



## CLEARING PERMIT

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

<b>Purpose Permit number:</b>	CPS 9439/1
<b>Permit Holder:</b>	Coogee Chlor Alkali Pty Ltd
<b>Duration of Permit:</b>	From 16 January 2022 to 16 January 2027

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

### **PART I – CLEARING AUTHORISED**

#### **1. Clearing authorised (purpose)**

The permit holder is authorised to clear *native vegetation* for the purpose of construction of laydown area and vehicle access.

#### **2. Land on which clearing is to be done**

Lot 254 on Deposited Plan 416516, Wellesley  
Lot 1 on Diagram 73196, Wellesley

#### **3. Clearing authorised**

The permit holder must not clear more than 2.09 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

### **PART II – MANAGEMENT CONDITIONS**

#### **4. Avoid, minimise, and reduce impacts and extent of clearing**

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

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

## 5. Weed and dieback management

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

- (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.

## 6. Directional clearing

The permit holder must conduct *clearing* activities in a slow, progressive manner in the direction of adjacent vegetation to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

## 7. Fencing

- (a) Prior to commencing clearing, the permit holder shall construct a temporary fence enclosing the area outlined in yellow on Figure 1 of Schedule 1 to avoid the clearing of *priority flora* species outside of the approved clearing area;
- (b) Within three months of the cessation of the authorised *clearing* activities, construct or install a permanent fence along the line outlined in red on Figure 1 of Schedule 2;
- (c) Within one month of construction or installation of the permanent fence, notify the *CEO* in writing that this action has been taken; and
- (d) Ensure the temporary and permanent fence are constructed to allow fauna to pass through.

## 8. Erosion management

The permit holder must commence the resurfacing and compacting of the cleared area and the construction of associated surface water drainage within six weeks after undertaking the authorised clearing activities to reduce the potential impacts from wind erosion and nutrient export.

## **PART III - RECORD KEEPING AND REPORTING**

### 9. Records that must be kept

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

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

No.	Relevant matter	Specifications
1.	In relation to the authorised <i>clearing</i> activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred,

No.	Relevant matter	Specifications
		<p>recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;</p> <p>(c) the date that the area was cleared;</p> <p>(d) the direction that clearing was undertaken;</p> <p>(e) the size of the area cleared (in hectares);</p> <p>(f) actions taken to avoid, minimise, and reduce the impacts and extent of <i>clearing</i> in accordance with condition 4; and</p> <p>(g) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 5;</p> <p>(h) actions taken to construct the temporary and permanent fencing in accordance with condition 7 of this permit;</p> <p>(i) the date that construction activities commenced in accordance with condition 8 of this permit.</p>

## 10. Reporting

The permit holder must provide to the *CEO* the records required under condition 9 of this permit when requested by the *CEO*.

## DEFINITIONS

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

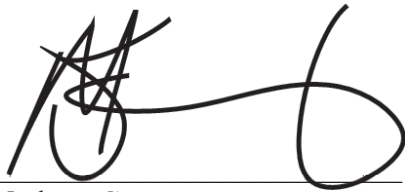
**Table 2: Definitions**

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.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
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)
fill	means material used to increase the ground level, or to fill a depression.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.

Term	Definition
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	<p>means any plant –</p> <ul style="list-style-type: none"> <li>(a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or</li> <li>(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or</li> <li>(c) not indigenous to the area concerned.</li> </ul>

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**END OF CONDITIONS**



Mathew Gannaway  
A/Senior Manager

NATIVE VEGETATION REGULATION

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

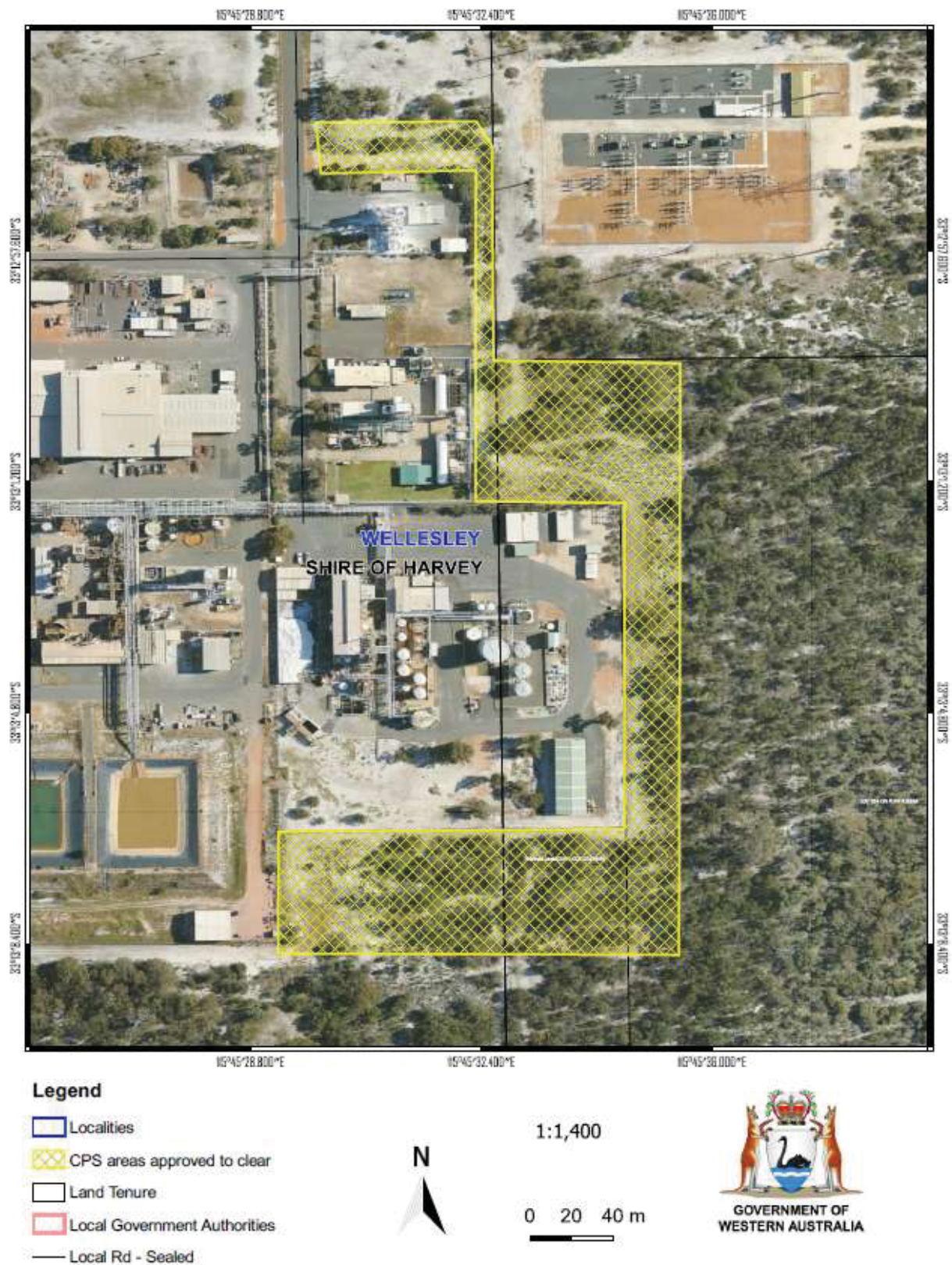
23 December 2021



# Schedule 1

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

## CPS 9439/1 - Plan



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



# Schedule 2

The fencing line to be constructed post clearing in accordance with the permit condition 7 is shown in the map below (Figure 1)



Figure 1. Map of the permanent fencing line to be constructed



# Clearing Permit Decision Report

## 1 Application details and outcome

### 1.1. Permit application details

<b>Permit number:</b>	CPS 9439/1
<b>Permit type:</b>	Purpose permit
<b>Applicant name:</b>	Coogee Chlor Alkali Pty Ltd
<b>Application received:</b>	24 September 2021
<b>Application area:</b>	2.09 hectares (ha) of native vegetation (revised)
<b>Purpose of clearing:</b>	Creation of laydown area and vehicle access
<b>Method of clearing:</b>	Mechanical
<b>Property:</b>	Lot 254 on Deposited Plan 416516 Lot 1 on Diagram 73196
<b>Location (LGA area/s):</b>	Shire of Harvey
<b>Localities (suburb/s):</b>	Wellesley

### 1.2. Description of clearing activities

The revised application is to clear 2.09 ha native vegetation contained within a single contiguous area. Approximately 50 percent of the application area is vegetated, with the remaining area previously cleared with only emergent small shrubs. Only approximately 0.9 ha of the proposed clearing is considered to contain good vegetation. The proposed clearing is required for the construction of the laydown area and vehicle access to support the operation, expansion and upgrade of the Coogee Chlor Alkali plant located immediately adjacent to the application area.

The application area has been reduced from 4.73 ha to 2.095 ha during assessment to minimise impacts of clearing.

### 1.3. Decision on application

<b>Decision:</b>	Granted
<b>Decision date:</b>	23 December 2021
<b>Decision area:</b>	2.09 ha 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 no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E.1), the findings of a biological survey (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments, information provided by the applicant,

and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer has considered the following as a result of the assessment:

- The proposed clearing will result in the loss of 0.9 ha of remnant native vegetation that is representative of the Banksia Dominated Woodlands of the Swan Coastal Plain of the IBRA Region (Banksia Woodlands), listed as a Priority 3 Priority Ecological Community (PEC) by the Department of Biodiversity, Conservation and Attractions (DBCA) and an Endangered Threatened Ecological Community (TEC) by the Commonwealth. The proposed clearing is on the edge an approximately 60 ha patch of Banksia Woodland, with a further 4,900 ha of Banksia Woodlands mapped in the local area. The removal of 0.9 ha is unlikely to be significant or result in long term adverse impacts on the conservation and biological values of the Banksia Woodlands TEC. The proposed clearing may reduce the quality of adjacent areas mapped as the Banksia Woodlands TEC due to the introduction and spread of weeds and dieback. Weed and dieback management measures and construction of a fence along the border between the application area and the Banksia Woodland will mitigate any further degradation to the adjacent Banksia Woodland TEC.
- The proposed clearing may result in the loss of 0.9 ha of Black cockatoo foraging habitat. The habitat removed, within the context of more than 60 ha of good quality habitat immediately adjacent to it and a further 4,900 ha of intact good quality foraging habitat nearby, the impact of clearing area is unlikely to be significant within the local context. Clearing of this relatively minimal area will not sever habitat connectivity.
- The proposed clearing will remove 54 *Acacia semitrullata* (Priority 4) individuals occurring within the application area. At least 77 *A. semitrullata* individuals have been identified outside of the application area and in the immediate vicinity, with an additional 77 known individuals within a five kilometre (km) radius from the application area. This indicates the species is widespread in the region. Removal of the 54 individuals is unlikely to result in a significant decline in the local and regional population of this flora taxon. To mitigate any further potential impacts on the remaining *A. semitrullata* individuals in the area, fencing during clearing to demarcate the clearing area is required.
- The application area is susceptible to land degradation due to wind erosion, nutrient export and sub-surface acidification. Noting the applicant's plan to resurface the area with compacted crushed lime and the extent of clearing that will not disturb the potentially subsurface acidic soils, the proposed clearing is unlikely to result in appreciable land or surface water degradation. Ensuring works commence within six weeks of clearing will reduce the risk 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 or have long-term adverse impacts on the environmental values mentioned above.

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

- Avoid, minimise and reduce the impacts and extent of clearing
- Implement weed and dieback measures to mitigate impacts to adjacent vegetation
- Clearly demarcate clearing areas with temporary fencing prior to clearing to avoid inadvertent impacts to any conservation significant flora taxa outside of the clearing area
- Undertake slow, progressive, one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity
- Stage clearing activity, resurface and compact the area, and construct associated drainage within six weeks of clearing to minimise wind erosion and nutrient export
- Construct and maintain permanent fence along the border between the clearing area and adjacent vegetation after clearing to prevent and minimise impact on adjacent native vegetation



## 1.5. Site map

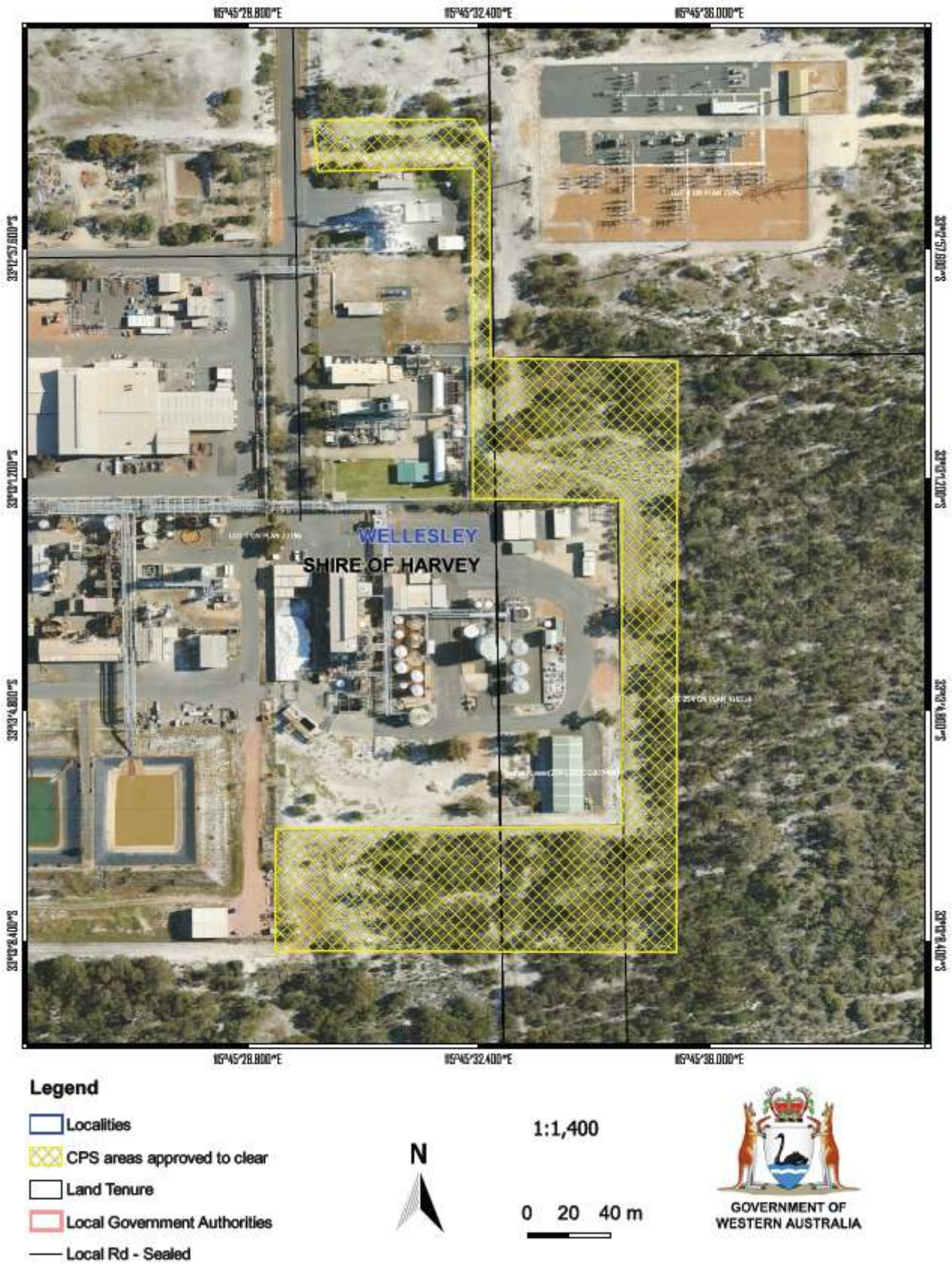


Figure 1. Map of the application area. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

## 2 Legislative context

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

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the 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)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)

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)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

## 3 Detailed assessment of application

### 3.1. Avoidance and mitigation measures

The original application was to clear an area of 4.7 ha. Following a reconnaissance biological survey (ELA 2021), approximately 2 ha of a contiguous native vegetation patch identified as Banksia Woodlands TEC in Good condition (Keighery, 1994) was omitted from the original proposed clearing area to minimise impacts on environmental values. The application area was reduced to 2.09 ha (Figure 2), consisting of predominantly cleared and disturbed areas (approximately 55 per cent), and patches of native vegetation on the edge of a larger remnant of Banksia Woodlands TEC (approximately 45%).

To mitigate the potential impacts of clearing on the remnant vegetation nearby, the applicant has expressed willingness to install a fence along the border between the clearing area and adjacent Banksia Woodlands. The applicant is also committed to resurface the cleared area with compacted crushed lime to prevent erosion and allow for permeability and stability (Coogee, 2021 d).

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.





Figure 2. The revised application area and the original application area

### 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) 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 B) identified that the impacts of the proposed clearing may present a risk to adjacent flora and vegetation, fauna, and land and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

### 3.2.1. Biological values – Biodiversity, flora and Banksia Woodlands PEC / TEC - Principles (a), (c) and (d)

#### Assessment:

#### **Banksia Woodlands TEC**

The application area is situated on the edge of a patch of remnant vegetation, totalling approximately 60 hectares in area. The large patch of vegetation is mapped as the Banksia Woodlands TEC. The Banksia Woodlands are protected for they are floristically diverse and provide a range of cross-scale ecological functions in the landscape (Threatened Species Scientific Committee – (TSSC), 2016).

In assessing the presence and potential impacts of clearing on the TEC, the key diagnostic characteristics and condition thresholds set out in the Banksia Woodlands Approved Conservation Advice (TSSC, 2016) are referred to. According to the advice, to be considered a Banksia Woodland TEC, a patch of vegetation should meet the key diagnostic characteristics and threshold conditions that include:

- located within the Swan Coastal Plain region
- typically occurs on well drained, low nutrient soils on sandplain
- having the following vegetation structure and composition
  - a distinctive upper sclerophyllous layer of low trees, typically dominated by the Banksia species including *Banksia attenuata*, *B. Menziesii*, *B. prionotes* or *B. ilicifolia*;
  - emergent trees of medium or tall Eucalyptus or Allocasuarina species, including *Corymbia calophylla*, *E. marginata*, *E. gomphocephala*
  - highly species-rich understorey consists of a layer of sclerophyllous shrubs and herbaceous ground layer
- for a patch larger than 2 hectares, the vegetation has to be at least in Good Condition.

A biological survey on the application area and immediate vicinity (see Figure 9) was conducted in August and September 2021 (ELA,2021). The survey's objective, among others, was to establish the vegetation type and conditions, and confirm the presence of any PEC/TEC. The survey found that 59.8% of the vegetation in the area was in Good condition (Keighery, 1994), whilst the remaining, mostly located along the edges of the remnants, was in Degraded condition. The survey identified one vegetation community that covered an area of 2.08 ha, or 63.8% of the survey area. The vegetation community consisted of *Eucalyptus marginata* mid open woodland over *Banksia attenuata*, *Banksia ilicifolia* low woodland, over *Kunzea glabrescens* tall sparse shrubland over *Xanthorrhoea brunonis*, *Bossiaea eriocarpa*, *Hibbertia hypericoides* mid open shrubland over *Dasypogon bromeliifolius*, *Hypolaena exsulca*, *Conostylis juncea* low sparse forblands (EmKgXb). This vegetation structure and composition resembles that of the Banksia Woodlands TEC. In addition, results from a multivariate analysis indicated a close affiliation between the identified vegetation community and the FCT 21c which represents the characteristics of the Banksia Woodlands ecological community, confirming the representativeness of this community as the Banksia Woodlands TEC. Given the above, it is inferred that the vegetation community within the survey area meets the diagnostic characteristics of the Banksia Woodlands TEC.

The average species richness (ASR) is often used as a surrogate for the floristic richness and diversity of an ecological community. Within the survey area which encompassed three quadrats of 10m x 10 m area each, ELA (2021) identified 62 flora species representing 28 families and 58 genera with an ASR per quadrat of 35.67 species. It is also noted that 10 of the 62 (16.2%) identified flora species are introduced species (weeds). As a comparison, a reference site of similar vegetation community (FCT 21) was reported to have had an ASR between 40 to 60 (TSSC, 2016). Therefore, although the majority of the vegetation community within the survey area is in Good condition, the ASR indicated that the site's species richness and diversity is lower than the reference site. This is likely due to its location near to the edge of the vegetation patch where disturbance is more prominent.

Having confirmed that the area contains Banksia Woodlands TEC, the applicant has decided to retain much of the vegetation in Good condition and reduce and limit the application area to the edges the Banksia Woodlands TEC. Of the reduced application area (2.09 ha), approximately 0.9 ha contains remnant vegetation in Good condition (see Figure 3), although it is further fragmented by tracks and previous disturbances into six (6) smaller patches measuring between 0.007 to 0.47 ha. Impacts of removal of these patches must be assessed within the context of the much broader Banksia Woodlands TEC in the local area. The 0.9 ha patch of TEC proposed to be cleared is connected to a larger patch of intact Banksia Woodlands TEC, measuring approximately 60 ha in area (Figure 4), which in turn relate to the more than 4,900 hectares of Banksia Woodlands TEC within the local area. Considering the relatively small size of remnant Banksia Woodland TEC to be cleared within the context of the much larger patch nearby and its location on the edge of a TEC where disturbance is evident, it is considered that the proposed clearing is unlikely



to have significant direct impacts on the biodiversity and conservation values of the Banksia Woodlands TEC within the local context. Being on the edge of a large patch of TEC, the proposed clearing will not fragment the adjoining Banksia Woodlands (see Figure 4).

Notwithstanding the above, clearing can have cumulative and indirect impacts on the nearby TEC due to the edge effects. Spatial and temporal edge effects may include physical disturbance of vegetation at edge due to intrusion, vandalism or trampling; and changes in vegetation due to changes in soil and hydrology, and introduction of pests, pathogens and weeds (E.J. Van Etten, 2014). Of these, weed and dieback infestations have the greatest potential to spread into the vegetation, particularly given the sandy nature of the soils where Banksia Woodlands commonly occur. Whilst the presence of weeds within a TEC is not uncommon (TSSS, 2016), the presence of weeds species including those listed as Declared Plants under the *BAM Act* within the application area and vicinity can exacerbate this risk unless stringent weed and dieback management measures are put in place. Impacts of access into the adjacent vegetation that could fragment the remnant and further disturb the TEC can be ameliorated by constructing a fence along the perimeter of the nearby TEC bordering with the clearing area (Figure 5).

### **Threatened and Priority Flora**

Nineteen records of conservation significant flora taxa have been known from the local area, five of which are Threatened. Whilst these records are mostly historical, the records, in addition to available information from previous surveys in the broader Kemerton area, have been used by Eco Logical Australia (2021) as the basis for the targeted flora survey of the application area and vicinity in August and September 2021 (see Appendix A.3).

No Threatened flora species listed under the EPBC Act or the BC Act were recorded within the survey area from the field survey.

One priority flora, *Acacia semitrullata* – listed as P4 by DBCA, was identified within the survey area at 26 locations, totalling 68 individuals. Twenty of the 26 locations are within the application area (Figure 3), containing a total of 54 individuals. An additional 63 individuals were recorded directly adjacent to the application area during the survey (ELA 2021) (See Figure 6). *A. semitrullata* has been previously recorded from two locations within the Kemerton Strategic Industrial Area and within 5 km of the application area (Coffey Environment 2008, Cardno 2010; DBCA 2021). In addition to the historical record, a more recent survey by ELA (2020) recorded the flora species at 27 locations, totalling 77 individuals, within the nearby Kemerton Strategic Industrial broader area (See Figure 7), many of which are located within protected DBCA managed lands. These findings suggest that *A. semitrullata* is widespread locally and regionally, with at least a total of 208 individuals known in the local area. It is likely that more individuals or populations are present in the broader area noting similarities in the mapped soil and vegetation types.

The 54 *A. semitrullata* individuals within the application area comprise approximately 26 percent of all individuals known locally. Considering the above, removal of this Priority 4 flora from the application area is unlikely to result in the significant decline of the species population within the local and regional contexts nor have a detrimental impact on its conservation status. Care, however, must be taken to ensure that no *A. semitrullata* or other priority flora is removed from outside of the application area. Demarcating the application area during clearing will prevent any inadvertent loss of priority flora from the adjacent vegetation.

### Conclusion:

For the reasons set out above, it is considered that the proposed clearing is unlikely to result in significant residual impacts on the biodiversity and conservation values of the nearby Banksia Woodlands TEC within the local context. The potential impacts of the proposed clearing on the adjacent Banksia Woodlands TEC can be ameliorated by constructing and maintaining a fence along the border between the TEC and the clearing area (Figure 5) in addition to applying weed and dieback management measures.

The proposed clearing will not impact on any Threatened flora taxa. The removal of the 54 *A. semitrullata* individuals from within the application area is unlikely to result in a significant decline of the *A. semitrullata* population in the local and regional contexts.

### Conditions:

To address the potential impacts, the following management measures will be required with the Permit:

- 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 into adjacent vegetation

- Construction and maintenance of fence along the border between the adjacent Banksia Woodlands TEC and application area (Figure 5) to limit the removal of *A. semitrullata* individuals to the application area and prevent inadvertent loss of any other individuals from the adjacent vegetation. Demarcation of the clearing area prior to clearing activities with temporary fencing is required



Figure 3. Vegetation type, condition, priority flora and potential habitat trees within the application area (ELA, 2021).





Figure 4. The application area within the context of the Banksia woodlands PEC/TEC in the local area.



Figure 5. The fence required to be constructed to minimise impacts on adjacent remnant of native vegetation



Figure 6. Locations of *Acacia semitrullata* within the survey area and immediately adjacent area (ELA 2021)

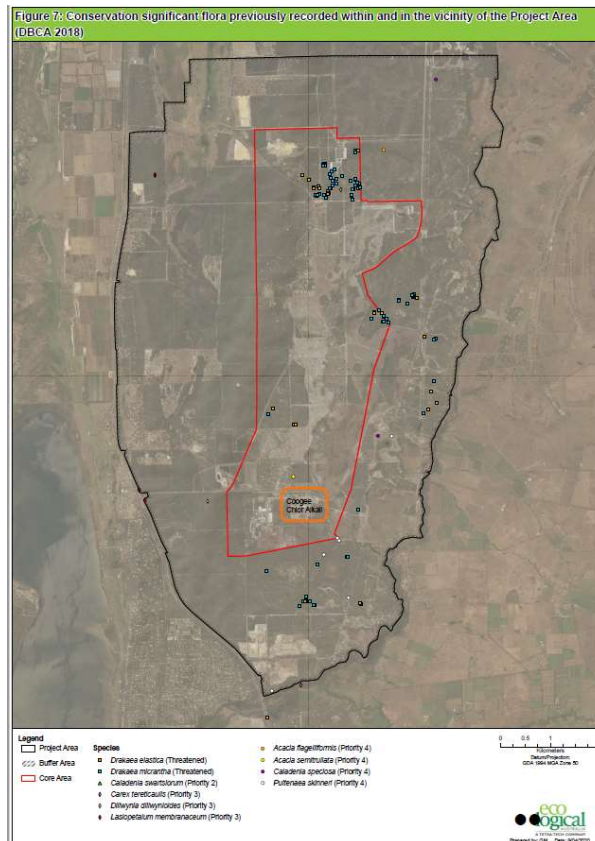


Figure 7. Priority flora taxa recorded from the Kemerton Area, including the application area (marked as Coogee Chlor Alkali). *A. semitrullata* has been recorded in the broader area (ELA, 2020)



### 3.2.2. Biological values – Fauna- Principle (b)

#### Assessment:

According to available databases, fifty conservation significant fauna species are recorded from within ten kilometres radius of the application area. These records include historical records of fauna species that were made more than forty years ago and that of marine and aquatic fauna species which are unlikely to inhabit the application area given the absence of suitable habitat. Many of the recorded species are migratory birds, which may be utilising or fly over the area from time to time, but prolonged inhabitancy of the area by these species is unlikely. Based on habitat availability, proximity of records and previous occurrence in the local area, further assessment has been made for the likely impacts of clearing on *Calyptorhynchus latirostris* (Carnaby's cockatoo) – EN, *Calyptorhynchus banksia naso* (Forest red-tailed Black cockatoo) - VU, *Calyptorhynchus baudinii* (Baudin's cockatoo) – EN, together referred to as Black cockatoos; *Pseudocheirus occidentalis* (Western Ringtail Possum – WRP) – CR, *Phascogale tapoatafa* subsp. *wambenger* (South-western Brush-tailed Phascogale) – SD, *Lerista lineata* (Perth Slider, Lined Skink) - P3 , *Isodon fusciventer* (Quenda, South-western Brown Bandicoot) - P4, *Falco peregrinus* (Peregrine falcon)-OS, and *Falsistrellus mackenziei* (Western false pipistrelle) – P4.

A fauna survey was performed by ELA (2021) in the application area and surrounds to identify any fauna species and habitat present, whilst also targeted for the Black cockatoo species and WRP.

The fauna survey encountered 19 fauna species in the survey area, 17 of them are birds, 1 native mammal and 1 introduced mammal (rabbit, *Oryctolagus cuniculus*). Apart from the Forest red-tailed black cockatoos seen foraging in the nearby vegetation at the time of survey, no priority fauna listed above were identified.

On the Swan Coastal Plain, the Priority 4 Quenda is often associated with wetlands and feeds in adjacent forest and woodland, which suggests that their presence around the application area is likely. Quenda, however, prefers shrub cover with high vegetation density and often avoid grasses (Watson, 2018). Given the partly Degraded condition of the vegetation in parts of the application area, particularly on the edge of the vegetation patch, and the availability of the vast and intact vegetation nearby, it is unlikely that the application area would comprise significant habitat for Quenda.

The presence of Perth lined skink in the application area and surround is possible. The Perth lined skink is known to inhabit landscaped gardens and may persist in degraded areas subsequent to development although they are also more sedentary than the larger reptiles (Maryan, B. et al., 2015). As such, the application area may provide habitat to this species prior to and after clearing. Given the extent of clearing area, the surrounding vegetation and the species' ability to thrive in degraded environments, the proposed clearing is unlikely to pose significant impacts on Perth lined skinks. Clearing, however, should be undertaken in a slow one directional manner to allow any individuals present to disperse into the adjacent remnant vegetation.

Brush-tailed phascogale inhabits dry sclerophyll forest and open woodlands with hollow bearing trees. The application area may contain habitat for Phascogale and dispersing individuals may utilise the application area for foraging. Given its location on the edge of a large vegetation patch and the presence of the vast and highly connected vegetation in at least Good condition nearby, the application area is not likely to comprise a significant habitat for Phascogale. The proposed clearing is unlikely impact on Phascogale.

As many as 139 records of WRP are known from the local area. The nearest is located approximately 2.3 km from the application area. The survey, however, did not indicate the presence of WRP nor any dreys or scats, the surrogate of their occurrence, in the application area and adjacent area. WRP is known to be able to persist in relatively disturbed areas. However, being so close to an active industrial precinct, the application area tends to be noisy that WRP may avoid it. The absence of the tree species preferred by WRP including *Agonis flexuosa* (Peppermint tree) or *Eucalyptus gomphocephala* (Tuart) from the application area may also explain their absence from the area. Whilst dispersing WRP may utilise the application area from time to time, given the above and the availability of vegetation patches immediately adjacent to it, prolonged inhabitancy by WRP of the application area is unlikely. Clearing is unlikely to have an impact on WRP and its available habitat within the local area.

Western false pipistrelle (*Falsistrellus mackenziei*) is known to inhabit wet sclerophyll forests of Karri, Jarrah and Tuart eucalypts. This fauna species roosts in hollows of old trees, branches and stumps. Only two records of this species are known from the local area, which were made in 2014 from within approximately 3.3 km of the application area. Whilst the application area exhibits the habitat characteristic of the Western false pipistrelle, given the absence of appropriate hollow bearing trees within the application area and the presence of a vast area of intact vegetation nearby, it is unlikely that the Pipistrelle would inhabit the application area.

Desktop assessment indicates that the Peregrine falcon (*Falco peregrinus*) has been known from the local area. At least three Peregrine falcons have been recorded, with the closest record located approximately within 3 km from the application area. The Peregrine falcon typically nests on rocky ledges in tall, vertical cliff faces and gorges, or in tall trees associated with drainage lines, and can hunt in a range of habitat types including timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings (DAWE, 2021). The application area and surrounds are likely to provide suitable foraging habitat for the Peregrine falcon. Given the relatively limited extent of clearing, the large movement range of the Peregrine falcon, and the availability of the large and intact tracks of vegetation within the Banksia Woodlands nearby, it is unlikely that the application area represents significant habitat for this fauna.

Of the vertebrate fauna species of conservation significance identified, the species most likely to occur over the application area are the Carnaby's cockatoo, Forest-tailed Black cockatoo and Baudin's cockatoo. The application area is mapped within the Distribution areas of all three Black cockatoo species. Numerous records of Black cockatoo are known from the local area, with the nearest record within 1.2 km from the application area. Forest Red-tailed Black cockatoos were seen in the vicinity at the time of the fauna survey (ELA 2021), although no other evidence of occurrence such as chewed eucalypts nuts, or nests present within the application area.

Black cockatoo habitat can be considered in terms of breeding habitat, night roosting habitat, and foraging habitat. Black cockatoos will generally forage up to 12 kilometres from an active breeding site (DSEWPaC 2012; DPaW 2013). Following breeding, they will flock in search of food, usually within six kilometres of a night roost (DSEWPaC 2012; DPaW 2013) but may range up to 20 kilometres (Commonwealth of Australia 2017). Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and surface water (Commonwealth of Australia 2017). Flocks will use different night roosts, often for weeks, or until the local food supply is exhausted. Flocks show some fidelity to night roosts with sites used in most years to access high-quality feeding sites. However, not all-night roosts are used in every year (DPaW 2013).

Food resources within the range of breeding sites and roost sites are important to sustain populations, and foraging resources are therefore viewed in the context of known breeding and night roosting sites, particularly within 12 kilometres of an impact area (Commonwealth of Australia 2017). Within the application area, three large *Eucalyptus marginata* with Diameter at Breast High (DBH) of more than 500mm occur (Figure 2), but no suitable hollow present. Within the local context, no breeding sites is recorded within 12 km of the application area. The nearest natural breeding site is located approximately 20km southwest and artificial breeding sites are located approximately 21 km northeast of the application area. Roosting sites, however, are recorded within 4 km from the application area (See Figure 8). As such, whilst it is unlikely that the application area would provide breeding or roosting habitat for Black cockatoos, foraging of Black cockatoos into the application area and vicinity is possible.

The Fauna survey has identified two fauna habitats present in the survey area, namely Jarrah/banksia woodland in Good condition and scattered *Eucalyptus spp.* at a low cover that would provide 'poor' quality foraging habitat for Black cockatoos. The proposed clearing potentially will remove approximately 0.9 ha of a mixed good and 'poor' quality foraging habitat. However, 60 ha of Banksia Woodlands in Good condition immediately surrounds the application area, and a further 4,900 ha are available within 10 km radius from the application area, much of which is within lands managed by DBCA. These woodlands will provide much better foraging habitat for Black cockatoo species. Considering the above, the foraging habitat being removed from within the application area in the context of the 60 ha of intact vegetation immediately east and south of the application area and the more than 4,900 ha within the local context is unlikely to be significant. The proposed clearing is not likely to cause a long-term adverse impact on the existence and maintenance of Black cockatoos and their habitat within the local context.

The application area and adjoining vegetation are parts of the South-West ecological linkages. The axes of these linkages are located approximately 3 km east and west of the application area. Given that the clearing will occur on the edge of a relatively small part of these linkages, without fragmenting the patch, the clearing is unlikely to sever any ecological linkage.

#### Conclusion:

Based on the above assessment, the proposed clearing will clear foraging habitat for Black cockatoos, Western false pipitrel, WRP, Quenda, Perth lined skink, and South-western brush-tailed phascogale. Given the limited extent of clearing, its location on the edge of a remnant vegetation, and the availability of vast, intact, and more suitable vegetation within the adjacent Banksia Woodlands, the application area is unlikely to comprise significant habitat for fauna within the local context. The proposed clearing is unlikely to result in a detrimental impact on the presence and maintenance of the fauna species. It is considered that the impacts of the proposed clearing on the fauna individuals can be managed through suitable conditions.

#### Condition:

To address the potential impact to any individuals presents at the time of clearing, staged and slow directional clearing to allow fauna to move into adjacent vegetation ahead of clearing activity will be required as a condition on the clearing permit.

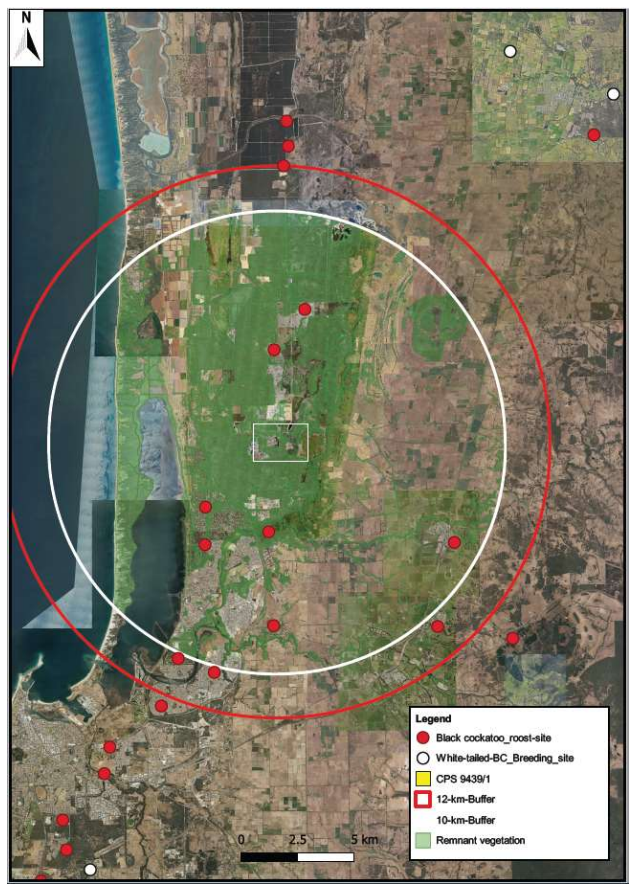


Figure 7. Known Black cockatoo breeding and roosting sites within the local area and remnant vegetation.

### 3.2.3. Land and water resources - Clearing Principles (f) and (g)

#### Assessment:

The soils within the application area and surrounds have been mapped as being highly prone to wind erosion, subsurface acidification, water repellence, and nutrient eutrophication. Since clearing activities will only affect the surface and will not reach the subsurface soils of 3 meters deep or more where acidification is likely to occur, the proposed clearing is unlikely to result in land degradation due to acid soils (DWER, Contamination Sites, 2021). In the absence of ground cover, soils can be easily eroded by wind. Given its tendency to repel water, surface water runoff in the event of high rainfall may exacerbate the risk of nutrient and sediment exports. Consequently, clearing of trees and excavation in this area may result in land degradation due to wind, water erosion and nutrient export, unless proper land management and erosion control measures are in place. Sealing of the cleared area and construction and maintenance of surface water drainage to avoid runoff of water and sediment into the surrounding environment may mitigate the potential impacts associated with wind erosion, surface runoff and nutrient export. It is noted that the applicant has committed to resurface the cleared area with compacted crushed lime that is permeable enough to minimise surface water runoff whilst providing stability to the surface that would prevent wind erosion (Coogee, 2021d).

#### Conclusion:

Based on the above assessment, it is considered unlikely for the proposed clearing to cause appreciable and long-term land degradation due to wind erosion, surface water runoff and nutrient export, provided suitable land management practices are applied.

#### Conditions:

To mitigate any potential impacts of clearing on the nearby land and water resources, the following conditions are required with the permit

- Commencement of resurfacing and stabilising of the cleared area and surface water drainage construction within six weeks of clearing

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

The proposed clearing area is located within the properties leased to Coogee Chlor Alkali Pty Ltd. Parts of the properties are within a prescribed premises for the operation of the chemical plant which is in need for an expansion and upgrade. Works Approval under Part V Division 3 of the EP Act for the expansion and upgrade of the plant is currently under assessment. Whilst the proposed clearing is required to create a laydown area and vehicle access for the expansion project, as well as the operations of the plant, the proposed clearing area is outside of the prescribed premises. The Delegated Officer has decided that the application for the purpose clearing permit is independent of the Works Approval process.

The proposed clearing will not interfere with riverbeds and banks nor ground water, therefore no permit or licence under the *Rights in Water and Irrigation Act 1914* will be required.

The Shire of Harvey (Shire) advised DWER that a Development Assessment Panel (DAP) application is under assessment in relation to the expansion of the plant (Shire of Harvey, 2021). The Shire have advised further that the proposal does not present any issues regarding height or visibility to the public and is in conformity with the objectives of the approved Kemerton Strategic Industrial Area Structure Plan. The Shire has recommended the proposal is approved by DAP, with a meeting scheduled for 05 January 2022 with no concerns raised by the Shire (Coogee, 2021e).

According to available databases, no Aboriginal sites of significance have been mapped within the application area. It is the responsibility of the applicant to comply with the *Aboriginal Heritage Act 1972* and ensure that no unauthorised impacts to Sites of Aboriginal Significance occur through the clearing process.

**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 DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix B.

Characteristic	Details
Local context	<p>The area proposed to be cleared is part of an expansive tract of native vegetation in the intensive land use zone of Western Australia. It is surrounded by tracks of remnant vegetation including Banksia Woodlands TEC/PEC, industrial premises and urban dwellings.</p> <p>Spatial data indicates the local area 10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 39 per cent of the original native vegetation cover.</p>
Ecological linkage	<p>The application area is situated on the edge of a large patch of remnant vegetation that is a part of a series of patches that provide corridors for fauna movement. The axis of the Southwest Ecological Linkages are approximately 2 km west and east of the application area. Removal of vegetation from the proposed clearing area is unlikely to sever any linkages.</p>
Conservation areas	<p>The application area is located approximately 150 metres north of a mapped Conservation Geo-morphological Wetlands, 600 metres west of a Bush Forever site, and 500 m north of a Forest Reserve.</p>
Vegetation description	<p>Within the application area and adjacent remnant vegetation, one vegetation community was delineated and identified during the flora and vegetation survey conducted in conjunction with this application (ELA 2021):</p> <ul style="list-style-type: none"> <li>EmKgXb: <i>Eucalyptus marginata</i> mid woodland over <i>Banksia attenuata</i>, <i>Banksia ilicifolia</i> low woodland over <i>Kunzea glabrescens</i> tall sparse shrubland over <i>Xanthorrhoea brunonis</i>, <i>Bossiaea eriocarpa</i>, <i>Hibbertia hypericoides</i> mid shrubland over <i>Dasypogon bromeliifolius</i>, <i>Hypolaena exsulca</i>, <i>Conostylis juncea</i> low sparse woodland.</li> </ul> <p>EmKGXb vegetation has a close affiliation with FCT 21c and to a lesser extent FCT21a. Both FCT 21c and FCT 21a are recognised as being part of the Banksia Woodlands TEC / PEC.</p> <p>Photographs and excerpt of the vegetation survey provided with the application are available in Appendix D.</p> <p>The survey's vegetation mapping is consistent with the mapped vegetation type of:</p> <ul style="list-style-type: none"> <li>Swan Coastal Plain – Bassendean Complex – Central and South (ID: 44), which is described as vegetation that ranges from woodland of <i>Eucalyptus marginata</i>, <i>Allocasuarina fraseriana</i>, <i>Banksia</i> species to low woodland of <i>Melaleuca</i> species and sedgelands on the moister sites. This area includes the transition of <i>Eucalyptus marginata</i>, <i>Banksia todiana</i> near in the vicinity of Perth. The southern transition of this Complex tends to comprise of woodland of <i>E. marginata</i> – <i>Corymbia calophylla</i> with well-defined second storey of <i>Allocasuarina fraseriana</i> and <i>Banksia grandis</i> on deeper soils and a closed scrub on moister sites (Hedde at al., 1980).</li> </ul> <p>The mapped vegetation type retains approximately 26.8 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>The survey indicated that the vegetation within the application area and adjacent patch of TEC/PEC are in Good to Degraded condition (Keighery, 1994). The rehabilitation area and tracks are in Degraded conditions (see Figure 3), whilst most patches of vegetation mapped as Banksia TEC/PEC is in Good condition.</p>

Characteristic	Details
	The full Keighery (1994) condition rating scale is provided in Appendix C. Representative photos and excerpt of and mapping are available in Appendix D.
Climate and landform	The area receives a mean annual rainfall of (987.8 mm). The land system of the application area is mapped as that of the Bassendean Dune Systems, which is characterised by low Banksia woodlands in the north and south, and low-lying areas, swamps, sumplands, creeks and rivers dominated by <i>Melaleuca preissiana</i> , <i>M raphiophylla</i> , <i>Banksia littoralis</i> , <i>Casuarina obesa</i> , <i>E. rudis</i> and sedges (DPRID 2018). The application area mostly lies on a flat landform (ELA, 2021).
Soil description	The soil unit is mapped as Bassendean B6 Phase - 212BS-B6, which is described as Sandplain and broad extremely low rises with imperfectly drained deep and very deep grey siliceous sands. The flora survey confirms that the soils in the application area comprise of grey deep sand (ELA, 2021).
Land degradation risk	Wind erosion – H2 Water erosion – L1 Water repellence – H2 Water logging – M2 Subsurface acidification – H2 Nutrient eutrophication – H2
Waterbodies	The application area is within 50 metres radius from a mapped Geomorphic wetland of the Swan Coastal Plain (UFI 1530). This wetland is categorised as a resource enhancement wetland, defined as a wetland which may have undergone some modification but still supports substantial ecological attributes and functions, and is categorised as a priority wetland. A Conservation wetland is located approximately 150 Southwest of the application area.
Hydrogeography	The application area is adjacent to the Swan Coastal Plain Geomorphic Wetlands of Resource Enhancement and Conservation. Groundwater salinity = 500 – 1000 mg/L (TDS)
Flora	Several conservation significant flora species have been recorded within 10 km radius from the application area, with a threatened flora species ( <i>Drakaea micrantha</i> ) recorded from approximately 1 km south east and 800 m south of the application area. A flora survey (ELA, 2021) found 62 flora species representing 28 families and 56 genera within the application area and its immediate adjacent remnant vegetation. This included 10 introduced weeds species, two of which are listed as Declared Plants under the BAM Act. None of the identified flora is Threatened. <i>Acacia semitrullata</i> (P4) was recorded within the application area and adjoining remnant vegetation (68 individuals). The survey effort was deemed suitable to identify conservation significant flora species that may be present within the application area.
Ecological communities	The application area intersects patches of mapped Banksia Dominated Woodlands of the Swan Coastal Plain (Banksia Woodlands), listed as Priority 3 by the DBCA and Endangered under the BC Act. Survey by ELA (2021) confirms that the application area exhibit the key characteristics of the Banksia Woodlands.
Fauna	Several records of fauna of conservation significance have been known from the local area. A fauna survey conducted in the area in 20219 (ELA 2020) have recorded 19 fauna species occurring within the survey area, including the Forest Red-tailed black cockatoo – VU. No Priority fauna listed by DBCA occurs. Spatial data indicates that no Black cockatoo breeding sites is present within 10 km radius, however 7 roosting sites have been recorded within the local area, with the closest one located approximately 4 km south and north of the application area. An active Black Cockatoo roosting site is within approximately 5.5 km from the application area.

## 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: Bassendean 1000	88,077.18	23,647.51	26.85	4,482.45	5.09
Hedde vegetation complex: Bassendean complex – central and south	87,476.26	23,508.66	26.87	1,881.84	2.15
Local area (calculation - delete if not required)					
10km radius	27,774.36	10,989.62	39.57	-	-

\*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 E.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)	Identified by the survey? [Y, N, N/A]
<i>Acacia flagelliformis</i>	P4	Y	Y	Y	7.15	2	N
<i>Acacia semitrullata</i>	P4	Y	Y	Y	5	211	Y
<i>Caladenia huegelii</i>	T	Y	Y	Y	5.75	1	N
<i>Caladenia speciosa</i>	P4	Y	Y	Y	9.21	3	N
<i>Carex tereticaulis</i>	P3	Y	Y	Y	3.27	1	N
<i>Drakaea elastica</i>	T	Y	Y	Y	6.69	1	N
<i>Drakaea micrantha</i>	T	Y	Y	Y	4.02	2	N
<i>Pultenaea skinneri</i>	P4	Y	Y	Y	3.45	4	N

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

#### A.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)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Botaurus poiciloptilus</i> (Australasian bittern)	EN	N	N	3.30	9	Y
<i>Calyptorhynchus banksii naso</i> (Forest red-tailed black cockatoo)	VU	Y	Y	1.23	9	Y
<i>Calyptorhynchus baudinii</i> (Baudin's cockatoo)	EN	Y	Y	3.00	3	Y
<i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo)	EN	Y	Y	1.58	37	Y
<i>Calyptorhynchus</i> sp. 'white-tailed black cockatoo' (White-tailed black cockatoo)	EN	Y	Y	3.30	14	Y
<i>Charadrius leschenaultii</i> (Greater sand plover, large sand plover)	VU	N	N	3.30	7	Y
<i>Falco peregrinus</i> (Peregrine falcon)	OS	Y	Y	2.28	3	Y
<i>Falsistrellus mackenziei</i> (Western false pipistrelle, western falsistrelle)	P4	Y	Y	3.26	2	Y
<i>Isoodon fusciventer</i> (Quenda, southwestern brown bandicoot)	P4	N	Y	1.19	29	Y
<i>Lerista lineata</i> (Perth slider, lined skink)	P3	Y	Y	6.52	5	Y
<i>Oxyura australis</i> (Blue-billed duck)	P4	N		3.02	21	Y
<i>Phascogale tapoatafa wambenger</i> (South-western brush-tailed phascogale, wambenger)	CD	Y	Y	1.12	25	Y
<i>Pseudocheirus occidentalis</i> (Western ringtail possum, ngwayir)	CR	Y	N	2.29	139	Y

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

#### A.5. Ecological community analysis table

The priority and threatened ecological communities mapped within 10 km radius of the application area are listed below).

Community name	Conservation Status (State)	Conservation Status (Commonwealth)	Total number of patches	Total area (ha)	Proximity – Closest record (km)	Likelihood of occurrence
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region	Priority 3	Endangered	391	4,917	0.00	Yes
Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. (1994))	Vulnerable	Critically Endangered	1	1	5.20	No
Shrublands and woodlands on Muchea Limestone of the Swan Coastal Plain	Endangered	Endangered	1	41	8.92	No
Subtropical and Temperate Coastal Saltmarsh	Priority 3	Vulnerable	3	290	4.19	No
Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the Swan Coastal Plain	Priority 3	Critically Endangered	93	1633	2.27	No



## Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> <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 is mapped as containing the Banksia Woodlands PEC which is synonymous with the Commonwealth listed TEC. This Woodland ecological community is protected for it may contain high level of biodiversity. The priority flora species <i>Acacia semitrullata</i> (Priority 4) has been identified from within the application area and surrounds.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<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>Several conservation significant fauna have been recorded within the local area. Black cockatoo roosting sites are within 4 km from the application area. Removal of native vegetation from the Banksia Woodlands may impact on available foraging habitat for Black cockatoo.</p>	May be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<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>No threatened flora species occurs within the application area. The flora survey (ELA, 2021) did not identify any Threatened flora. The proposed clearing area is not necessary for the continued existence of threatened flora.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<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 occurs within a mapped Banksia Woodland and contains species that resemble the Banksia Woodland TEC listed as ‘Endangered’ under the BC Act.</p>	May be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<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 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 a significant remnant.</p>	Not likely to be at variance	No
<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>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.		
<b>Environmental value: land and water resources</b>		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>The application area is located within 150 metres of a network of non-perennial Geomorphological wetlands. Clearing may indirectly impact the nearby wetlands, especially during the wetter seasons. However, considering native vegetation remains adjacent to the application area that would act as a buffer, it is unlikely that the proposed clearing would lead to appreciable impact on the wetlands.</p>	Not likely to be at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are highly susceptible to wind erosion, nutrient export, and subsurface acidification. Given the temporary nature of clearing, the end land use and that the proposed clearing will not disturb the soils beneath the surface beyond 3 metres deep, the proposed clearing is unlikely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.4, above.</i>
<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>The proposed clearing and associated activities will not intercept any water table or watercourses. It is unlikely to cause deterioration in the quality of surface or groundwater quality.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.4, above.</i>
<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>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p>	Not likely to be at variance	No

## 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 and photographs of the vegetation (ELA, 2021)

Eco Logical Australia (ELA) was commissioned by the applicant to undertake a targeted orchid survey in winter 2021, focussing on *Drakaea elastica* (EN under the EPBC Act 1999) and CR under EP Act and *Drakaea micrantha* (VU under the EPBC Act and EN under the EP Act); a single-phase spring Detailed and Targeted flora and vegetation survey, basic terrestrial fauna study, targeted Black cockatoo habitat assessment and targeted Western Ringtail Possum (WRP) assessment.

The targeted orchid survey was undertaken on 2 August 2021 and the Detailed and targeted flora and survey on 16 September 2021. ELA have previously undertaken flora and vegetation and fauna surveys in the broader Kemerton area (ELA 2020), which results related to the survey area are included in the report presented with this clearing permit application.

The total area of survey is 3.26 hectares, comprises of patches of Jarrah / Banksia woodlands (2.08 ha, 63.8%), rehabilitation areas (0.28 ha; 8.6%) and cleared areas for tracks etc (0.90 ha – 27.6%) (Figure 7).



Figure 9. Quadrat's locations and survey efforts (ELA, 2021)





Figure 10. Vegetation with ELA1 Quadrat



Figure 11. Vegetation in the ELA 2 Quadrat



Figure 12. Vegetation in the ELA 3 Quadrat



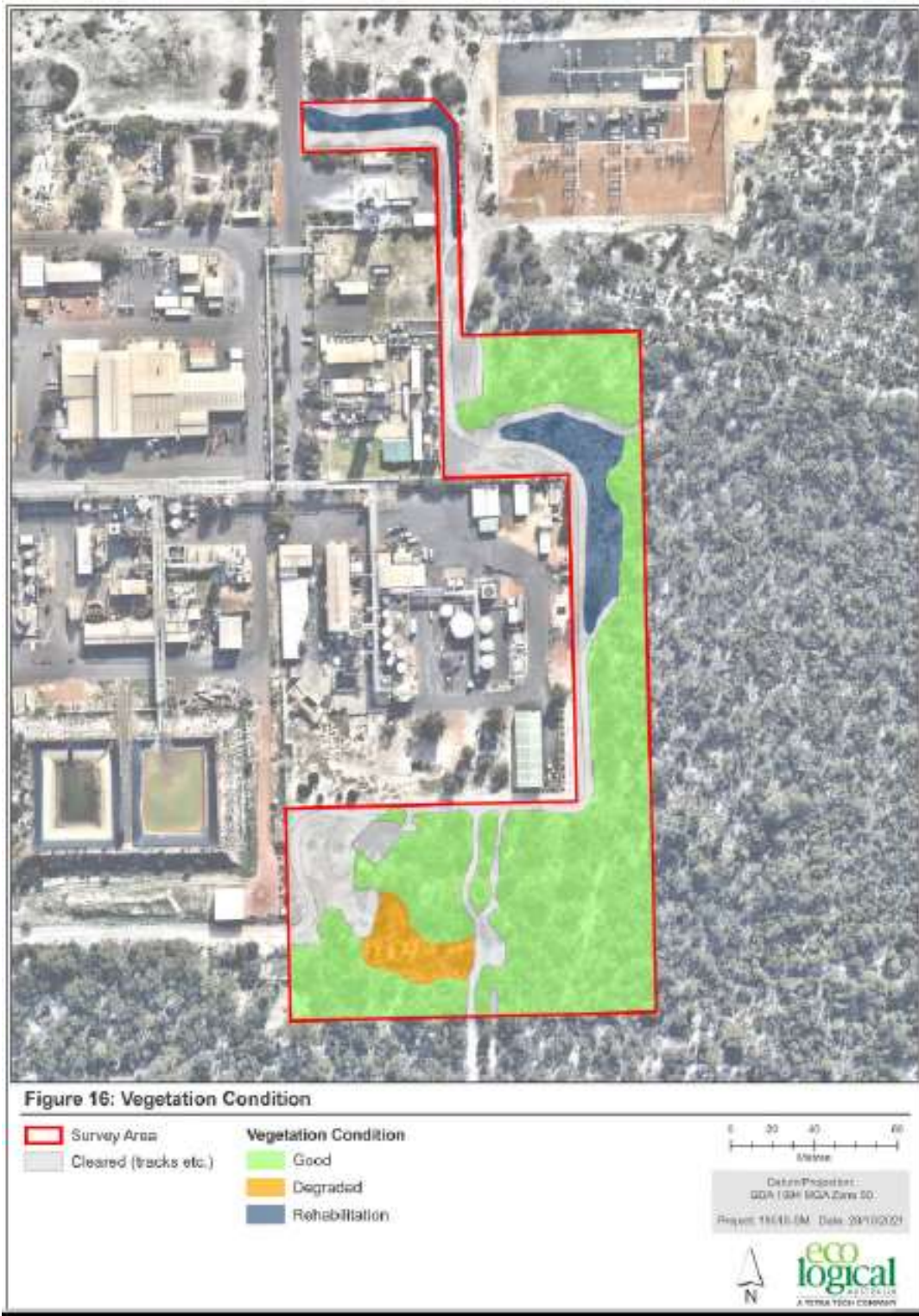
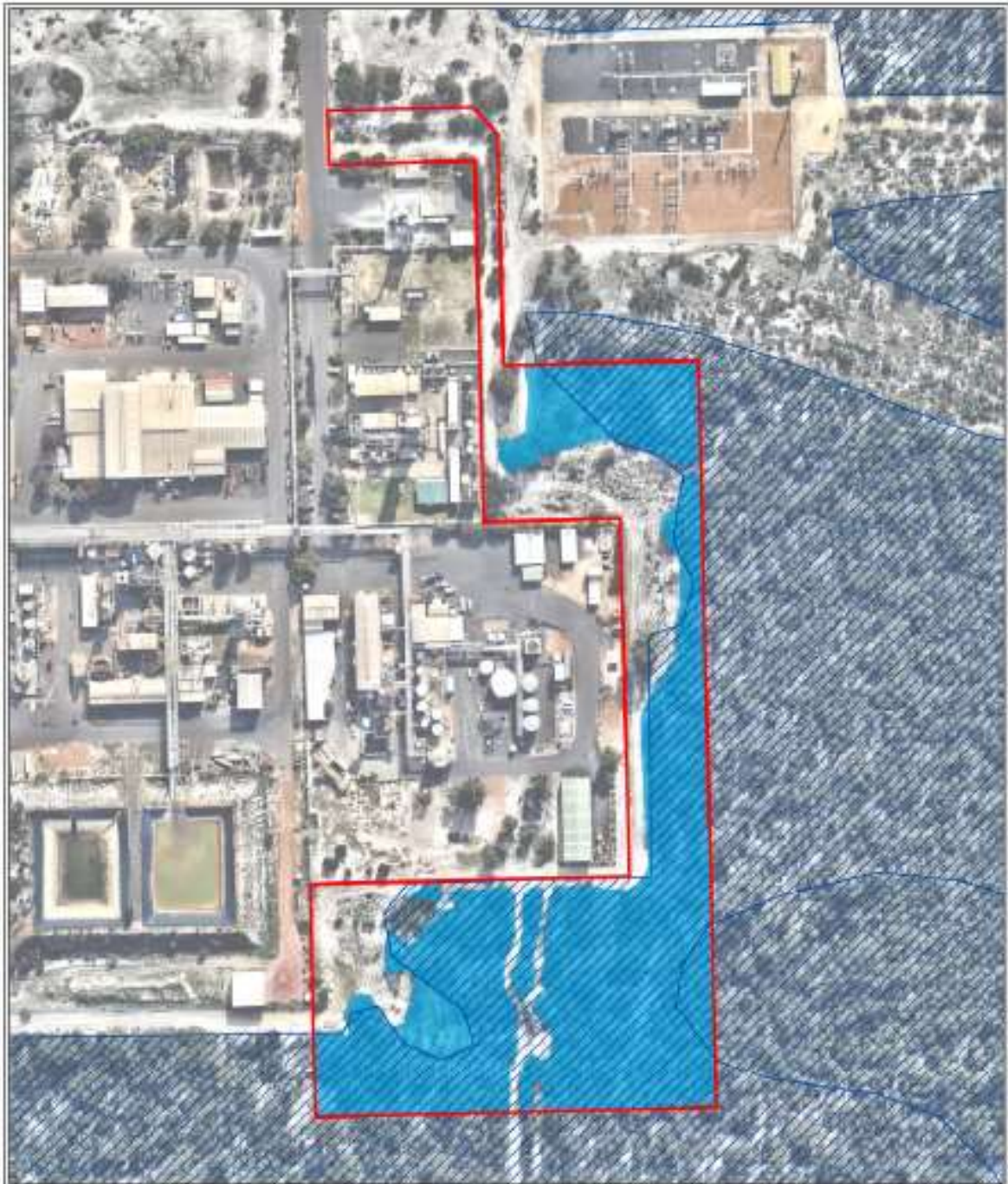


Figure 13. Conditions of the vegetation within the survey area (ELA, 2021)



**Figure 15: Conservation Significant Vegetation Communities**

- Survey Area
- Banksia Woodlands TEC
- Banksia Woodlands TEC (ELA 2020)



Deakin Project  
 GDA 1984 MGA Zone 50  
 Project 15516-04 (Date 28/10/2021)



Figure 14. The presence of Banksia Woodlands PEC / TEC within the survey area.



## Appendix E. Sources of information

### E.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- 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
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

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

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