessment

According to available databases, 12 conservation significant fauna species have been recorded in the local area of the project areas. Of these, the following five are considered to utilise the project areas:

- *Calyptorhynchus latirostris* (Carnaby's cockatoo), listed as Endangered under the EPBC Act and the BC Act
- *Leipoa ocellata* (Malleefowl), listed as Vulnerable under the EPBC Act and the BC Act
- *Acanthophis antarcticus* (Southern death adder) listed as Priority 3 by DBCA
- *Dasyurus geoffroii* (Chuditch), listed as vulnerable under the EPBC Act and the BC Act
- *Falco peregrinus* (Peregrine falcon), listed as Other specially protected species under the BC Act.

Carnaby's cockatoo

Carnaby's cockatoo nests in hollows in live or dead trees of wandoo, York gum, salmon gum, powderbark wandoo, marri, jarrah, flooded gum, tuart and karri (Commonwealth of Australia, 2012). This species forages on the seeds, flowers and nectar of native proteaceous plant species (e.g. Banksia, Hakea and Grevillea species), Eucalyptus and Callistemon species (Commonwealth of Australia, 2012). All the project areas, except for Richardson street and Grass Patch road project areas, contain vegetation that comprise of the common foraging items for Carnaby's cockatoo.

Carnaby's cockatoo has been significantly impacted by historical clearing of its habitat and as a result it is estimated that this species has disappeared from more than one-third of its historical breeding range (EPA, 2019). Broad-scale clearing of native vegetation has resulted in fragmentation of breeding and foraging habitat, loss of breeding hollows, changes in the species distribution, and genetic partitioning (EPA, 2019). The EPA's technical guidance notes that "this species is reliant on the maintenance of resources over multiple bioregions, which adds an extra complexity to its conservation. To address this, mitigation must be applied across the species range" (EPA, 2019). Noting this, it is considered that the remaining suitable habitat for this species within its current range is likely to be significant.

Specifically, it is considered that the foraging habitat within the application area is significant for Carnaby's cockatoo due to the following reasons:

- the extent of foraging habitat within the application area (8.301 hectares)
- the dominance of native proteaceous plant species which are a preferred foraging species
- the very good to excellent condition of the vegetation
- the local area surrounding the project areas has been extensively cleared and retains an average of 12 per cent native vegetation.

Malleefowl

Malleefowl are found in arid and semi-arid areas dominated by mallee eucalypts on sandy soils (DPaW, 2016). They are known to also occur in Mulga (Acacia aneura), Broombush (Melaleuca uncinata), Scrub Pine (Callitris verrucosa), Eucalyptus woodlands and coastal heathlands. Malleefowl require abundant leaf litter and a sandy substrate for the successful construction of nest mounds (DPaW, 2016). Its remaining populations are highly fragmented due to extensive land clearing. Noting its known habitats, the application area may provide habitat for malleefowl. However, given the presence of nature reserves within the local area, the linearity of the application area and that the proposed clearing will occur adjacent to existing roads, the application area is not likely to provide significant habitat for this species.

Southern death adder

The Southern death adder is known from Yanchep to Pinjarra and inland to Narrogin and Cunderdin within its northern population extent, and from Hopetoun to the Western Australian - South Australian border within 200 kilometres of the coastline in its southern population extent. This species occurs within a wide variety of habitats in association with deep leaf litter, including coastal heathlands and chenopod dominated shrublands (DEHP, 2015). Based on the known habitat of this species and the habitat present within the application area, it is considered likely that the species inhabits vegetation within the application area. However, given the range of this species, and that it occupies a wide range of habitats, the application area is not likely to provide significant habitat for this species. Mechanical clearing activities would however pose a risk of fauna fatalities should this species occur within the application area. Slow, directional clearing may allow for dispersal of this species into other areas of remnant vegetation.

Chuditch

Most chuditch are found in varying densities throughout the jarrah forest and south coast of Western Australia, and in a range of habitats including forest, mallee shrublands, woodland and desert (DEC, 2012). The species uses denning habitat types such as hollow logs, burrows or rock crevices (DEC, 2012). Based on information provided by the applicant, the application area is not likely to contain suitable denning habitat for the chuditch (Shire of Esperance, 2017f). Due to the habitat preferences of this species, it is not considered likely that habitat for this species is present within the application area.

Peregrine Falcon

The Peregrine Falcon is found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings. It has been recorded within the local areas of Grass Patch road and Fisheries road. Due to the wide range of habitats and its mobile nature, this species may occur in the application area. However, it is not likely to comprise significant habitat for the Peregrine Falcon and the proposed clearing is not likely to have a significant impact to this species.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 8.301 hectares of significant foraging habitat for Carnaby's cockatoo.

For the reasons set out above, it is considered that the impacts of the proposed clearing on Carnaby's cockatoo foraging habitat constitutes a significant residual impact.

As stated under Section 3.2.1., the applicant may have notification responsibilities under the EPBC Act for impacts to Carnaby's cockatoo and their habitats, as set out in the EPBC Act [Commonwealth of Australia, 2012; 2014]. The applicant has been advised to contact the federal Department of Water, Agriculture and the Environment (DAWE) to discuss EPBC Act referral requirements.

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

- Provision of an offset to address significant residual impacts of the proposed clearing (Section 4).
- Slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of clearing activity.

3.2.3. Biological values of 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 is within an extensively cleared landscape as the local area retains an average of approximately 12 per cent remnant vegetation. In addition, Beard Vegetation Associations 512 and 6048 retain less than 30 per cent of their pre-European extent within the IBRA bioregions. The proposed clearing will further reduce the extent of these BVAs.

The application area is considered to be significant as a remnant in an area that has been extensively cleared due to the highly diverse flora and vegetation that contains habitat suitable for conservation significant flora and fauna. Given the extent to which the local area has been previously cleared, the application area may contribute towards fauna dispersal within the landscape. However, due to the vegetation that will remain within the road reserves after the proposed clearing, it is not likely that the proposed clearing will have a significant impact to linkage and dispersal values.

Conclusion
Based on the above assessment, the proposed clearing will result in:

- loss of 4.783 hectares of the highly cleared Beard Vegetation Association 512
- loss of 0.82 hectares of the highly cleared BVA 6048
- loss of 14.33 hectares of native vegetation that is a significant remnant within an extensively cleared landscape.

For the reasons set out above, it is considered that the impacts of the proposed clearing on significant remnant vegetation constitutes a significant residual impact.

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

- Provision of an offset to address significant residual impacts of the proposed clearing (Section 4).

3.3. Relevant planning instruments and other matters

It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

4 Suitability of 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:

- 8.301 hectares of foraging habitat for *Calyptorhynchus latirostris* (Carnaby's cockatoo)
- 4.497 hectares of native vegetation that is representative of the Commonwealth listed threatened ecological community 'Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia'
- 4.783 hectares of the highly cleared BVA 512
- 0.82 hectares of the highly cleared BVA 6048
- 14.33 hectares of native vegetation that is a significant remnant within an extensively cleared landscape.

The applicant proposed an environmental offset that involves changing the vesting of a number of reserves to conservation for management in perpetuity and utilising banked offsets. The following reserves were presented to DWER to be used as offsets for the proposed clearing:

- Crown Reserve 35808 – vesting 'municipal purposes' to be changed to 'conservation'
- Undeveloped road reserve Washpool road - vesting 'road reserve' to be changed to 'conservation'
- Undeveloped road reserves Wells road – Crisps road – vesting 'road reserve' to be changed to 'conservation'
- Crown Reserve 27365 (existing banked offset) - vesting 'aerial landing ground' to be changed to 'conservation'
- Reserve 4181 (existing banked offset) – vesting 'common reserve' to be changed to 'conservation'
- Crown Reserve 26912 (existing banked offset) – vesting 'recreation and parklands' to be changed to 'conservation'
- Crown Reserve 26257 (existing banked offset) – previous vesting was 'agricultural general', which has changed to 'conservation'.

In assessing whether the proposed offset is adequately proportionate to the significance of the environmental values being impacted, DWER undertook a calculation using the DAWE Offsets Assessment Guide 'Calculator'. The calculator indicated that:

- The allocation of:
  - 16.14 hectares of Very Good to Excellent vegetation within Reserve 27365
  - 64.91 hectares of Very Good vegetation within Reserve 4181
  - 11.06 hectares of Very Good vegetation within Wells road – Crisps road
  - 6.75 hectares of Good to Very Good vegetation within Reserve 35808
  - 2.44 hectares of Excellent vegetation within Washpool road

  is adequate to counterbalance the significant residual impacts upon 8.301 hectares of Carnaby's cockatoo foraging habitat and 4.497 hectares of Kwongkan Shrublands, from the proposed clearing.

- The allocation of 91.1 hectares of Very Good to Excellent vegetation representative of BVA 512 within Reserve 26912 (Roberts Swamp) is adequate to counterbalance the significant residual impacts upon 4.783 hectares of BVA 512 from the proposed clearing.
- The revegetation of 1.42 hectares and allocation of 1.76 hectares of vegetation within Reserve 26257 is adequate to counterbalance the significant residual impacts upon 0.82 hectares of BVA 6048 from the proposed clearing.
- The acquisition of areas above is adequate to counterbalance the significant residual impacts upon 14.33 hectares of significant remnant in a highly cleared landscape, from the proposed clearing.

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 F.

The reserves to be used as offset sites are shown in Figure 2.

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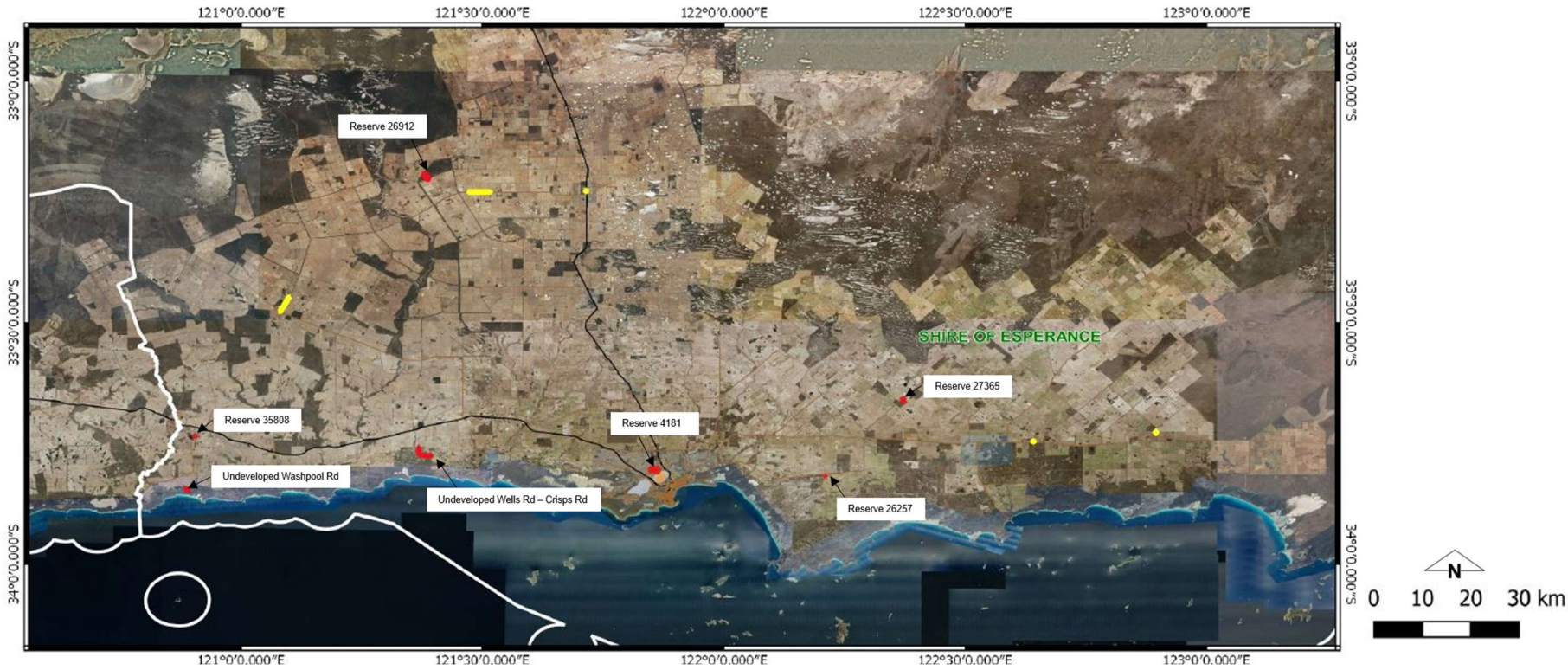


Figure 2 Offset sites (outlined in red) in context of project areas (outlined in yellow)

Crown Reserve 35808

Figure 3 below illustrates the offset site associated with counterbalancing the significant residual impacts upon Carnaby's cockatoo foraging habitat and Kwongkan Shrublands from the proposed clearing. The 6.75 hectare offset will be recorded in the WA Offsets Register. It should be noted that the vegetation within this offset is in Good to Very Good condition and contains BVA 47, which is described as shrublands; tallerack mallee-heath.

The proposed offset is considered suitable to counterbalance the significant residual impacts to Carnaby's cockatoo foraging habitat and Kwongkan Shrublands, due to:

- the presence of 6.75 hectares of Kwongkan Shrublands in Good to Very Good condition. Kwongkan Shrublands also provides foraging habitat for Carnaby's cockatoo
- the reserve being located in a highly cleared landscape.

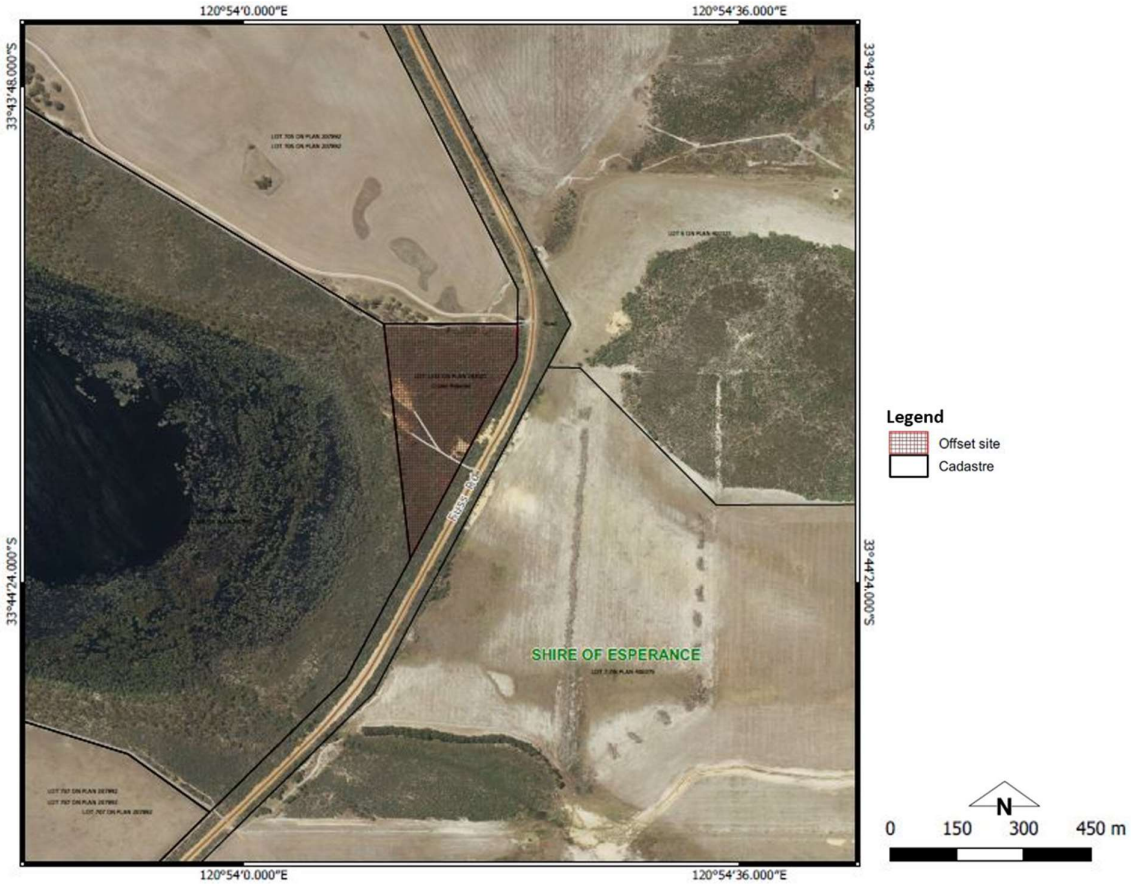


Figure 3 Crown Reserve 35808 approved offset (6.75 ha)

Undeveloped road reserve Washpool Road

Figure 4 below illustrates the offset site associated with counterbalancing the significant residual impacts upon Carnaby's cockatoo foraging habitat and Kwongkan Shrublands from the proposed clearing. The 2.44 hectare offset will be recorded in the WA Offsets Register. It should be noted that the vegetation within this offset is in Excellent

condition and contains Kwongkan Shrublands. This offset site would extend Lake Nature Reserve and protect Kwongkan Shrublands which covers the entire reserve.

The proposed offset is considered suitable to counterbalance the significant residual impacts to Carnaby's cockatoo foraging habitat and Kwongkan Shrublands, due to the presence of 6.75 hectares of Kwongkan Shrublands in Excellent condition. Kwongkan Shrublands also provides foraging habitat for Carnaby's cockatoo.

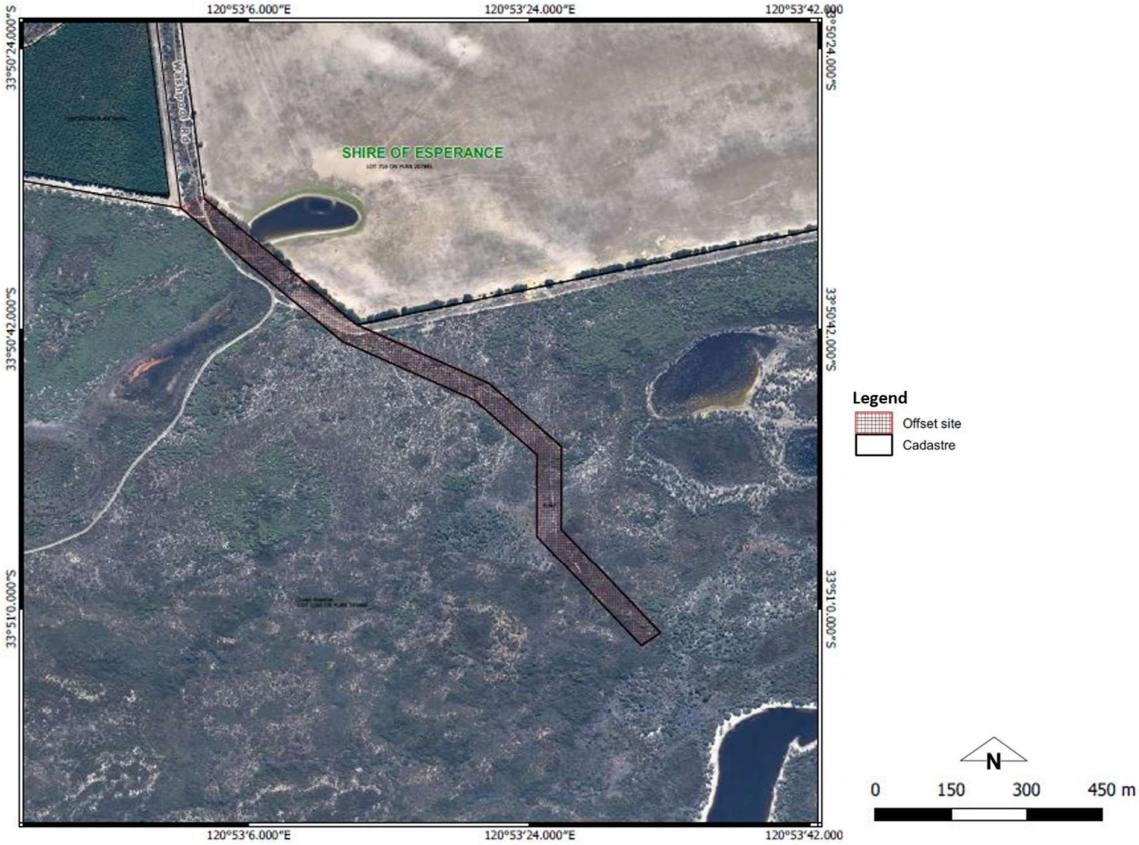


Figure 4 Undeveloped Washpool road reserve approved offset (2.44 ha)

Undeveloped road reserves Wells Road – Crisps Road

Figure 5 below illustrates the offset site associated with counterbalancing the significant residual impacts upon Carnaby's cockatoo foraging habitat and Kwongkan Shrublands from the proposed clearing. The 11.06 hectare offset will be recorded in the WA Offsets Register. It should be noted that the vegetation within this offset is in Excellent to Degraded condition and contains Kwongkan Shrublands.

The proposed offset is considered suitable to counterbalance the significant residual impacts to Carnaby's cockatoo foraging habitat and Kwongkan Shrublands, due to the presence of seven hectares of Kwongkan Shrublands in Excellent condition. Kwongkan Shrublands also provides foraging habitat for Carnaby's cockatoo.

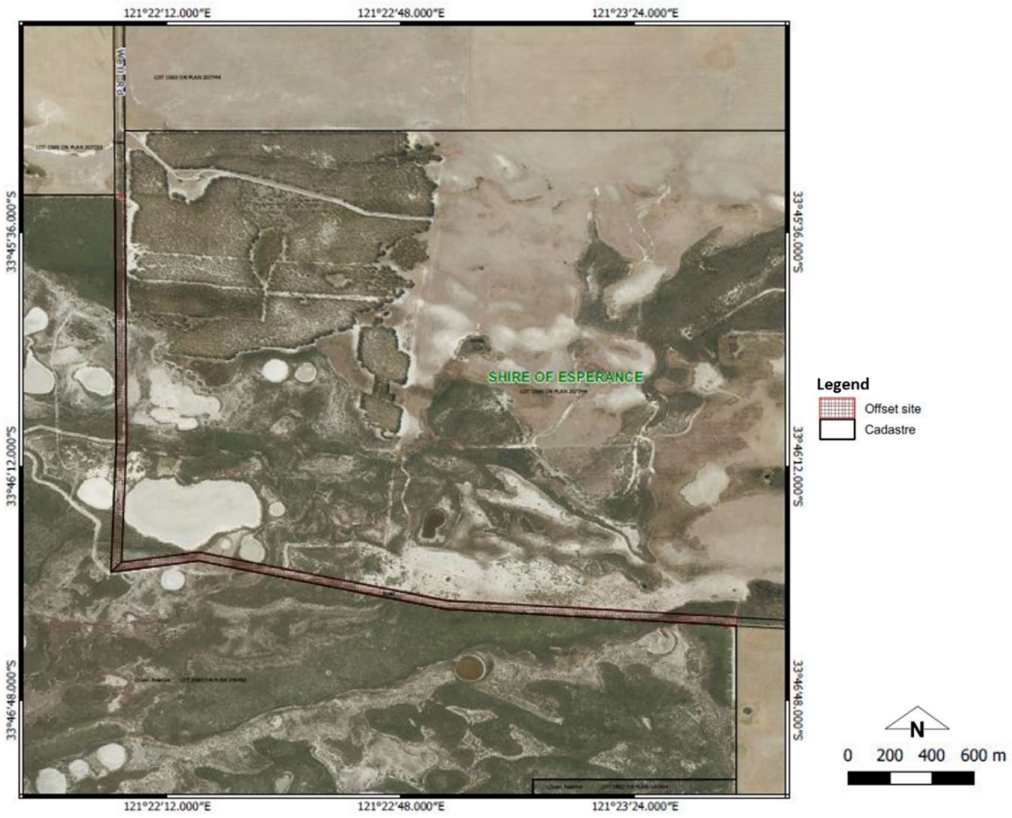


Figure 5 Undeveloped Wells – Crisps road reserves approved offset (11.06 ha)

Crown Reserve 27365

Figure 6 below illustrates the remaining banked offset within Crown Reserve 27365. The 16.14 hectare offset which contains Carnaby's cockatoo foraging habitat and Kwongkan Shrublands in Excellent condition, in addition to the remaining banked portion (4.02 hectares), will be recorded in the WA Offsets Register.

The proposed offset is considered suitable to counterbalance the significant residual impacts to Carnaby's cockatoo foraging habitat, Kwongkan Shrublands and significant remnant in a highly cleared landscape, due to:

- the presence of 209.84 hectares of Kwongkan Shrublands, of which 189.817 hectares is in excellent condition and 19.99 hectares is in Very Good condition. Kwongkan Shrublands also provides foraging habitat for Carnaby's cockatoo
- the reserve being located in a highly cleared landscape.

It should be noted that the vegetation remaining within this banked offset only contains mallee over mixed Melaleuca and is therefore not suitable to utilise as an offset to counterbalance significant residual impacts upon Carnaby's cockatoo foraging habitat and Kwongkan Shrublands for future clearing permit applications.

This banked offset has been used for a previous permit, 193.7 hectares to offset the residual impacts associated with CPS 8608/1. This area is shown in Figure 6.

Figure 6 Crown Reserve 27365 approved offset (16.14 ha), used offset areas (193.7 ha) and banked offset (4.02 ha)

Reserve 4181

Figure 7 below illustrates the remaining banked offset in reference to the offset site associated with counterbalancing the significant residual impacts upon Carnaby's cockatoo foraging habitat and Kwongkan Shrublands from the proposed clearing. The 44.81 hectare offset, in addition to the remaining banked portion (64.91 ha), will be recorded in the WA Offsets Register. It should be noted that the vegetation within this banked offset is in Very Good to Excellent condition and contains vegetation mapped as Beard vegetation association 7048: banksia scrub-heath on coastal plain in the Esperance Plains region.

The proposed offset is considered suitable to counterbalance the significant residual impacts to Carnaby's cockatoo foraging habitat and Kwongkan Shrublands TEC, due to the presence of 92.46 hectares of Kwongkan Shrublands, of which 88 hectares is in excellent condition and 4 hectares is considered to be in degraded condition. Kwongkan Shrublands also provides foraging habitat for Carnaby's cockatoo.

This banked offset has been used for a previous permit, 44.81 hectares to offset the residual impacts associated with CPS 8400/1. This area is shown in Figure 7.

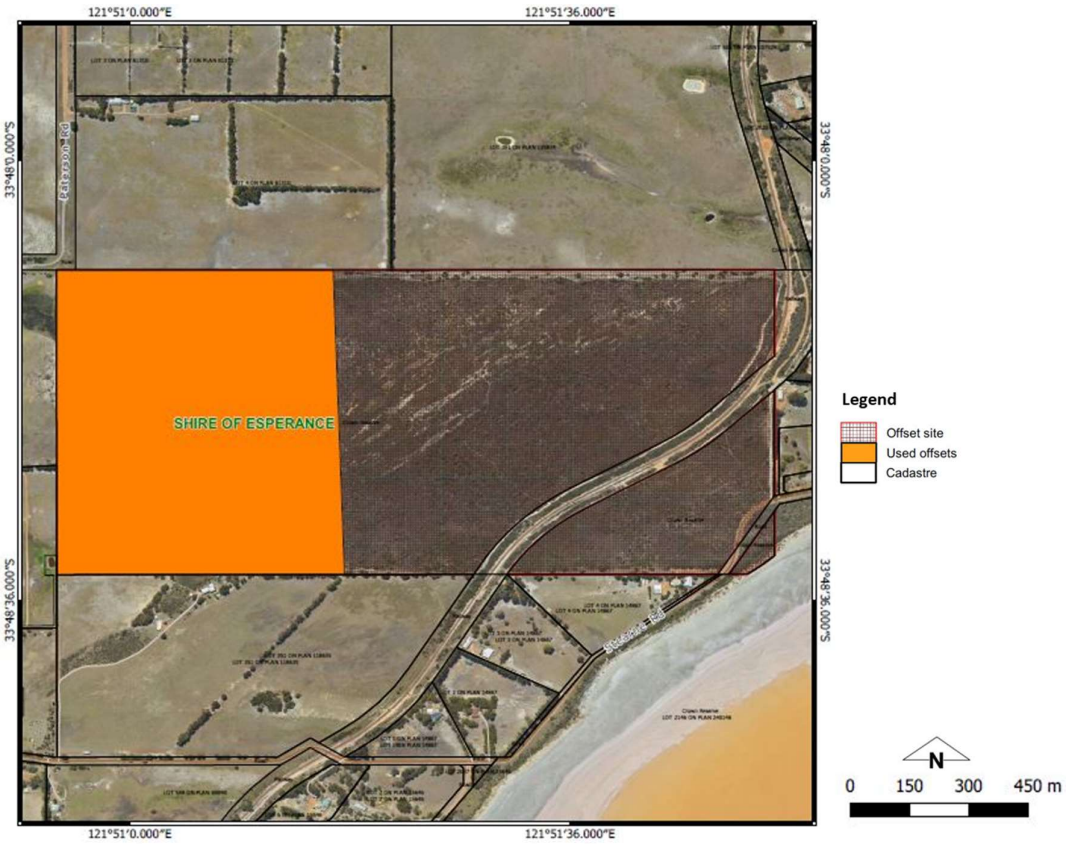


Figure 7 Reserve 4181 approved offset (64.91 ha) and used offset areas (44.81 ha)

Crown Reserve 26912

Figure 8 below illustrates the offset site associated with counterbalancing the significant residual impacts upon BVA 512 from the proposed clearing. The 91.1 hectare offset, in addition to the remaining banked portion (1,416.5 hectares), will be recorded in the WA Offsets Register. The vegetation within this reserve is in Excellent condition and contains the following environmental values:

- BVAs 51, 482 and 512;
- Old growth Salmon Gums / York gum woodlands; and
- Populations of Priority one flora species *Leucopogon rugulosus*.

The proposed offset is considered suitable to counterbalance the significant residual impacts to BVA 512, due to the presence of:

- 370 hectares of vegetation type 'Mallee woodlands of sand and blue mallee' which corresponds with BVA 512
- being located in a highly cleared landscape.

It should be noted that there is approximately 125.6 hectares of BVA 512 remaining within the banked offset. This banked offset has been used for a previous permit, 153.3 hectares to offset the residual impacts associated with CPS 8608/1. This area is shown in Figure 8.

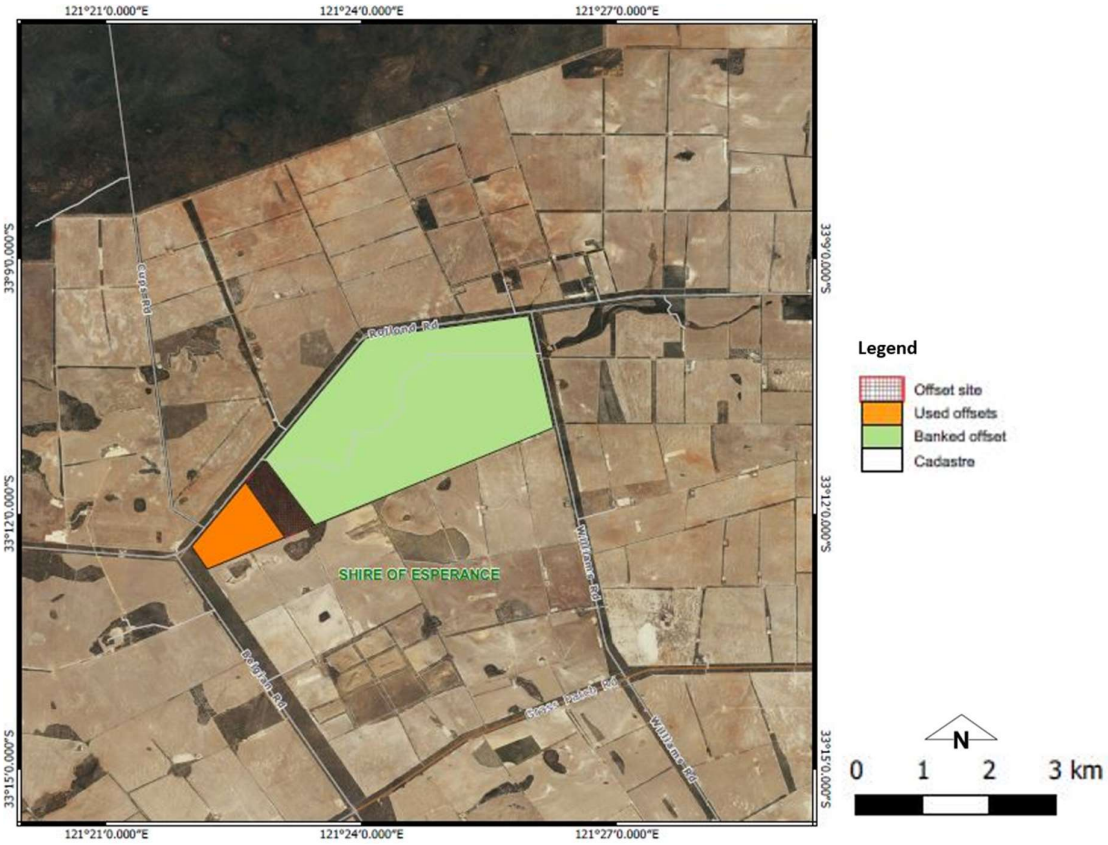


Figure 8 Crown Reserve 26912 approved offset (91.1 ha), used offset areas (153.3 ha) and banked offset (1,416.5 ha)

Crown Reserve 26257

Figure 9 below illustrates the offset site associated with counterbalancing the significant residual impacts upon BVA 6048 from the proposed clearing. The 1.67 hectare offset, in addition to the remaining banked portion (74.33 hectares), will be recorded in the WA Offsets Register. It should be noted that the vegetation within this banked offset ranges from Excellent to Good condition, and that it also contains vegetation type 'Boyra and *Kunzea baxteri* / *Hakea clavata* near granite areas' which corresponds with BVA 128.

The proposed offset is considered suitable to counterbalance the significant residual impacts to BVA 6048, due to the presence of 57.468 hectares of vegetation type 'heath with scattered *Nuytsia floribunda*' in Very Good condition which corresponds with Beard vegetation association 4801. BVA 6048 is described as banksia scrub-heath on sandplain in the Esperance Plains region and is therefore of a similar vegetation association to BVA 4801. Utilising this banked offset is considered acceptable in this instance as the Shire will also undertake revegetation of 1.42 hectares within Fisheries road reserve (Figure 10). The Shire advised there is no additional land available to revegetate and due to BVA 6048 being highly cleared, it was difficult to acquire land containing this vegetation association.

This banked offset has been used for previous permits, six hectares to offset the residual impacts associated with CPS 8608/1, 15.5 hectares to offset the residual impacts associated with CPS 7188/2 and 3.5 hectares to offset the residual impacts associated with CPS 5330/3. These areas are shown in Figure 9.

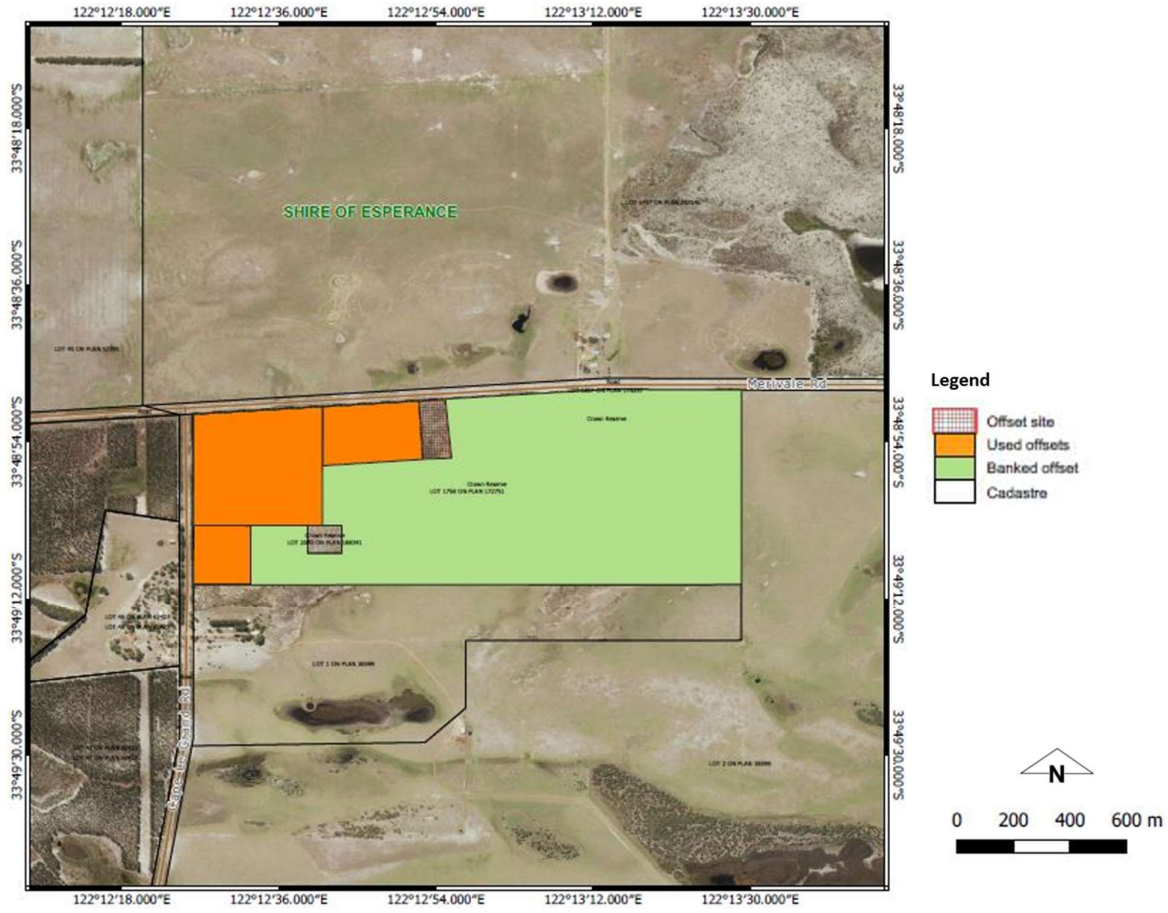


Figure 9 Crown Reserve 26257 approved offset (1.67 ha), used offset areas (25 ha) and banked offset (76 ha)

Figure 10 Revegetation site within Fisheries road reserve (1.42 ha)

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Response to DWER's request for more information: • Offset in the form of revegetation was not considered as the Shire does not have any land available to revegetate where the land use is compatible with environmental conservation due to vesting and land use. • The Shire agrees to extending the revegetation area within Fisheries Road reserve. • The Shire will remove the proposed clearing within Cape Le Grand road from the application.	Comments regarding offset and mitigation measures were noted and taken into consideration in Section 4. The assessment was revised to reflect the exclusion of Cape Le Grand road, and the application area was reduced from 18.12 hectares to 14.33 hectares. The removal of this area was considered as further avoidance and minimisation measure in Section 3.1. The Shire's revegetation activities were reflected as conditions on the clearing permit.
Rehabilitation plans for proposed extraction activities.	The applicant's rehabilitation plans were assessed for adequacy and incorporated into conditions of the permit.

Appendix B. Details of public submissions

Summary of comments	Consideration of comment
Black cockatoo flock movements near some of the project areas is important as foraging habitat. Foraging habitat for black cockatoos is already insufficient, and this insufficient habitat is driving their ongoing declines. Cleared habitat will need to be replaced with at least the same area of foraging vegetation.	Foraging habitat for black cockatoos has been considered in Section 3.2.1 and proposed clearing is considered to have a significant residual impact to Carnaby's cockatoo foraging habitat. The Shire has advised revegetation is not feasible in areas currently vested with the Shire. The suitability of the offsets proposed is discussed in Section 4.
Importance of retaining night roosts and breeding habitat. Targeted black cockatoo habitat surveys have not been conducted to identify any night roosts (which should be retained if possible) and to map all potential breeding trees and inspect all large hollows (following best practice; e.g. ladders and internal inspection) for evidence of use.	Based on the information and photographs provided by the applicant, trees proposed to be cleared are minimal and unlikely to be of a sufficient size or species to support breeding habitat.
Importance of considering cumulative impacts. Many clearing actions involve clearing of smaller areas of important habitat that do not individually meet the threshold for requiring referral or controlled action, but which, cumulatively, involve loss of extensive areas of foraging, breeding and/or corridor habitat used by black cockatoo populations.	Remnant vegetation extents within the local area and extents of relevant mapped BVA's were considered in the assessment. DWER acknowledges that the proposed clearing will be undertaken in an extensively cleared landscape. Significant residual impacts to Carnaby's cockatoo foraging habitat, highly cleared BVAs, significant remnant vegetation were identified and the applicant is required to provide offsets to counterbalance these significant residual impacts.
Federal and state level referral. The proposed clearing is likely to impact Matters of National Environmental Significance listed under the EPBC Act. The application should be referred as per the EPBC Act referral guidelines.	The applicant has been advised that they may have notification responsibilities under the EPBC Act. It is the responsibility of the applicant to refer the project and adhere to other legislation and approvals that may apply.
Appropriate offsets are required to counterbalance the impacts from the proposed clearing.	Suitability of offsets is discussed in Section 4.

Appendix C. Site characteristics

C.1. Site characteristics

Characteristic	Details
Local context	The areas proposed to be cleared are located within road reserves in the Shire of Esperance, which falls within the intensive land use zone of Western Australia. Majority of the proposed clearing areas are directly adjacent to agricultural land, apart from Neds Corner road which is part of an expansive tract of native vegetation and Richardson street which is located in a townsite. Spatial data indicates the local area (10-kilometre radius from the centre of the areas proposed to be cleared) retains approximately an average of 12 per cent of the original native vegetation cover.
Ecological linkage	The areas proposed to be cleared may contribute towards fauna dispersal within the landscape due to the extensive clearing that has occurred within the local area.
Conservation areas	The nearest conservation areas to the areas proposed to be cleared are as follows: • Bishops nature reserve, approximately 6.46 kilometres to the southeast of Grass Patch road • Beaumont nature reserve, approximately 12.9 kilometres to the northeast of Fisheries road • Cape Arid National Park, approximately 9.12 kilometres to the southeast of Shao Lu road • Jeffrey Lagoon nature reserve, approximately 5.22 kilometres southwest of Richardson street • An un-named nature reserve vested for the conservation of flora and fauna, approximately 1.41 kilometres to the east of Neds Corner road.
Vegetation description	Vegetation surveys (Shire of Esperance, 2020b-f) indicate the vegetation within the proposed clearing areas include mixed mallee eucalyptus, mixed heathland and highly diverse shrubland. Representative photos, the full survey descriptions and maps are available in Appendix G. This is consistent with the mapped vegetation types: • BVA 512, which is described as Shrublands; mallee scrub, *Eucalyptus eremophila* and *E. forrestiana* (Forrest's marlock) • BVA 924, which is described as shrublands; mallee scrub, *Eucalyptus eremophila* and red mallee • BVA 929, which is described as low forest; *Eucalyptus platypus* (moort) • BVA 1047, which is described as shrublands; *Eucalyptus incrassata* mallee-heath • BVA 6048, which is described as shrublands; banksia scrub-heath on sandplain in the Esperance Plains Region. The Shire of Esperance identified additional BVAs within the application area (Neds Corner Road) that were not mapped: • BVA 128, which is described as bare areas; rock outcrops • BVA 931, which is described as medium woodland; Yate • BVA 1413, which is described as shrublands; acacia, casuarina and melaleuca thicket • BVA 1519, which is described as shrublands; mallee scrub, *Eucalyptus eremophila* and banksia • BVA 2048, shrublands; shrub-heath in the Mallee region. Vegetation extents of the mapped vegetation types are detailed under Section C.2.
Vegetation condition	Vegetation surveys (Shire of Esperance, 2020b-f) indicate the vegetation within the proposed clearing areas is in Degraded to Excellent (Keighery, 1994) condition.

Characteristic	Details
	The full Keighery (1994) condition rating scale is provided in Appendix E. Representative photos, the full survey descriptions and mapping are available in Appendix G.
Climate and landform	The Esperance climate is described as Mediterranean, characterised by cool wet winters and dry warm summers (BoM 2019). The area receives an average annual rainfall of 350 to 500 millimetres. The topography within the proposed clearing areas is described as (Schoknecht et al, 2004): • level to gently undulating plain, with areas of gilgai microrelief. Drainage is generally poorly developed and usually internal, forming gently undulating and undulating plains. Drainage changes to external in areas adjacent to the Lort River • dominated by level to gently undulating plain with areas of gilgai micro relief • gently undulating plains, with minor swales and wet depressions • dominated by a level plain.
Soil description	The soil within the proposed clearing areas is mapped as: • Scaddan 5 subsystem 246Sc_5, deep uniform sands • Scaddan 1 subsystem 246Sc_1, alkaline solonetzic duplex soils • Condingup 2 subsystem 245Co_2, gently undulating plain with minor depressions. Aeolian sands / Pallinup formation. Grey deep sandy duplex soils (some gravelly) with associated pale deep sands. • Esperance 6 subsystem 245Es_6, red-brown to grey brown alluvial sands.
Land degradation risk	There is low risk of salinity, water erosion and waterlogging over the application area. There is however a relatively moderate to high risk of wind erosion.
Waterbodies	The desktop assessment and aerial imagery indicated that there are no waterbodies transecting the areas proposed to be cleared.
Flora	<u>Neds Corner Rd</u> In total, 233 flora species were identified during the targeted flora survey, showing the extremely high diversity of the site. It is believed that the area is on the periphery of intersecting bioregions resulting in a unique combination of landscape conditions and species community composition. One species of threatened flora and 24 priority have been recorded within a 20 kilometre radius of the site. Four priority flora species were recorded within the project area. <u>Richardson St</u> The targeted flora survey identified a total of 21 flora species from the site, indicating low diversity. Five species of weeds were also identified. 36 priority flora species and two threatened flora species were identified within 20 kilometres of the project area. One priority flora species was recorded within the project area. <u>Fisheries Rd</u> The targeted flora survey recorded a total of 83 flora species. This demonstrated the high diversity of the project area. Three threatened flora and 24 priority flora species were recorded within a 20 kilometre radius of the site. One priority flora species was recorded within the project area. <u>Shao Lu Rd</u> The project area has a high species richness, with a total of 79 native species identified within the area surveyed. Eleven weed species were recorded within the application area. Three threatened flora and 30 priority flora species were recorded within a 20 kilometre radius of the site. No flora species of conservation significance were recorded within the project area.

Characteristic	Details
	Grass Patch Rd In total, 76 flora species were identified during the targeted flora survey of the proposed clearing area. Three species of threatened flora and 26 species of priority flora were recorded within a 20 kilometre radius of the project area. One threatened flora and three priority flora species were recorded within the project area.
Ecological communities	The Commonwealth listed threatened ecological community 'Proteaceae Dominated Kwongkan Shrubland of the Southeast Coastal Floristic Province of Western Australia' has been recorded within the local area of all project areas.
Fauna	Neds Corner Rd Within a 20 kilometre radius of the project area, 124 species of fauna have been recorded. Of these, two fauna species of conservation significance have the potential to occur within the area proposed to be cleared. The presence of Kwongkan TEC and high Proteaceae suggests this site is a potential Carnaby's cockatoo foraging habitat. Larger Eucalypts scattered regularly throughout the project area may be used as roosts. There is also thick Broom brush thicket present within vegetation types two, three and five, which could be potential malleefowl habitat. Richardson St Within a 20 kilometre radius of the project area, 207 fauna species have been recorded. Of these, the Peregrine Falcon is likely to be found in this habitat. Due to the large home range of these birds and the small area of impact, there is unlikely to be any significant impact. Fisheries Rd and Shao Lu Rd Within a 20 kilometre radius of the project areas, 15 to 22 conservation significant fauna species have been recorded. Of these, two species are likely to utilise the project area. The vegetation within the application area is suitable as a possible feeding site for the Southern Death Adder, with many small nectivorous birds observed. The high Proteaceae cover and prevalence of Hakea and Banksia species also suggests these areas are potential Carnaby's cockatoo foraging habitats. It is noted that there are pine plantations only 2.5 kilometres east of the Fisheries road project area, which contain feeding and roosting habitat for Carnaby's cockatoos. At Shao Lu road, there are large tuart trees in the adjacent paddock that may be used by the Carnaby's cockatoos as roosts. The trees were not observed to contain any nesting hollows. However, these trees are not proposed to be cleared and will therefore not be impacted. Grass Patch Rd Within a 20 kilometre radius of the project area, 144 fauna species have been recorded. Of these, Carnaby's cockatoo, chuditch and Peregrine Falcon were identified to possibly occur within the area as it meets suitable habitat requirements.

C.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	2,899,9400.66	1,494,450.87	51.53	822,666.27	28.84
Mallee	7,395,894.36	4,180,937.68	56.53	1,289,384.08	18.03
Vegetation complex					
Esperance Plains					
Beard vegetation association 1047*	217,776.70	185,586.85	85.22	119,810.24	55.08
Beard vegetation association 6048*	113,688.87	16,099.85	14.16	4,000.26	4.04
Mallee					
Beard vegetation association 512*	237,682.29	62,771.24	26.41	5,654.35	2.40
Beard vegetation association 924*	107,510.91	60,668.68	56.43	23,839.45	22.57
Beard vegetation association 929*	6,663.03	4,825.80	72.43	208.18	3.19
Local area (10 km radius)					
Neds Corner Rd	39.225.69	7,697.25	19.62	-	-
Grass Patch Rd	39,883.33	5,968.81	14.96	-	-
Fisheries Rd	31,908.71	2,773.12	8.69	-	-
Shao Lu Rd	32,728.49	3,102.93	9.48	-	-
Richardson St	32,119.95	2,621.86	8.16	-	-

*Government of Western Australia (2019)

C.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix H.1), and biological survey information, impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
Daviesia pauciflora	P3	Y	Y	Y	2.15	Y
Scaevola archeriana	P1	Y	Y	Y	0.01	Y
Eremophila lactea	CR	Y	Y	Y	1.27	Y
Eremophila chamaephila	P3	Y	Y	Y	0.13	Y
Goodenia laevis subsp. *laevis*	P3	Y	Y	Y	Within application area	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
Eucalyptus dolichorhyncha	P4	Y	Y	Y	0.39	Y
Melaleuca similis	P1	Y	Y	Y	0.50	Y
Persoonia cymbifolia	P3	Y	Y	Y	13.33	Y

C.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
Calyptorhynchus latirostris (Carnaby's cockatoo)	EN	Y	Y	0.83	N/A – no fauna survey undertaken
Acanthophis antarcticus (Southern death adder)	P3	Y	Y	9.56	As above
Leipoa ocellata (malleefowl)	VU	Y	Y	3.04	As above
Falco peregrinus (Peregrine falcon)	OS	Y	Y	3.92	As above
Dasyurus geoffroii (chuditch)	VU	Y	Y	15.56	As above

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, OS: Other specially protected fauna.

C.5. Ecological community analysis table

Community name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia	P3	Y	Y	Y	Within application area	Y

Appendix D. 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: The areas proposed to be cleared contain locally and regionally significant flora, fauna habitat and assemblages of plants. The proposed clearing areas include Commonwealth listed TEC 'Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia'.	At variance	Yes *Refer to Section 3.2.1, above.*
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."* Assessment: The areas proposed to be cleared contain habitat for conservation significant fauna, including foraging habitat for Carnaby's cockatoos.	At variance	Yes *Refer to Section 3.2.2, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The native vegetation proposed to be cleared within Grass Patch road contains one flora species listed under the BC Act.	At variance	Yes *Refer to Section 3.2.1, above.*
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: The areas proposed to be cleared do not contain species that can indicate a state listed threatened ecological community.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation types and native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is considered to be part of significant remnant of native vegetation vegetation in the local area.	At variance	Yes *Refer to Section 3.2.3, above.*
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation areas, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to impact an environment associated with a watercourse or wetland.	Not likely to be at variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are moderately susceptible to wind erosion. Noting the linearity of the application area, the proposed clearing is not likely to cause significant wind erosion. The soils will be exposed on a short-term basis with cleared areas to be covered by bitumen and gravel, or to be extracted. Any wind erosion is likely to be minimal given that soil exposure is short term. As a condition of the permit, the applicant will be required to commence road upgrade activities within three months of clearing.	Not likely to be at variance	No
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: Given no water courses, wetlands or Public Drinking Water Sources Areas are recorded within the application area, the proposed clearing is unlikely to impact surface or ground water quality.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: 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. Given no water courses or wetlands are recorded within the application area, the proposed clearing is unlikely to contribute to waterlogging.	Not likely to be at variance	No

Appendix E. 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.
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 F. Offset calculator value justification

Kwongkan Shrubland and Carnaby's cockatoo offset calculator value justification

Field Name	Description	Justification for value used
IUCN Criteria	The IUCN criteria for the value being impacted	1.2% - afforded to Kwongkan Shrublands and Carnaby's Cockatoo, both listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999*
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted or number of features/individuals impacted	4.497 hectares of Kwongan Shrublands is proposed to be cleared and 8.301 hectares of Carnaby's Cockatoo habitat is proposed to be cleared
Quality of impacted area (habitat/community)	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	The vegetation within the application area is in mostly very good to excellent (Keighery 1994) condition.
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	The proposed offset would change the purpose of the reserve to conservation in perpetuity therefore the maximum 20 years is applied
Time until ecological benefit (habitat/community) or Time horizon (features/individuals)	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	12 months is provided to complete the change in reserve purpose
Start area (habitat/community) or Start value (features/individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	Coomalbigup Swamp - 16.141 hectares available to offset residual impacts of clearing Kwongan TEC/BC habitat Stearns Rd - 64.91 hectares Well Rd- Crisps Rd - 11.06 hectares Fuss Rd - 6.75 hectares Washpool Rd - 2.44 hectares
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	Coolinup-Land Rd - vegetation in Very Good to Excellent condition Stearns Rd - vegetation in Very Good to Excellent condition Well Rd- Crisps Rd - vegetation in Very Good condition Fuss Rd - vegetation in Good to Very Good condition Washpool Rd - vegetation in Excellent condition
Future quality without offset (habitat/community) or Future value without offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	Same values as Start Quality. It is expected that over the forseeable future (20 years), the current condition of the site will not deteriorate in the absence of a change in land tenure.
Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	Same values as Start Quality. The condition of the vegetation is unlikely to change in the presence of a change in land tenure.

Field Name	Description	Justification for value used
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	Coolinup-Land Rd - 20%, aerial landing ground Stearns Rd - 20%, common reserve Well Rd- Crisps Rd - 30%, local road reserve (Shire has no plans to develop - in between farmland) Fuss Rd - 40%, municipal purposes Washpool Rd - 40%, local road reserve
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	It is considered that the risk will be reduced to 10 per cent with the proposed change of reserve and road reserve purpose to 'conservation'.
Confidence in result (%) – risk of loss (habitat/community)	The capacity of measures to mitigate risk of loss of the proposed offset site	90% - there is a high level of confidence that the conservation covenant will mitigate the risk of loss.
Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	90% - there is a high level of confidence that the offset will not change in quality.
% of impact offset	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	Percentage calculated from values above

Beard vegetation association 512 offset calculator value justification

Field Name	Description	Justification for value used
IUCN Criteria	The IUCN criteria for the value being impacted	Beard vegetation association 512- not a TEC
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted or number of features/individuals impacted	4.783 hectares of Beard vegetation association 512 is mapped within the application area.
Quality of impacted area (habitat/community)	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	The vegetation condition ranged from degraded to excellent (Keighery 1994) condition, mostly in very good to excellent. Averaged to very good.
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	The proposed offset would change the purpose of the reserve to conservation in perpetuity therefore the maximum 20 years is applied.
Time until ecological benefit (habitat/community) or Time horizon (features/individuals)	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	12 months is provided to complete the change in reserve purpose
Start area (habitat/community) or Start value (features/individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	91.1 hectares is required to offset 100% of the significant residual impacts from the proposed clearing

Field Name	Description	Justification for value used
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	7 - the condition of the vegetation within the Reserve listed above is in Very Good to Excellent condition
Future quality without offset (habitat/community) or Future value without offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	7 - it is expected that over the forseeable future (20 years), the current condition of the site will not deteriorate in the absence of a change in land tenure.
Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	7 - the condition of the vegetation is unlikely to change in the presence of a change in land tenure.
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	15% - Reserve is vested with the Shire for recreation and parklands
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	It is considered that the risk of development will be reduced to 10 per cent with the proposed change of reserve purpose to 'conservation'.
Confidence in result (%) – risk of loss (habitat/community)	The capacity of measures to mitigate risk of loss of the proposed offset site	90% - there is a high level of confidence that the covenant will mitigate the risk of loss.
Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	90% - there is a high level of confidence that the offset will not change in quality.
% of impact offset	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	100% - to achieve offset requirement.

Beard vegetation association 6048 offset calculator value justification

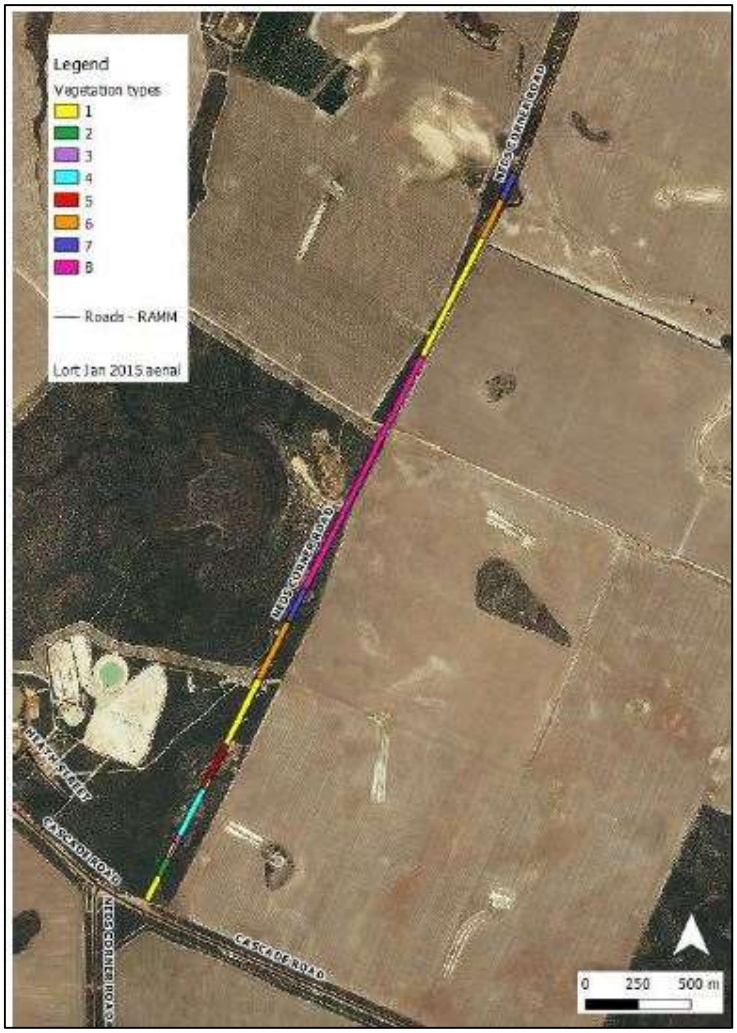
Field Name	Description	Justification for value used
IUCN Criteria	The IUCN criteria for the value being impacted	Beard vegetation association 6048 - no IUCN criteria.
Area of impact (habitat/community) or Quantum of impact (features/individuals)	The area of habitat/community impacted or number of features/individuals impacted	0.82 hectares, as stated by the applicant's flora and vegetation survey of the application area.
Quality of impacted area (habitat/community)	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	8 - application area is in excellent (Keighery 1994) condition.

Field Name	Description	Justification for value used
Time over which loss is averted (habitat/community)	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	The proposed offset would change the purpose of the reserve to conservation in perpetuity therefore the maximum 20 years is applied
Time until ecological benefit (habitat/community) or Time horizon (features/individuals)	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	12 months is provided to complete the change in reserve purpose.
Start area (habitat/community) or Start value (features/individuals)	The area of habitat/community or number of features/individuals proposed to offset the impacts	1.756 hectares - reverse-calculated using the 'What-if' function to achieve 42.85% of offset required (the remaining to be achieved from revegetation).
Start quality (habitat/community)	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	According to a flora survey conducted by the Shire of Esperance, vegetation 'heath with scattered Nuytsia' in Reserve 26257 is in very good (Keighery, 1994) condition.
Future quality without offset (habitat/community) or Future value without offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	Reserve 26257 will undergo a purpose change from 'parkland and recreation' to 'conservation'.
Future quality with offset (habitat/community) or Future value with offset (features/individuals)	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	Reserve 26257: Park will no longer be used for recreation, which decreases the risk of weed spread and dieback. Overall future condition is unlikely to change.
Risk of loss (%) without offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	Reserve 26257: The reserve is currently for the purpose of 'parkland and recreation'. Risks as above. Low risk of losing the entire vegetation community.
Risk of loss (%) with offset (habitat/community)	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	Reserve 26257 will be managed by the Shire of Esperance for conservation. Low associated risk of loss.
Confidence in result (%) – risk of loss (habitat/community)	The capacity of measures to mitigate risk of loss of the proposed offset site	42.85% - to make up the remaining offset required, revegetation of 1.42 hectares will offset 57.15% of the impacts.
Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	Change in condition is not likely to occur, however 80% accounts for catastrophic events or change in land management by Parks and Wildlife.
% of impact offset	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	Using this metric, the acquisition of 1.756 hectares within Reserve 26257 offsets 100% of the proposed clearing of BVA 6048.

Field Name	Description	Justification for value used
Other comments	Include here any relevant additional comments (e.g. the size of offset required to offset 100% of the residual impacts)	In this instance the acquisition of BVA 4801 (banksia scrub-heath on coastal plain in the Esperance Plains Region) is used to counterbalance the significant residual impact of clearing BVA 6048 (banksia scrub-heath on sandplain in the Esperance Plains Region) - like for similar. The Shire advised there is no additional land available to revegetate and due to BVA 6048 being highly cleared, it would be difficult to acquire land containing this vegetation association.

Appendix G. Biological survey information excerpts / photographs of the vegetation

Photographs of vegetation within projects areas (Shire of Esperance, 2020b-f)



Vegetation community mapping within Neds Corner road (Shire of Esperance, 2020b)

Vegetation type one within Neds Corner Rd, described as mixed Mallee Eucalyptus with low diversity, dense Melaleuca shrubland.

Vegetation type two within Neds Corner Rd, described as highly diverse shrubland, with scattered Acacia and Eucalyptus understorey. Mixed understorey of *Santalum acuminatum, Calothamnus quadrifidus, Leptospermum erubescens* and *Hakea marginata*.

Vegetation type three within Neds Corner Rd, described as Acacia Shrubland, with *Melaleuca hamata,* Broom Bush.

Vegetation type four within Neds Corner Rd, described as mixed granite shrubland. The periphery of road reserve has a Cape Weed and African lovegrass infestation.

Vegetation type five within Neds Corner Rd, described as closed shrubland of *Melaleuca hamata and Calothamnus quadrifidus*

Vegetation type six within Neds Corner Rd, described as mixed Mallee Eucalyptus with low diversity, dense Melaleuca shrubland, and dominant Banksia media mid-story.

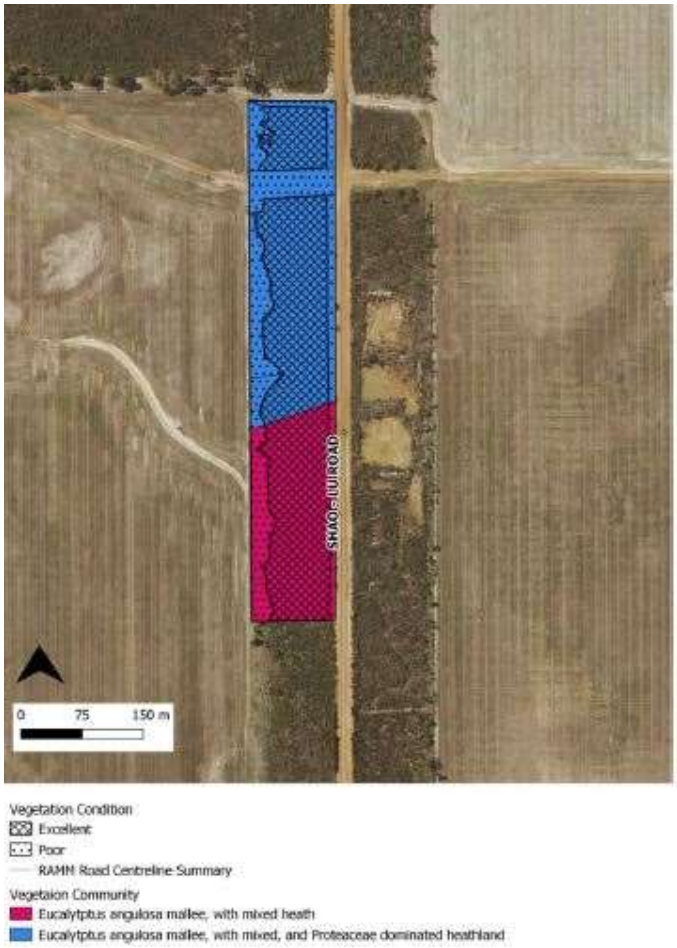
Vegetation type six within Neds Corner Rd, described as a Yate Swamp.

*No representative photo for vegetation type eight

Vegetation community mapping within Grass Patch road (Shire of Esperance, 2020f)

Vegetation type one within Grass Patch Rd, described as “scattered Eucalyptus Mallee trees with thick and diverse Melaleuca under-story”

Vegetation type two within Grass Patch Rd, described as “Dense Eucalyptus Mallet trees, with scattered *Melaleuca cucullata* and low chenopod under-story.



Vegetation community mapping within Shao Lu Road (Shire of Esperance, 2020e)

Vegetation type one within Shao Lu Road, described as *Eucalyptus angulosa* Mallee - mixed heathland

Vegetation type two within Shao Lu Road, as *Eucalyptus angulosa* Mallee with mixed Proteaceae dominated heathland, with an under-story of *Banksia repens* and *Anarthria laevis.*

Vegetation type within Fisheries road, described as *Nuytsia floribunda* and *Banksia speciosa* dominated over-story, *Melaleuca striata, Allocasuarina humilis* and *Adenanthos cuneatus* dominated mid-story, and *Caustis dioica* and *Anarthria scabra* dominated under-story

Vegetation type within Richardson street, described as *Eucalyptus eremophila* woodland, with Melaleuca and Chenopod shrubland.

Appendix H. Sources of information

H.1. GIS databases

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

- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems

Restricted GIS Databases used:

- 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)

H.2. References

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Shire of Esperance (2020b) *Supporting information for clearing permit application CPS 8884/1 – Neds Corner Road Vegetation, Flora, Fauna and Environmental Considerations, and Targeted Flora Report,* received 21 April 2020 (DWER Ref: A1889932).

Shire of Esperance (2020c) *Supporting information for clearing permit application CPS 8884/1 – Richardson Street Vegetation, Flora, Fauna and Environmental Considerations, and Targeted Flora Report*, received 21 April 2020 (DWER Ref: A1889934).

Shire of Esperance (2020d) *Supporting information for clearing permit application CPS 8884/1 – Fisheries Road Vegetation, Flora, Fauna and Environmental Considerations, and Targeted Flora Report,* received 21 April 2020 (DWER Ref: A1889930).

Shire of Esperance (2020e) *Supporting information for clearing permit application CPS 8884/1 – Shao Lu Road Vegetation, Flora, Fauna and Environmental Considerations, and Targeted Flora Report,* received 21 April 2020 (DWER Ref: A1889933).

Shire of Esperance (2020f) *Supporting information for clearing permit application CPS 8884/1 – Grass Patch Road Vegetation, Flora, Fauna and Environmental Considerations, and Targeted Flora Report,* received 21 April 2020 (DWER Ref: A1889931).

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