



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 2701/6
Permit Holder:	Hanson Construction Materials Pty Ltd
Duration of Permit:	7 February 2013 – 7 February 2033

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

The Permit Holder is authorised to clear *native vegetation* for the purpose of sand extraction.

2. Land on which clearing is to be done

Lot M1899 on Diagram 10521, Lennard Brook, 6503

3. Clearing authorised (area)

The Permit Holder must not clear more than 17.6 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The Permit Holder must not clear any *native vegetation* after 3 January 2028.

5. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear *native vegetation* authorised under this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

6. Compliance with assessment sequence and management procedures

Prior to clearing any *native vegetation* under conditions 1, 2 and 3 of this Permit, the Permit Holder must comply with the Assessment Sequence and the Management Procedures set out in Part II of this Permit.

PART II – MANAGEMENT CONDITIONS

7. Clearing authorised (staging)

The Permit Holder shall not clear *native vegetation* unless actively mining within 3 months of the authorised clearing being undertaken.

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

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

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

9. Dieback and weed-management

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following measures 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) shall only move soils in *dry conditions*;
- (c) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
- (d) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

10. Offsets

The Permit Holder must implement and adhere to the offset commitments as outlined in RPS Environmental and Planning Pty Ltd letter and attached figures and appendixes dated 22 December 2011, titled “APPEAL AGAINST REFUSAL TO GRANT CLEARING PERMITS (CPS 2757/1; CPS 2860/1; CPS 2701/1; CPS 2142/1 AND CPS 2515/1) – VARIOUS SITES IN THE SHIRE OF SERPENTINE-JARRAHDAL, SHIRE OF GINGIN AND CITY OF WANNEROO” and including but not limited to:

- (a) The submission of a site specific restoration plan for the area hatched yellow on attached Plan 2701/6 to the *CEO* within 6 months of commencing clearing approved under this permit.
- (b) The site specific restoration plan for the area hatched yellow in Figure 1 of Schedule 1, must be approved by the *CEO* prior to commencing restoration works.
- (c) A site specific contingency plan, consistent with the methodology in the approved site specific restoration plan, is submitted to the *CEO* within 6 months of determining that *CEO* approved restoration criteria have not been met.
- (d) The site specific contingency plan, consistent with the methodology in the approved site specific restoration plan, must be approved by the *CEO* prior to commencing the contingency plan.
- (e) In respect to the areas hatched yellow on Figure 1 of Schedule 1, the Permit Holder shall enter into a conservation covenant, agreement to reserve or some other form of binding undertaking to establish and maintain vegetation within 24 months of determining that *CEO* approved restoration criteria have been met.
- (f) The conservation covenant, agreement to reserve or some other form of binding undertaking to establish and maintain vegetation shall include, but not be limited to, the following conditions:
 - (i) native vegetation in the area subject to the *conservation reserve* must not be cleared, other than for clearing required under the *Bush Fires Act 1954*;
 - (ii) the land subject to the *conservation reserve* shall not be used for the purpose of cultivation of crops or pasture, or for the de-pasturing of any stock; and
 - (iii) the *conservation reserve* is to apply in perpetuity and be registered on the title of the property.

PART III - RECORD KEEPING AND REPORTING

11. Records to be kept

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

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally.	<ul style="list-style-type: none">(a) the species composition, structure and density of the cleared area;(b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees;(c) the date that the area was cleared;(d) the size of the area cleared (in hectares);(e) the date mining commenced in accordance with condition 7 of this Permit;(f) actions taken to avoid, minimise and reduce the impact and extent of clearing in accordance with condition 8 of this Permit; and(g) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 9 of this Permit.
2.	In relation to the offset of areas pursuant to condition 10.	<ul style="list-style-type: none">(a) The location of any area of offsets recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees;(b) a description of the offset activities undertaken;(c) the size of the offset area (in hectares);(d) results of measurements undertaken against restoration success criteria; and(e) evidence of conservation covenant, agreement to reserve or some other form of binding undertaking to establish and maintain vegetation, where required.

12. 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 11 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 was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 8 November 2032, the Permit Holder must provide to the *CEO* a written report of records required under condition 11 of this Permit where these records have not already been provided under condition 12(a) of this Permit.

DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
conservation reserve	means a conservation covenant, agreement to reserve or some other form of binding undertaking to establish and maintain vegetation
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
dry conditions	means when soils (not dust) do not freely adhere to rubber tyres, tracks, vehicle chassis or wheel arches;
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; 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
A/SENIOR MANAGER
NATIVE VEGETATION REGULATION

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

29 January 2024



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 2701/6
Permit type:	Purpose permit
Applicant name:	Hanson Construction Materials Pty Ltd
Application received:	20 September 2022
Application area:	17.6 hectares of native vegetation
Purpose of clearing:	Extractive Industry
Method of clearing:	Mechanical
Property:	Lot 1899 on Deposited Plan 10521
Location (LGA area/s):	Shire of Gingin
Localities (suburb/s):	Lennard Brook

1.2. Description of clearing activities

This amendment is to extend the duration in which native vegetation can be cleared. Currently, CPS 2701/5 allowed for the clearing of 17.6 hectares of native vegetation for extractive industry until the 3 January 2023, in accordance with condition 4 of the permit. The applicant advised that 10.39 hectares of clearing has been undertaken under CPS 2701, since the commencement of the permit in 2013. A total of 4.67 hectares have been progressively rehabilitated under conditions of CPS 2701 since 2019. The applicant wishes to extend the duration of condition 4 until the 3 January 2028 (Hanson Construction Materials Pty Ltd, 2022).

1.3. Decision on application

Decision:	Granted
Decision date:	29 January 2024
Decision area:	17.6 hectares of native vegetation, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit amendment 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 14 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix F.1), the findings of flora and vegetation surveys and a site inspection (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration the Minister for Environment's determination on the appeal against the refusal of CPS 2701/1. The Minister for Environment determined to grant the permit subject to offset conditions.

The assessment has not changed since the assessment for CPS 2701/5, except in the case of clearing principle (d). Since the assessment, the Banksia Woodlands of the Swan Coastal Plain (Banksia woodland) threatened ecologically

community (TEC) was listed as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and is present within the clearing area. The significant residual impacts of the clearing on the Banksia woodland TEC have been adequately counterbalanced through the already conditioned offset and revegetation requirements.

The Delegated Officer determined that the proposed amendment to extend the duration of the permit expiry is not likely to lead to an unacceptable risk to environmental values. The current conditions of CPS 2701/5 and the associated approved offset under CPS 2701/5 are adequate to manage and counterbalance the significant residual impacts of the clearing.

The Delegated Officer considers that the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values, and the conditions to mitigate potential impacts, remains unchanged from the original assessment and can be found within Clearing Permit Decision Report CPS 2701/5.

1.5. Site map

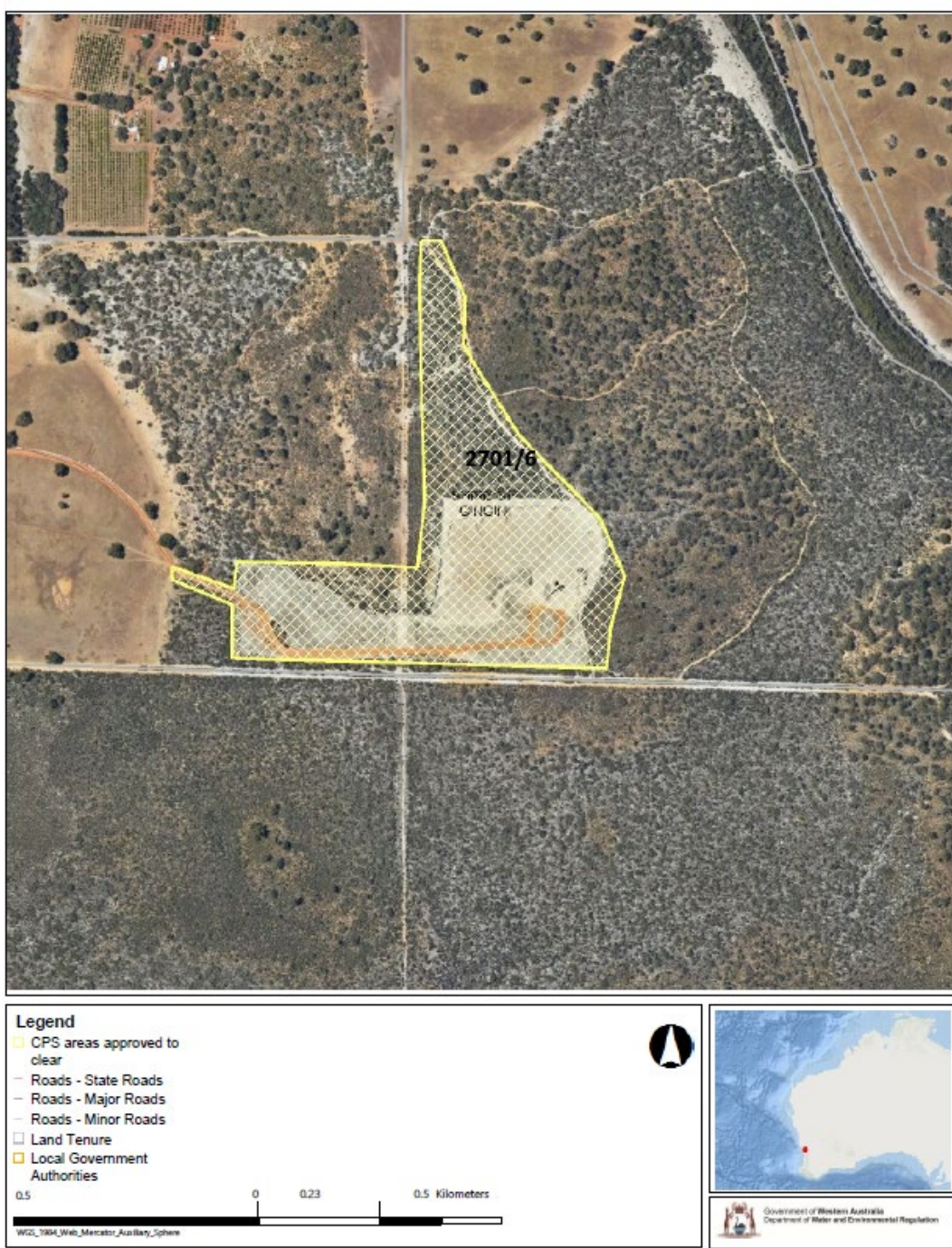


Figure 1: Map of approved clearing area.

The area crosshatched yellow indicate the area approved for clearing.

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)
- EPBC Act
- *Planning and Development Act 2005* (WA) (P&D 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, 2020)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3 Detailed assessment of application

3.1. Assessment of impacts on environmental values

A review of current environmental information (Appendix A) reveals that the assessment against the clearing principles have not significantly changed from the Clearing Permit Decision Report CPS 2701/5, except in regard to clearing principle (d).

3.1.1. Biological values (flora and vegetation communities) - Clearing Principles (a), (c) and (d)

Flora

A detailed spring flora and vegetation survey was undertaken in 2008 of 29.7 hectares of vegetated land within Lot M1899, Lennards Rd Gingin, in which the application area occurs (RPS, 2009). A total of 190 taxa were recorded during the flora survey, including two priority 4 flora species, *Calytrix sylvana* and *Hypolaena robusta*. *C. sylvana* is no longer listed as priority flora. No threatened flora species were identified (RPS, 2009).

Hypolaena robusta was recoded throughout the *Allocasuarina humilis* and *Xanthorrhoea* heath vegetation type occurring within the original application area. The remaining area of vegetation that has not been cleared (7.21 hectares) under CPS 2701 contains approximately 3.5 hectares of this vegetation community. Therefore, the proposed clearing of the remaining vegetation will impact this species. According to available databases, this species is known from 31 populations from Augusta to Eneabba (WA Herbarium, 1998-). Given this, the proposed clearing is not considered to significantly impact the occurrence of this species or impact important habitat.

Given the time since the flora survey was undertaken in 2008, a number of threatened flora species have been added to the Biodiversity Conservation Listing of Native Species Order under the BC Act. One Vulnerable listed flora species (list under both the BC Act and EPBC Act), *Ptychosema pusillum*, has been recorded within the local area within similar soil and vegetation type as the area under application. This species is known to occur within low open woodland of *Banksia attenuata*, *Banksia menziesii* and *Eucalyptus todtiana* on high sand ridges near Gingin (Commonwealth of Australia, 2008). This species was listed as Vulnerable under the BC Act and EPBC Act at the end of 2008 and was therefore, not targeted in the 2008 spring survey. Given this, it is considered that habitat for this threatened species may occur within the application area.

There is also potential for two priority 2 and one priority 3 listed flora species to occur. This is based on the presence of suitable habitat and that these species were not targeted during the 2008 spring survey. These species include *Leucopogon squarrosus* subsp. *trigynus* (P2), *Poranthera moorokatta* (P2) and *Styphelia filifolia* (P3).

A flora survey targeting threatened and priority flora, undertaken at the appropriate time of year, by a suitably qualified botanist, was requested during assessment, to determine if these species occur within the application area. In December 2023, the applicant provided a targeted flora survey, undertaken on 26 September 2023 by RPS (2023). The survey involved 10-15 metre distanced transects, with the entire vegetated area within the area under application searched. No conservation significant taxa were recorded during the targeted survey (RPS, 2023).

Vegetation

The Flora and Vegetation survey undertaken by RPS Environment in Spring 2008 identified three vegetation units across the survey area, and all three units had a high species richness (RPS, 2009). The two vegetation units mapped within the current application area are:

- Ah.Xp - *Allocasuarina humilis* and *Xanthorrhoea* Heath, described as scattered *Nuytsia floribunda* and *Corymbia calophylla* over Open Heath of *Allocasuarina humilis*, *Xanthorrhoea preissii* and *Hakea ruscifolia* very low open shrubland of *Hibbertia hypericoides*, *Calytrix sylvana* and *Calothamnus sanguineus* over open herbland/sedgeland dominated by *Caustis dioica*, *Hypolaena exsulca* and *Patersonia occidentalis*; and
- Et.Ba – *Eucalyptus todtiana* and *Banksia attenuata* Woodland, described as, low woodland of *Eucalyptus todtiana* and *Banksia attenuata* over low open shrubland of *Astroloma xerophyllum* over sedgeland/herbland dominated by *Phlebocarya ciliata*, *Hypolaena exsulca* and *Patersonia occidentalis*.

According to spatial data it is estimated that 3.5 hectares of Ah.Xp vegetation community and 3.71 hectares of the Et.Ba community, remain within the area under application.

A site visit of the application area was undertaken in January 2023 (DWER, 2023) and identified that the majority of the vegetation is considered to be in an Excellent (Keighley, 1994) condition.

On 16 September 2016, the Commonwealth Minister for the Environment and Energy (the Minister) listed the Banksia woodlands as an Endangered ecological community under the Commonwealth's EPBC Act. The areas considered critical to the survival of the Banksia woodlands covers all patches that meet the key diagnostic characteristics and condition thresholds for the ecological community, plus the buffer zones, particularly where this comprises surrounding native vegetation. This is because this ecological community occurs in a landscape that has often been very heavily cleared and modified, and now exists as mostly very small and highly fragmented patches (Commonwealth of Australia, 2016).

A key feature of this TEC is a prominent tree layer of Banksia, with scattered eucalypts such as *Eucalyptus todtiana*, and other tree species often present among or emerging above the Banksia canopy. The understorey is a species rich mix of sclerophyllous shrubs, graminoids and forbs. The ecological community is characterised by a high endemism and considerable localised variation in species composition across its range (Commonwealth of Australia, 2016). Based on the descriptions of the vegetation present in the application area and photographs taken on site, it is considered likely that the vegetation within the application area to comprise Banksia Woodlands TEC and the proposed clearing is at variance to clearing principle (d).

A number of vegetation communities or floristic community types are encompassed within the Banksia Woodlands TEC. Some of these sub-communities within the Banksia Woodlands are highly restricted and listed as Threatened in Western Australia under the BC Act or Priority ecological communities (PEC) by the Department of Biodiversity, Conservation and Attractions. These have higher significance than sub-types known to be more common and should be provided specific or additional protection (Commonwealth of Australia, 2016).

There are approximately 15 occurrences of the priority 2 PEC, 'Banksia woodland of the Gingin area restricted to soils dominated by yellow to orange sands' within the local area of the proposed clearing, with the closest occurrence being approximately 3.2 km south west. This PEC is described as 'scattered *Eucalyptus todtiana* and *Corymbia calophylla* over *Banksia menziesii* and *Banksia attenuata* low open woodland over *Jacksonia sternbergiana* and *Adenanthos cygnorum* high open shrubland over *Allocasuarina humilis* open shrubland over *Eremaea pauciflora* and *Astroloma xerophyllum* low shrubland over *Mesomelaena pseudostygia* open sedgeland' (Commonwealth of Australia, 2016). Approximately 1302.2 hectares of this PEC is known from 17 occurrences from Mooliabeenee to Chittering over a distance of 25 km and is restricted to the western side of the Dandaragan Plateau (Commonwealth of Australia, 2016). Given the presence of the Et.Ba community type (3.71 ha) within the application area and the similarities with this PEC, it is considered likely for the application area to contain this PEC.

Conclusion

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

- The removal of 3.71 hectares of Banksia Woodland TEC in excellent condition;
- The potential removal of 3.71 hectares of vegetation that is likely to represent the Banksia woodland of the Gingin area PEC which is highly restricted and is a significant sub-type of the Banksia Woodland TEC.

For the reasons set out above, the vegetation remaining within the Permit area for CPS 2701/5 is considered to contain high biodiversity and significant environmental values.

The Delegated Officer considers that the current conditions of CPS 2701/5 and the current approved offset under CPS 2701/5, are adequate to manage and counterbalance the significant residual impacts listed above.

3.1.1. **Biological values (Fauna)- Clearing Principle (b)**

As previously determined during the assessment of CPS 2701, the application area contains suitable habitat for the Endangered Carnaby's cockatoo. A review of the current significance and quality of black cockatoo habitat within the remaining vegetation located within the Permit Area was conducted.

Black cockatoos

Breeding/roosting

According to the Commonwealth of Australia's EPBC Act referral guidelines for Western Australia's three threatened black cockatoo species, the proposed clearing falls within the known breeding range for the Carnaby's cockatoo (DAWE, 2022). Carnaby's cockatoos generally forage within six kilometres of a night roost site and, while nesting, within a 12- kilometre radius of their nest site (DAWE, 2022). According to current DBCA databases, three confirmed black cockatoo roosting sites and five known breeding site occurs within a 12 kilometre radius of the application area. The closest roosting site is 7.5 kilometres away.

In accordance with the referral guidelines for the three species of black cockatoo, nesting habitat is defined as trees of species known to support nesting within the range of the species, which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow (DAWE, 2022). For jarrah and marri trees, DBH is 50 centimetres (cm) or above (DAWE, 2022). During the site inspection (DWER, 2023) no trees with suitable hollows for black cockatoo breeding or roosting were observed within the application area.

Foraging

Clearing of foraging habitat is a known key threat to Carnaby's cockatoo (DAWE, 2022). Habitat loss, habitat modification, climate change and fire are increasingly causing the scarcity of foraging resources which are critical at all stages of life for this species (DAWE, 2022).

Black cockatoo's forage on the seeds, nuts and flowers of a large variety of plants including proteaceous species (*Banksia* sp., *Hakea* sp., *Grevillea* sp.), as well as *Allocasuarina* and *Eucalyptus* species, marri, and a range of introduced species (Valentine and Stock, 2008; DAWE, 2022). Surveys of Carnaby's cockatoo populations and their feeding and roosting habits showed that this species uses the entire landscape of the Swan Coastal Plain, and that the Northern Region (in which the application area occurs) appears to be an important area throughout the season (Shah, 2006). The application area contains suitable foraging habitat for black cockatoo's, and evidence of foraging by black cockatoo's on *Banksia* was observed within the application area during site inspections (DER, 2016; DWER, 2023).

In total, the proposed clearing will result in the loss of 7.1 hectares of high-quality foraging habitat for Carnaby's cockatoo. The quality of the foraging habitat was determined to be high, in accordance with the Department of Agriculture, Water and the Environment's foraging quality scoring tool (DAWE, 2022). According to this tool, high quality foraging habitat for Carnaby's cockatoo consists of more than 1 hectare of native shrubland or woodland dominated by proteaceous species such as *Banksia*, shows evidence of feeding debris on site and is in close proximity to known breeding and roosting habitat (DAWE, 2022).

The Carnaby's cockatoo recovery plan summarises habitat critical to the survival of Carnaby's cockatoos as:

- the eucalypt woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding;
- woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established; and
- in the non-breeding season the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources (Parks and Wildlife, 2013).

The recovery plan also states that success in breeding is dependent on the quality and proximity of feeding habitat within 12 kilometres of nesting sites. Along with the trees that provide nest hollows, the protection, management and increase of this feeding habitat that supports the breeding of Carnaby's cockatoo is a critical requirement for the conservation of the species (Parks and Wildlife, 2013).

Given that the application area contains high quality foraging habitat and is within 12 km of three confirmed black cockatoo roosting sites and five known breeding sites, it is considered that the application contains critical habitat for Carnaby's cockatoo.

Conclusion

Based on the above assessment, the proposed clearing will result in the removal of 7.1 hectares of high-quality foraging habitat for black cockatoo species that is considered to represent critical habitat that is important for the long-term survival of Carnaby's cockatoo. This is in addition to the 10.39 hectares that has already been cleared under the permit.

The Delegated Officer considers that the current conditions of CPS 2701/5 and the current approved offset under CPS 2701/5, is adequate to manage and counterbalance the significant residual impact listed above.

3.2. Relevant planning instruments and other matters

Relevant planning instruments

- The application area is not within a priority resource location or a key extraction area within the Basic Raw Materials Statement of Planning Policy No. 2.4 (SPP2.4) (WAPC 2000). State Planning Policy 2.4 identifies the location and extent of known basic raw material resources, protects priority resource locations, ensures that the use of development of land for the extraction of basic raw materials does not adversely affect the environment or amenity and provides a consistent planning approval process for extractive industry proposals.
- A review of Interactive geological map identifies the application area as containing regionally significant basic raw materials (sand) by the Geological Survey of Western Australia. The mapping shows basic raw material areas and does not indicate government endorsement of approval or priority to mine in these areas and that further consideration such as environmental constraints will need to be taken into account before it can be used for planning purposes (DMP, 2011).
- The application area is zoned 'Rural' under the local town planning scheme.
- On 24 February 2023, the Shire of Gingin approved the Development Application - Extractive Industry for Lot M1899 Teatree Road, Lennard Brook.
- The proposed clearing is in accordance with this development approval which has an expiry date of 21 February 2033.
- The Shire of Gingin also approved the extension of the applicant's extractive industry (EIL) licence over Lot M1899 for five years. The EIL is valid until the 24 February 2028 (Shire of Gingin 2023).

Relevant other matters

Previous Appeal determination

- On 2 September 2008, Rocla Pty Ltd trading as Rocla Quarry Products (Rocla) submitted an application CPS 2701/1 to clear 29.7 hectares of native vegetation for sand extraction on Lot M1899 on Diagram 10521, Lennard Brook. On 22 October 2009, this application was refused based on environmental grounds. The applicant appealed this decision on 27 November 2009.
- An Appeal determination on 7 October 2010 allowed in part the clearing (C022 of 2009). Taking into account the matters raised by the appeal, and the environmental values identified at the time of the decision, the Minister for Environment agreed that the decision to refuse the permit was justified. However, noting the additional information provided by Rocla (now Hanson), the reduction in the area (30 ha to 17.6 ha) proposed to be cleared and concerns about the availability of sand resources within the metropolitan area, the Minister was of the view that a permit to clear up to 17.6 hectares of vegetation at the Lennard Road site can be approved, subject to offset conditions.
- In determining the Appeal, the Minister took into account the following:
 - Both the direct offset (restoration of 17.6 ha of native vegetation representing black cockatoo foraging habitat to very good condition and protected under a conservation covenant) and indirect offsets proposed by the applicant at the time, especially that the restoration of the application area, post extraction is required to achieve a higher completion criteria (i.e: 80% return of species within first year after commencement of restoration) then would normally be achieved in similar restoration projects.
 - This higher quality of restoration was expected due to the development of the 'Banksia woodlands: A restoration guide for the Swan Coastal Plain (Stevens et al., 2016)' (the Guide) that the applicant produced in conjunction with Kings Park.
 - Expert advice was obtained during the appeal from Kings Park that confirmed that the applicant was considered highly proficient in restoration on the Swan Coastal Plain (SCP);
 - The offset proposal also included restoration of degraded areas on site that are not proposed to be cleared (~0.5 hectares);

- The applicant was committed to securing remnant vegetation as a backup offset if the restoration is unsuccessful at a greater ratio of 1 to 1 (~ 36 ha).
 - The development of the Guide would improve restoration outcomes in general on the SCP;
 - that the applicant committed to providing part of an ARC grant of \$1.23 million for research into Carnaby's black cockatoo habitat;
 - the applicant reduced the amount of clearing from 30 ha to 17.6 ha; and
 - the availability of sand resources within the metropolitan area is considered scarce.
- The Minister's approval was subject to the following:
 1. Habitat trees at the site being identified by Rocla and excluded from the proposal, where practicable, having regard to the location of the sand resource;
 2. Requirement to restore degraded areas onsite which are not proposed to be cleared;
 3. Securing remnant native vegetation off site in the event restoration is unsuccessful be at a positive ratio, with the actual ratio to be determined by the DEC through conditions, taking into account the quality of the restoration (that is, a higher ratio where restoration fails);
 4. Consistent with the Offset Position Statement, on-site restoration needs to be coupled with suitable long-term management arrangements where Rocla is not the owner of the land, such that the restoration has a long-lasting benefit (Minister for Environment 2010).
 - Subsequently, Clearing Permit CPS 2701/2 was granted on 17 January 2013, subject to Offset conditions. The permit has been amended 3 times since then with clearing Permit 2701/5 being currently active.
 - The clearing permit was transferred to Hanson Constructions Pty Ltd in 2016.

Other approvals

- There is one Aboriginal Site of Significance listed within the area under application. The applicant has been advised of their obligations under the *Aboriginal Heritage Act 1972*.
- Approval of the proposal under the EPBC Act (EPBC No. 2010/5620) was granted on 5 April 2013 and allowed the clearing of 17.6 hectares of black cockatoo habitat. Under this approval, to mitigate the impacts to black cockatoo, the permit holder is required to:
 - restore the mine extraction area post extraction activities and an additional 4.97 hectares at the site with Banksia woodland providing high quality foraging habitat for black cockatoo. This area must be conserved in perpetuity under a conservation covenant;
 - conserve an additional 17.6 hectares of land under a conservation covenant on the property; and
 - implement indirect offsets, including provisions of funds to Kings Park botanic garden and the University of Western Australia to undertake research on Banksia woodland restoration and the finalization of the document 'Banksia woodlands: A restoration guide for the Swan Coastal Plain'.

Review of annual report and compliance with permit conditions of CPS 2701

- A review of the applicant's compliance with current conditions of Permit 2701/5 has indicated that the applicant is currently compliant with Permit conditions and is meeting the success criteria for the revegetation offset (see Appendix D).

Reason for clearing

- The applicant has advised that the specialised high quality sand resource extracted from this site is used for roof tile manufacture, specialised concrete products and high strength concrete projects.
- Deposits of this quality quartz sand near the Perth Metropolitan area are typically not common and have been identified as nearing exhaustion. Hanson's existing operations is currently the only quarry in Perth which supplies this specialised sand.
- Perth's construction industry is reliant on a sustainable supply of silica sand including for manufacture of bricks, tiles and high strength concrete (i.e. used in apartments). The Lennard Road quartz sand contains large angular silica, with low impurities (i.e. iron) and has high thermal stability. Because of these traits, this unique sand resource is able to be used in specialised products including:
 - Roof, wall and floor tiles. The Lennard Road quarry is a key preferred sand supply for BGC's roof tiles and specialist brick manufacturing plant.
 - High voltage electrical transformers bedding sand to provide a thermally stable environment.
 - Ultra-high performance concrete (UHPC) products. UHPC is a relatively new class of concrete which has superior characteristics including high workability, high compressive strength, increased ductility, and high resistance to environmental attacks (Hanson Construction Materials Pty Ltd, 2023).

4 Suitability of offsets

Through the detailed assessment outlined in Section 3.1 above, the Delegated Officer has determined that the following significant residual impacts remain:

- 17.6 hectares of high-quality black cockatoo feeding habitat; and
- 13.4 hectares of native vegetation representing the Banksia woodland TEC in very good to excellent condition.

The Minister for Environment's appeal determination to grant CPS 2701 was subject to:

1. The requirement to restore degraded areas onsite which are not proposed to be cleared;
2. Securing remnant native vegetation off site in the event restoration is unsuccessful be at a positive ratio, with the actual ratio to be determined by the DEC through conditions, taking into account the quality of the restoration (that is, a higher ratio where restoration fails);
3. Consistent with the Offset Position Statement, on-site restoration needs to be coupled with suitable long-term management arrangements where Rocla is not the owner of the land, such that the restoration has a long-lasting benefit (Minister for Environment 2010).

Subsequently, Clearing Permit CPS 2701/2 was granted on 17 January 2013, subject to suitable offset conditions to counterbalance the impact to black cockatoo habitat, in accordance with the Minister for Environment's appeal determination.

In regards to Banksia woodland TEC, as this TEC was not listed at the time of the appeal, the residual impacts of the clearing to this environmental value was not considered. The direct and indirect offset approved under CPS 2701/5 was therefore reviewed, using the WA Offset Calculator and in accordance with the WA Offset Policy, to determine if the provided offset proposal adequately counterbalances the impact of the clearing to Banksia woodland TEC.

It was determined that the restoration of the application area and additional degraded area within the site, achieving the 80% species target and conserving the offset area under a conservation covenant, post extractive industry, will counterbalance the residual impact to the Banksia woodland TEC by 89.6%. The Delegated Officer also took into account the indirect offset to develop the document 'Banksia woodlands: A restoration guide for the Swan Coastal Plain (Stevens et al., 2016)' and considers this action to adequately offset the remaining 10.4% of the residual impact to Banksia woodland TEC. The justification for the values used in the offset calculation is provided in Appendix E.

End

Appendix A. Site characteristics

A.1 Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to the department at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix B. The 'local area' is considered a 10 kilometre radius of the application area.

Characteristic	Details
Local context	<p>The area proposed to be cleared is a part of an extensive tract of native vegetation in the intensive land use zone of Western Australia and is located on the western edge of the Dandaragan plateau.</p> <p>Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 37 per cent of the original native vegetation cover.</p>
Ecological linkage	No mapped ecological linkage falls within the application area.
Conservation areas	<p>The closest conservation areas are unnamed Nature Reserve (Reserve 42743), Breera Road Nature reserve (Reserve 47435) and Nullilla Nature Reserve (R46414), which are located and 5.7 kilometres north-east, 5.6 kilometres south-west and 6.1 kilometres west, respectively.</p> <p>A review of aerial imagery indicates there is limited connectivity from the area under application to the mapped conservation areas.</p>
Vegetation description	<p>The flora and vegetation survey (RPS, 2009) and photographs of the vegetation obtained from a DWER site inspection (DWER, 2023) indicate the vegetation within the proposed clearing area consists of <i>Banksia sp.</i> and <i>Eucalyptus todtiana</i> low open woodland over a native and diverse shrub and herb layer.</p> <p>Two vegetation units mapped within the current application area are (RPS, 2009):</p> <ul style="list-style-type: none"> Ah.Xp - <i>Allocasuarina humilis</i> and <i>Xanthorrhoea</i> Heath, described as scattered <i>Nuytsia floribunda</i> and <i>Corymbia calophylla</i> over Open Heath of <i>Allocasuarina humilis</i>, <i>Xanthorrhoea preissii</i> and <i>Hakea ruscifolia</i> very low open shrubland of <i>Hibbertia hypericoides</i>, <i>Calytrix sylvana</i> and <i>Calothamnus sanguineus</i> over open herbland/sedgeland dominated by <i>Caustis dioica</i>, <i>Hypolaena exsulca</i> and <i>Patersonia occidentalis</i>; and Et.Ba - <i>Eucalyptus todtiana</i> and <i>Banksia attenuata</i> Woodland, described as, low woodland of <i>Eucalyptus todtiana</i> and <i>Banksia attenuata</i> over low open shrubland of <i>Astroloma xerophyllum</i> over sedgeland/herbland dominated by <i>Phlebocarya ciliata</i>, <i>Hypolaena exsulca</i> and <i>Patersonia occidentalis</i>. <p>This is consistent with the mapped vegetation complexes (Hedde et al. 1980):</p> <ul style="list-style-type: none"> Karamal Complex-South which is described as Open forest of <i>Eucalyptus marginata</i> (Jarrah) - <i>Corymbia calophylla</i> (Marri) with second storey of <i>Banksia grandis</i> (Bull Banksia). Moondah Complex which is described as Low closed to low open forest of <i>Banksia attenuata</i> (Slender Banksia) - <i>Banksia menziesii</i> (Firewood Banksia) - <i>Eucalyptus todtiana</i> (Pricklybark) - <i>Banksia prionotes</i> (Acorn Banksia) on slopes, open woodland of <i>Corymbia calophylla</i> (Marri) - <i>Banksia</i> species in valley. <p>The vegetation more accurately falls into the Reagan complex due to its position in the landscape. The Reagan complex is described as 'open woodland of <i>Banksia</i> species and <i>Eucalyptus todtiana</i> to a closed Heath depending on the depth of the soil (RPS 2008).</p> <p>Representative photos and survey descriptions and maps are available in Appendix D.</p>

Characteristic	Details
Vegetation condition	<p>Photographs obtained during a DWER site inspection indicate the vegetation within the proposed clearing area is in Excellent to Pristine (Keighery, 1994) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix C. Representative photos are available in Appendix D.</p>
Soil description	<p>The soils within the application area have been mapped by Northcote et al. (1960-68) as soil types Cb38 and Mu11. These soil types are described as:</p> <ul style="list-style-type: none"> AC2: Gently undulating plateau underlain by sedimentary rocks: chief soils are yellow earthy sands with siliceous sands. AB3: Gently undulating sandy plains with an occasional low dune: dominant soils are deep red earthy sands. <p>The landscape of the area under application and surrounds can be described as undulating to low hilly dissected plateau on the western section and gently undulating plateau underlain by sedimentary rocks (Northcote et al, 1960-68). The chief soils on the slopes are red earthy sands on the western section and yellow earthy sands with siliceous sands on the eastern section (Northcote et al. 1960-68).</p> <p>A DWER site inspection found that the soils within the application area consists of sandy grey/white soils (DWER, 2023).</p>
Land degradation risk	<p>The soils mapped within the application area are considered to be at risk of wind and water erosion.</p> <p>Given the sandy soils within the application area, the proposed clearing may result in appreciable land degradation in the form of wind erosion.</p> <p>A majority of the area under application is located on a ridge (170m AHD) and the topography of the property gently slopes downwards towards the south western boundary of the application area to 130m AHD at a gradient of 11%, moderately inclined (Wells 1988). Given this downward slope and that the removal of vegetation over sandy soils increases the risk of water erosion following rainfall, the proposed clearing may cause water erosion through an increase in surface water runoff causing erosion gullies.</p>
Waterbodies	<p>According to available datasets, no wetlands or watercourses are mapped within the application area. The closest wetland is a conservation category palusplain wetland, located 500 north and east of the application area, which is known as Lennard Brook.</p> <p>No watercourses, wetlands or vegetation growing in or in association with an environment associated with a watercourse or wetland, were observed during a site inspection (DWER, 2023).</p>
Flora	<p>Available datasets indicate that five threatened flora species, two priority 1, five priority 2, 14 priority 3 and eight priority 4 flora species have been recorded within the local area.</p> <p>No threatened or priority flora were identified within the area remaining to be cleared (RPS, 2023).</p>
Ecological communities	<p>Available datasets indicate that four threatened or priority ecological communities have been recorded within the local area, they are:</p> <ul style="list-style-type: none"> SCP 07 Herb rich shrublands in clay plans (Vulnerable under BC Act) SCP15 Forests and woodlands of deep seasonal wetlands of the SCP (Critically Endangered under BC Act) Banksia woodland of the Gingin area PEC – Priority 2 SCP20 <i>Banksia attenuata</i> woodland over species rich dense shrubland (Endangered under BC Act)
Fauna	<p>Available datasets indicated that there are records of 19 fauna species of conservation significance within the local area. In addition, three confirmed black cockatoo roosting sites and five known breeding site occurs within a 12-kilometre radius.</p>

A.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*					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation complex					
Beard vegetation association 1027 *	39,534.38	23,367.69	59.11	8,630.90	21.83
Hedde Complex: Karamal Complex south**	24,017.08	15,385.29	64.06	6,986.16	29.09
Local area					
10km radius	37,490	13,963	37.2	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

A.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)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Grevillea curviloba</i>	T	N	N	N	10	1	Y
<i>Grevillea corrugata</i>	T	N	N	N	10	1	Y
<i>Eleocharis keigheryi</i>	T	N	N	N	10	1	Y
<i>Ptychosema pusillum</i>	T	Y	Y	Y	6.5	1	Y
<i>Chamelaucium lullfitzii</i>	T	Y	Y	Y	6.5	12	Y
<i>Grevillea evanescens</i>	P1	N	N	N	10	1	Y
<i>Lechenaultia magnifica</i>	P1	Y	Y	Y	4.6	1	Y
<i>Leucopogon squarrosus</i> subsp. <i>trigynus</i>	P2	N	Y	Y			Y
<i>Poranthera moorokatta</i>	P2	Y	Y	Y			Y
<i>Styphelia filifolia</i>	P3	Y	Y	Y			Y
<i>Hypolaena robusta</i>	P4	Y	Y	Y	Within application	5	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains critical habitat for significant fauna species and contains vegetation that is representative of the Banksia woodlands TEC.</p>	<p>At variance</p> <p>(as per CPS 2701/5)</p>	<p>Yes</p> <p>Refer to Section 3.2.1, above.</p>
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The vegetation under application represents critical habitat for the Carnaby’s cockatoo.</p>	<p>At variance</p> <p>(as per CPS 2701/5)</p>	<p>Yes</p> <p>Refer to Section 3.2.1, above.</p>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared may contain suitable habitat for threatened flora species listed under the BC Act, based on the soil and vegetation type present within the application area. An appropriately time flora survey was undertaken of the application area. No threatened flora species were identified. It is considered that this survey was done in accordance with relevant EPA guidance documents. Given this finding, it is not considered for the proposed clearing to impact threatened flora.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 2701/5)</p>	<p>Yes</p> <p>Refer to Section 3.2.1, above.</p>
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains vegetation representative of the Bankia Woodland TEC.</p>	<p>At variance</p> <p>(Changed from CPS 2701/5)</p>	<p>Yes</p> <p>Refer to Section 3.2.1, above.</p>
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation types and the extent of native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 2701/5)</p>	<p>No</p>
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>The closest conservation areas are located several kilometres away.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 2701/5)</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>A review of aerial imagery indicates there is limited connectivity from the area under application to the mapped conservation areas.</p> <p>Given the distance of the application area to nearby conservation areas and the limited connectivity, the proposed clearing is not likely to impact on the environmental values of nearby conservation areas.</p>		
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>According to available datasets, no wetlands or watercourses are mapped within the application area. The closest wetland is a conservation category palusplain wetland, located 500 north and east of the application area, which is known as Lennard Brook.</p> <p>No watercourses, wetlands or vegetation growing in or in association with an environment associated with a watercourse or wetland, were observed during a site inspection (DWER 2023).</p>	<p>Not likely to be at variance</p> <p>(as per CPS 2701/5)</p>	<p>No</p>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>Land degradation mapping indicates that small sections of the application area fall within the category for high to extreme wind erosion risk (DAFWA 2015). Given the sandy soils within the application area, the proposed clearing may result in appreciable land degradation in the form of wind erosion. Staged clearing will mitigate this risk.</p>	<p>May be at variance</p> <p>(as per CPS 2701/5)</p>	<p>No</p>
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>According to available datasets, no wetlands or watercourses are mapped within the application area. The closest wetland, Lennard Brook, is a conservation category palusplain wetland, located 500 north and east of the application area. The application area is located in the catchment of the Lennard Brook which is a tributary of the Ellen Brook.</p> <p>The application area contains a mildly sloping terrain down towards the existing quarry. If a heavy rainfall takes place, given the sandy nature of the soils and this slope, sheet flow may occur. The potential impacts to the quality of surface water are unlikely to be significant given that the watercourse is 500 m east of the application area.</p> <p>Mapped groundwater salinity within the application area is brackish (1000 - 3000 milligrams per litre total dissolved solids). The clearing is not likely to cause deterioration in the quality of groundwater.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 2701/5)</p>	<p>No</p>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>According to available datasets, no wetlands or watercourses are mapped within the application area.</p>	<p>Not likely to be at variance</p> <p>(as per CPS 2701/5)</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>The application area is located in a medium rainfall area, where the average rainfall is 800 millimetres per year.</p> <p>Based on the medium rainfall, sandy soils and the nature of the clearing, it is considered that the proposed clearing is unlikely to cause, or exacerbate the incidence or intensity of flooding.</p>		

Appendix C. 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 D. Biological survey information excerpts, DWER site inspection photographs and annual report data on revegetation conditions.

Excerpts from DWER site inspection for CPS 2701/6 (DWER, 2023)

Revegetation areas

- 1-year-old revegetation site (outlined in orange on Figure 1).
- Limited weed species observed however vegetation heat affected and under heat stress. Limited and very scattered Banksia and Eucalyptus saplings occur, however most of the revegetation consisted of understorey species (see photos 6 and 7).
- 3-year-old revegetation site (outlined in light blue on Figure 1).
- Limited weed species. Scattered Banksia and Eucalyptus saplings observed that are of a height to indicate that they may have been tube stock. Revegetation from topsoil mainly of understorey species (see photos 8, 9, 10).

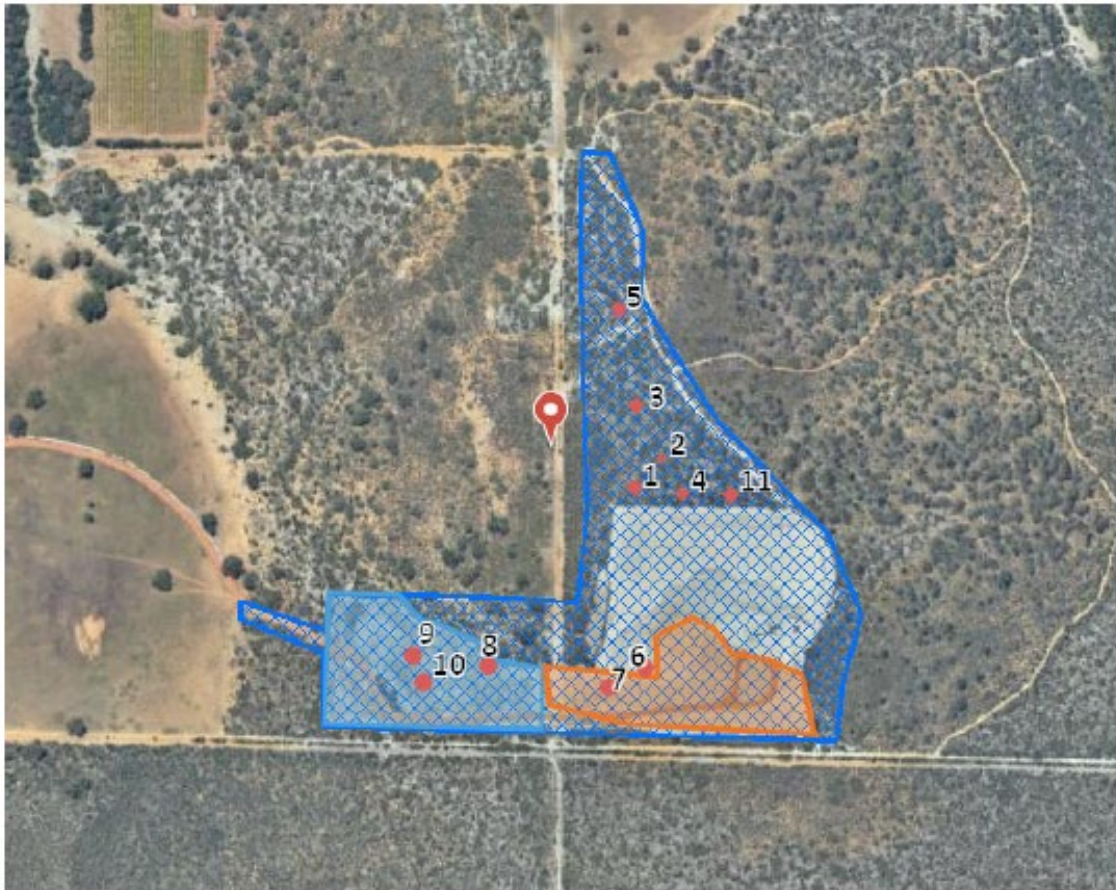


Figure 1: Location of photos taken and revegetation within application area



Photo point 1 looking north– Banksia woodland in excellent condition



Photo point 2 – Banksia woodland in excellent condition. *Conospermum crassinervium* in the foreground.



Photo point 3 -Looking north – Banksia woodland in excellent condition. *Eucalyptus tottiana* in the overstorey.



Photo point 4 -Looking south within the southern end of vegetated area toward existing pit.



Photo point 5 - Looking north -Banksia woodland in excellent condition



Photo point 5 - Evidence of foraging on Banksia cone within application area



Photo point 6 - Looking south into 1 year revegetation area



Photo point 7 - Banksia attenuatta sapling within year 1 revegetation area

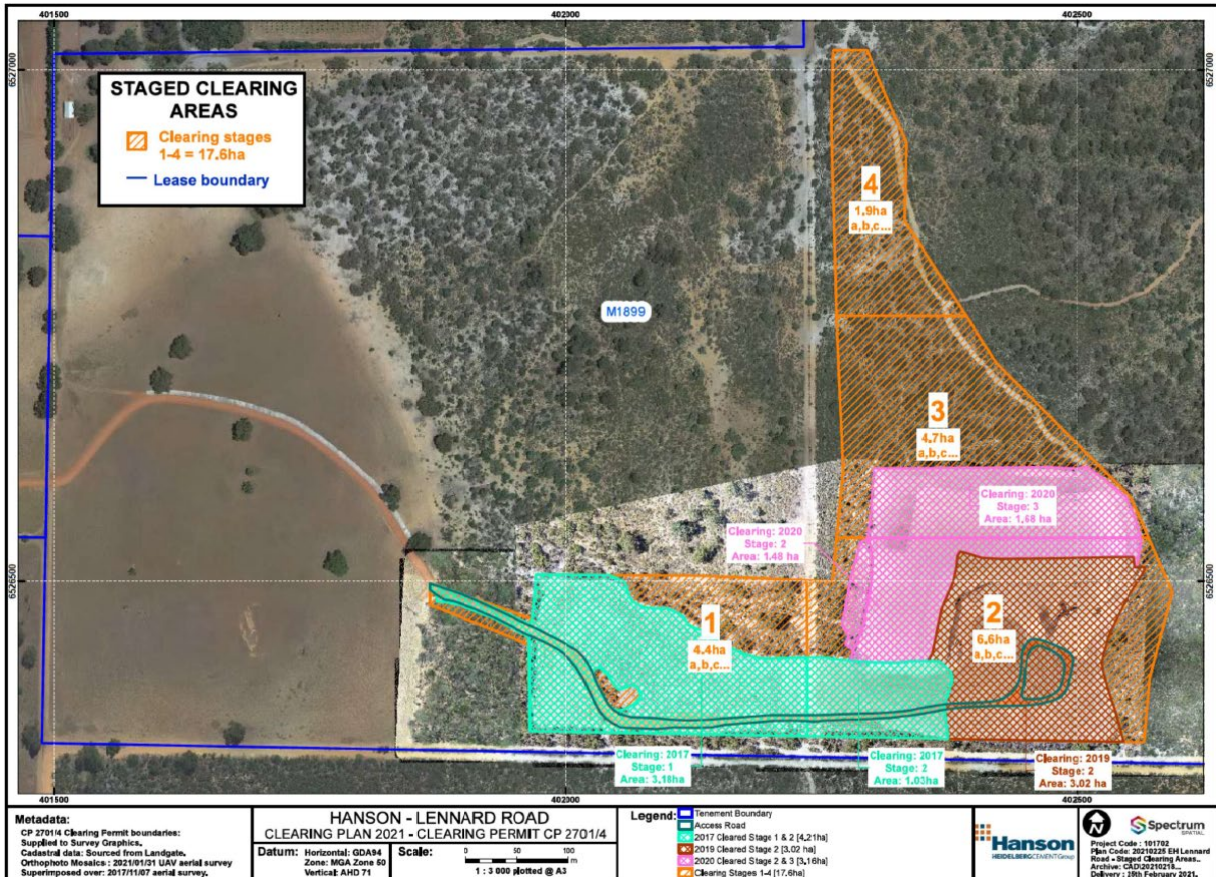
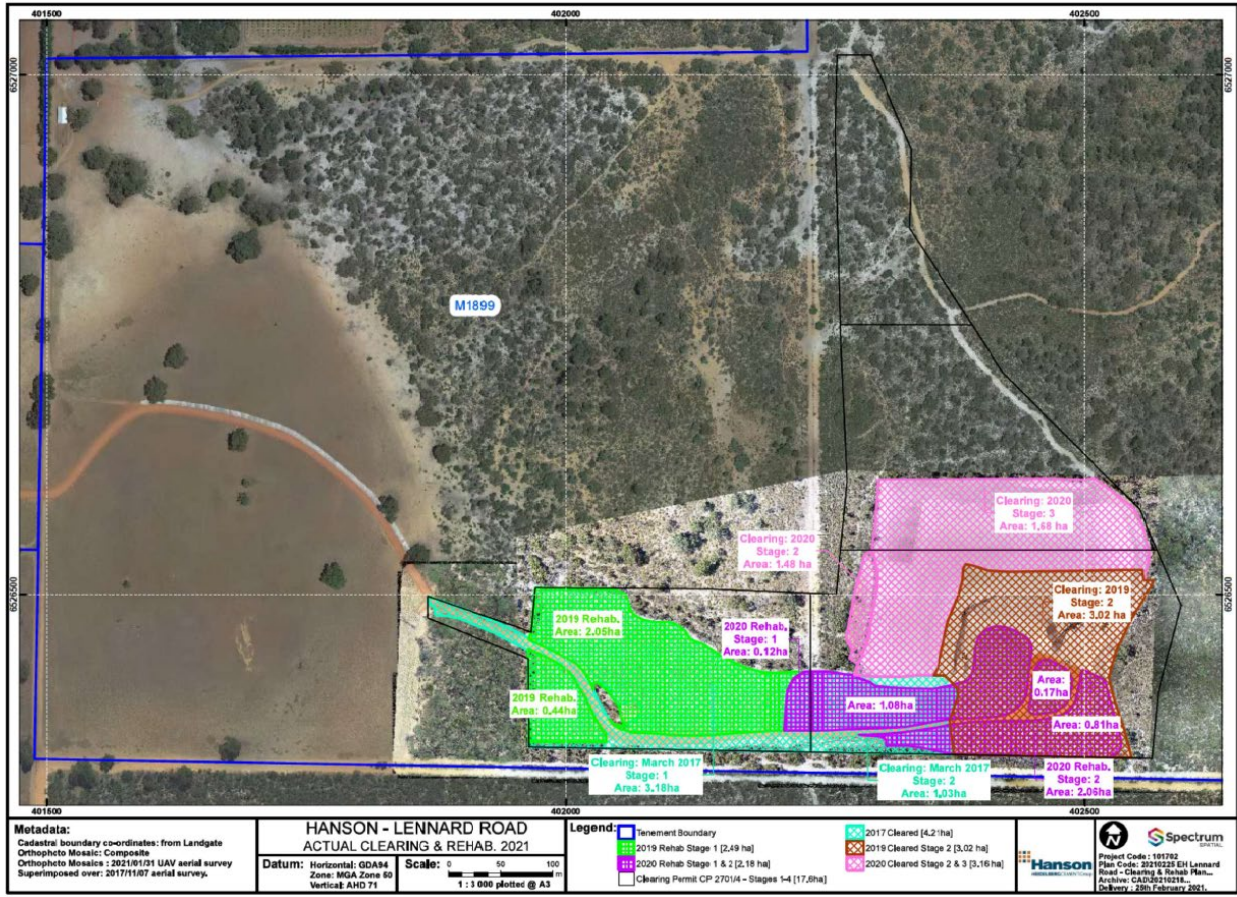


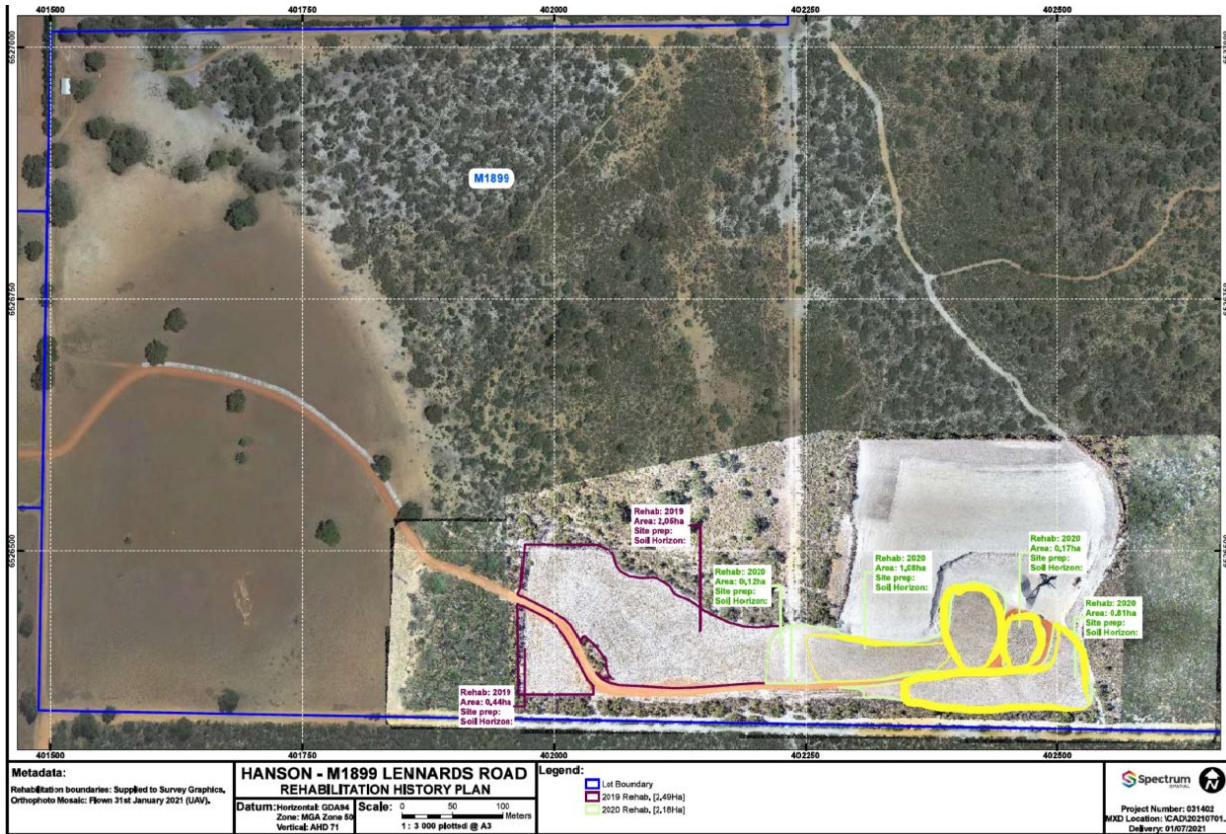
Photo point 8 - Looking southeast into 3 year revegetation area. Banksia sapling in top right corner of considerable size.



Photo point 9 - Typical groundcover within 3 year revegetation area

Excerpts from Annual Report 2022/23 for CPS 2701/5 (Hanson Construction Materials Pty Ltd, 2023)





Spectrum Ecology monitored six sites since 2019 within the Lennards Road quarry’s rehabilitation area. The monitored rehabilitation sites either two years (LR01, LR02, LR03) or one year (LR04, LR05, LR06) in age. In summary, within the three two-year-old rehabilitation (2019-2020) sites:

- One or more key overstorey species present with density ranging from two to 16 individuals per quadrat.
- Native species richness ranged from 34 to 39, while weed species richness ranged from six to 11.
- Total weed cover varied from 0.6 to 2.0%, with *Ursinia anthemoides* accounting for the majority of weed cover across the sites.

Within the one-year-old rehabilitation (2021) sites:

- Two of the three sites had a single key overstorey species present each while the remaining site had none.
- Native species richness ranged from 32 to 34.
- Weed species richness ranged from nine to 12 and total weed cover from 1.0 to 1.3%.
- *Ursinia anthemoides* again accounted for the majority of weed cover.

Completion Criteria

Lennards Road quarry’s rehabilitation success is ongoing and subject to annual monitoring and assessment against the restoration success criteria as established in the Site Restoration Management Plan. Tables 1 and 2 detail the density and biodiversity key performance indicators (KPIs) for year 1 and year 5 rehabilitation success.

KPI's	Target	Current	Target	Actual
Plant / Stem	Year 1	Year 3	Year 5	Year 5
Abundance per 5m ²				
Good	124	2 – 16 species per quadrant	15	TBA

Table 1: Lennards Road KPIs for plant/stem abundance

KPI's	Target	Current	Target	Actual
Plant / Stem	Year 1	Year 3	Year 5	Year 5
Abundance per 5m ²				
Good	17	34 – 39 species per quadrant	8	TBA

Table 2: Lennards Road KPIs for plant/stem abundance

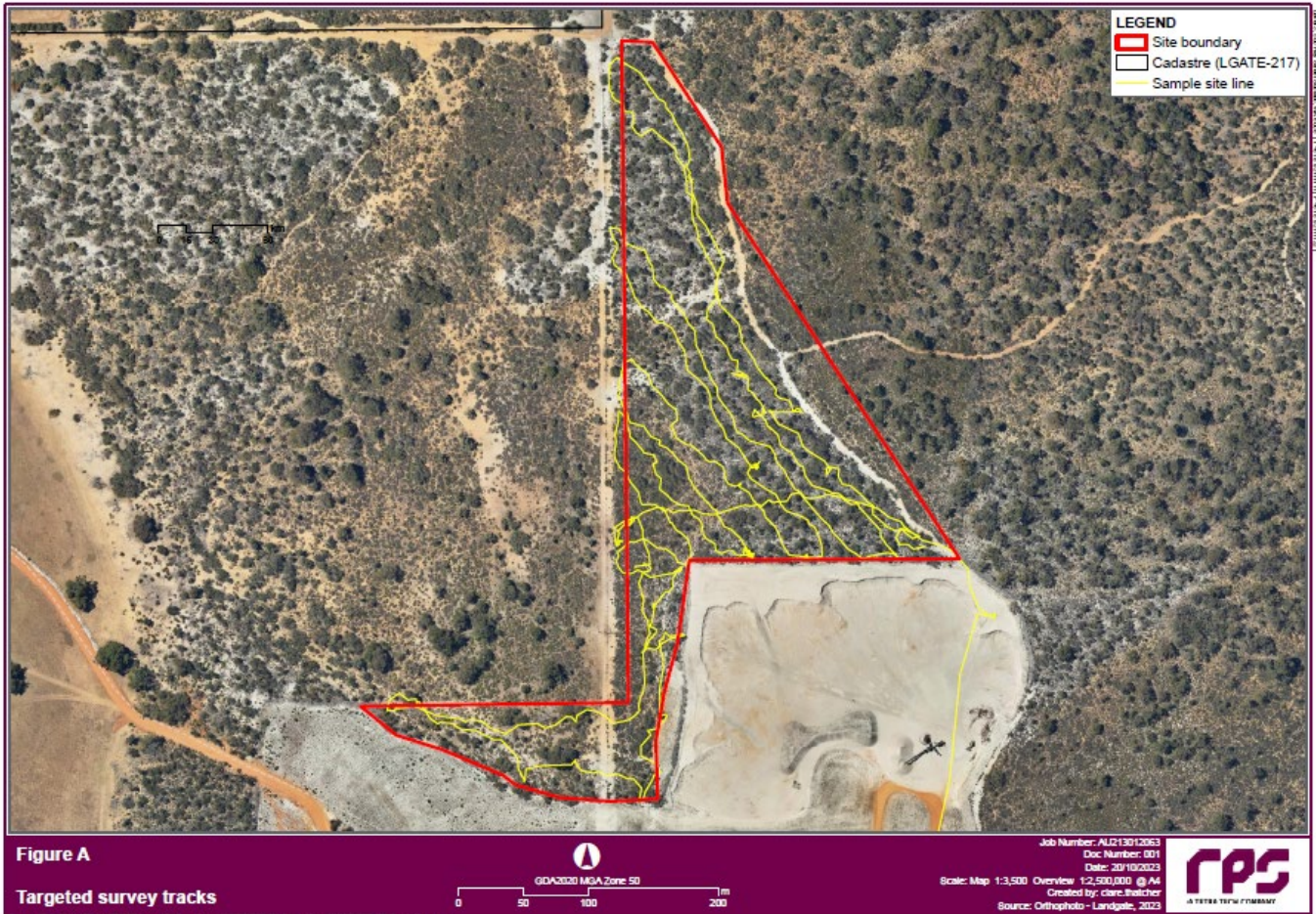
Year	Cleared Area	Methodology Notes
2017	4.02 ha*	Topsoil removal by Traxcavator – March 2017. *Previously reported as 4.21ha – updated aerial mapping has allowed for more accurate spatial recording.
2018	0 ha	No Clearing
2019	3.02 ha	Topsoil removal by Traxcavator – March 2019
2020	3.16 ha	Topsoil removal by Traxcavator - October 2020
2021	0 ha	No Clearing
2022	0 ha	No Clearing
2023 (Proposed)	Stage 3 – approx. 2ha	Proposed clearing in March 2023

Table 3: Lennards Road clearing areas and rehabilitation methodology summary notes

Year	Rehabilitation Area (Topsoil)	Rehabilitation (Tubestock)	Weed Coverage (%)	Methodology Notes
2017	0 ha	Nil	N/A	
2018	0 ha	Nil	N/A	
2019	2.49 ha	Nil	N/A	<ul style="list-style-type: none"> • 3 Monitoring Plots installed in 2019 rehab area. • Topsoil spread at 80-100mm thick by Landplane • Seed Collection undertaken.
2020	2.18 ha	Nil	0.6 - 2%	<ul style="list-style-type: none"> • Installed 3 monitoring plots in 2020 area. • Cleared area in October 2020. • Topsoil spread a 80-100mm thick by landplane. • Banksia Provenance trial established in 2020 rehab area. • Seed Collection undertaken. • Weed Management – October 2020.
2021	0 ha	Nil	1.0 - 1.3%	<ul style="list-style-type: none"> • Monitoring of all 6 plots (Year 1 and Year 3). • Weed Management – November 2021
2022	0 ha	3,400 plants	TBC	<ul style="list-style-type: none"> • No topsoil movement onsite. • Seed Collection undertaken (Tranen). • Tubestock installed within 2019 rehab areas by Natural Area Management in July 2022. • 3 species planted (B. attenuata, B. menziesii, E. todtiana).
2023 (Proposed)	2 ha	Tubestock for 2020 areas		<ul style="list-style-type: none"> • 2020 cleared area proposed to be rehabilitated with direct transfer of topsoil from new clearing area. • Install new monitoring plots • Weed Management

Table 4 – Rehabilitation & Methodology

Excerpt from targeted flora survey (RPS, 2023)



Appendix E. Offset Justification Table

**WA Environmental Offset Calculator
 Rationale for scores used in the calculator for Banksia Woodland TEC**

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Native vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plain (Banksia Woodlands) TEC	The proposed clearing will impact on 13.4 hectares of native vegetation that is representative of the Banksia Woodlands TEC.
Type of environmental value	Ecological Community	The Banksia Woodlands ecological community is listed as a threatened ecological community under the Commonwealth EPBC Act and considered a priority ecological community by DBCA.
Conservation significance of environmental value	Threatened ecological community - endangered	The Banksia Woodlands TEC is listed as Endangered under the EPBC Act and is considered a Priority ecological community in Western Australia by DBCA. Therefore, the highest level of threat has been applied for this field.
Landscape-level value impacted	yes/no	The impact is to an area of Banksia Woodlands TEC in hectares.
Significant impact		
Description	Clearing of native vegetation that is representative of the Banksia Woodlands TEC.	Native vegetation that is representative of the Banksia Woodlands TEC is proposed to be cleared.

Calculation	Score (Area)	Rationale
Significant impact (hectares) / Type of feature	13.4	Based on the available information provided by the applicant, 13.4 hectares of Banksia Woodland occurred within the application area.
Quality (scale) / Number	8.00	Based on the available information and site inspection of the application area (DWER, 2023), the proposed clearing area consists of Banksia woodland in Very Good to Excellent (Keighery, 1994) condition.
Offset		
Description	Revegetation and rehabilitation of native vegetation that comprises Banksia Woodland TEC in very good condition	
Proposed offset (area in hectares)	18.10	The revegetation of 18.10 hectares of native vegetation that comprises Banksia woodland in very good condition counterbalances 89.6 per cent of the significant residual impact to this value. The remaining 10.4 per cent of the significant residual impact to Banksia Woodland TEC is indirectly offset through the development of the document ' Banksia woodlands: A restoration guide for the Swan Coastal Plain (Stevens et al., 2016)'
Current quality of offset site / Start number (of type of feature)	0	A quality score of 0 has been assigned for land that is completely degraded, post extraction activities.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	0	The quality of the offset site is unlikely to change in the absence of the offset.
Future quality WITH offset (scale) / Future number WITH offset	7	The applicant has prepared site-specific restoration plan with a commitment to achieving a 80 per cent success criteria and restoring Banksia Woodland to very good condition within the offset site.
Time until ecological benefit (years)	9	9 years has been assigned, as extraction activities is authorised until Feb 2028 under approved extractive industry licence (EIL) and restoration criteria has to be met within 5 years post extractive industry, in accordance with the site-specific restoration plan.
Confidence in offset result (%)	0.9	There is a high level of confidence that the offset will achieve the predicted result given revegetation and rehabilitation will be undertaken in accordance with the approved site-specific restoration plan.
Duration of offset implementation (maximum 20 years)	20.00	The revegetation offset area will be conserved in perpetuity under a conservation covenant. Therefore, the maximum of 20 years for this field is applied.
Time until offset site secured (years)	11	11 years has been assigned, being the time until the conservation covenant is required to be in place in accordance with condition 10(e) which is two years after restoration competition criteria has been met (criteria to be met within 5 years post extraction which is authorised under EIL until Feb 2028)
Risk of future loss WITHOUT offset (%)	15.0%	15% risk of loss without offset is offset site is assumed to be zoned for rural purposes
Risk of future loss WITH offset (%)	5.0%	5% risk of future loss due to protection of vegetation under a conservation covenant

Appendix F. Sources of information

F.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- 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

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

F.2. References

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Schedule 1

The boundary of the area authorised to be cleared is shown in the map below (area cross-hatched yellow) (Figure1):

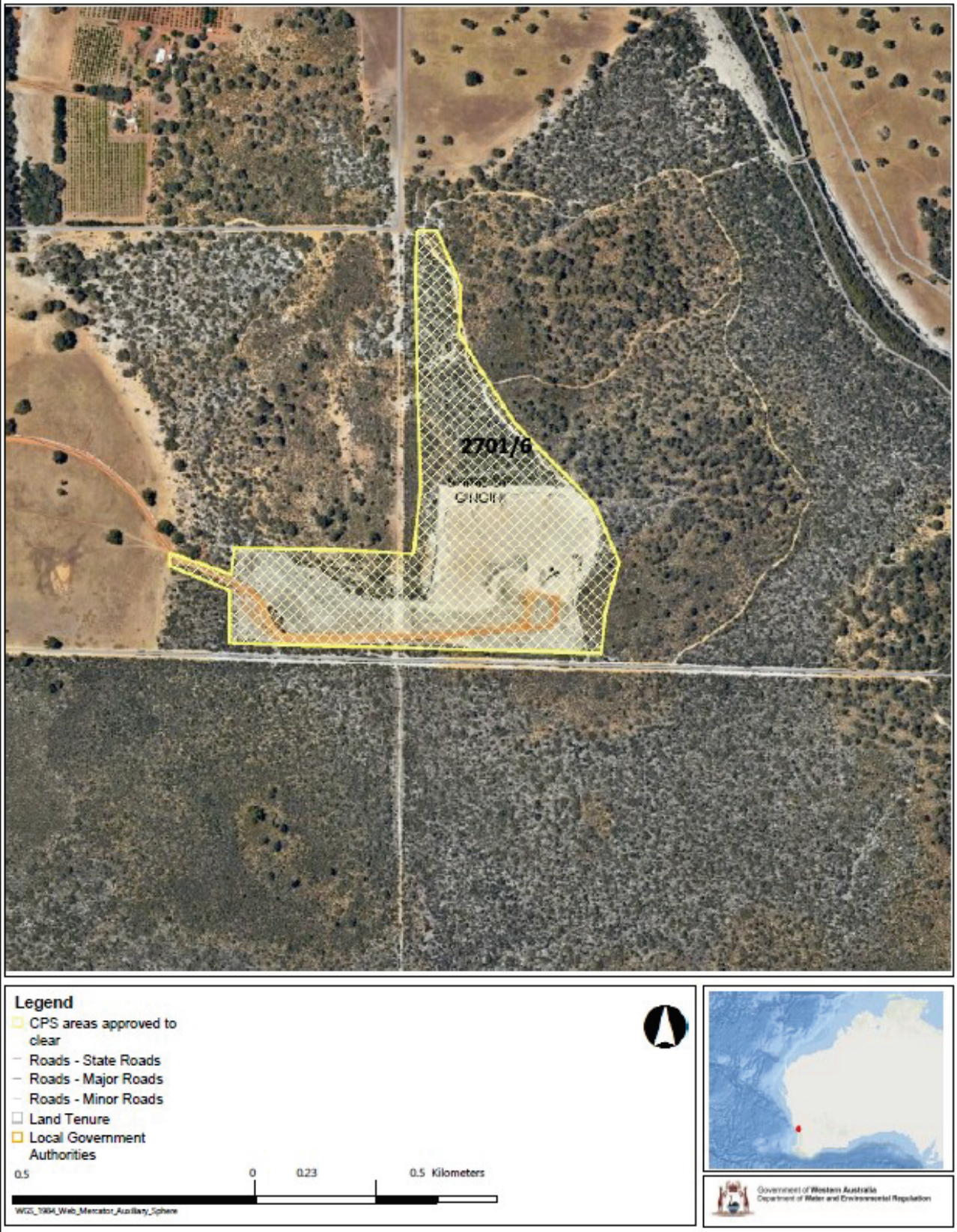


Figure 1: Map of the boundary of the area within which clearing may occur