



# Clearing Permit Decision Report

## 1. Application details and outcomes

### 1.1. Permit application details

Permit number:	6900/2
Permit type:	Purpose Permit
Applicant name:	Tuma Holdings Pty Ltd
Application received:	1 July 2019
Application area:	5 hectares
Purpose of clearing:	Sand extraction
Method of clearing:	Mechanical removal
Tenure:	Mining Lease 70/836 Mining Lease 70/1113
Location (LGA area/s):	Shire of Northam
Colloquial name:	Goods Road sand project

### 1.2. Description of clearing activities

Tuma Holdings Pty Ltd proposes to clear up to 5 hectares of native vegetation within a boundary of approximately 5.8 hectares, for the purpose of sand extraction. The project is located approximately 50 kilometres east of Perth, within the Shire of Northam.

The application is to allow for the continued mining of sand at the Goods Road sand project.

Clearing permit CPS 6900/1 was granted by the Department of Mines and Petroleum (now the Department of Mines, Industry Regulation and Safety) on 17 March 2017 and was valid from 22 April 2017 to 22 April 2027. The permit authorised the clearing of up to 5 hectares of native vegetation within a boundary of approximately 5.86 hectares, for the purpose of sand extraction.

On 1 July 2019, the Permit Holder applied to amend CPS 6900/1 to amend the permit boundary, and to amend the boundary of revegetation areas subject to conditions 8 and 9. The permit boundary for CPS 6900/1 lies directly south to the existing quarry. No clearing of vegetation has been undertaken for this clearing permit. The proposed amendment is to move the permit boundary from this area south of the quarry to the area east of the existing quarry face (see Figure 1 in section 1.5). The amendment application is also seeking to reduce the area required to be fenced and revegetated as required by conditions 8 and 9 of CPS 6900/1 (see Figure 2 in section 1.5).

### 1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	28 November 2023
Decision area:	5 hectares of native vegetation

### 1.4. Reasons for decision

This clearing permit application was made in accordance with section 51KA(1) of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Mines, Industry Regulation and Safety (DMIRS) on 1 July 2019. DMIRS advertised the application for a public comment for a period of 21 days. The amendment application was changed to include amendments to conditions 8 and 9 and included additional areas to the permit boundary and was advertised on 10 March 2023 for a second 21 day comment period. There was one submission received stating no objections to the proposed amendment.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix C), relevant datasets (Appendix H), supporting information provided by the applicant (Appendix A) including the results of a flora and vegetation survey (Appendix G), the clearing principles set out in Schedule 5 of the EP Act (Appendix D), proposed avoidance and minimisation measures (Section 3.1), relevant planning instruments and any other matters considered relevant to the assessment (Section 3.3). The Delegated Officer also took into consideration the amendment to the permit boundary is not likely to result in any change in environmental impacts above what is already approved under CPS 6900/1.

The assessment identified that the proposed clearing may result in:  
CPS 6900/2

- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values;
- the loss of native vegetation that is suitable foraging habitat for threatened black cockatoo species;
- potential impacts to water quality;
- potential land degradation in the form of wind erosion.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed amendment of the permit boundary is unlikely to lead to an unacceptable risk to environmental values. The Delegated Officer considered that given the lack of success for the offset planting it was not appropriate to reduce the area of the required offset. Given the extenuating circumstances due to flooding, the date by which the plantings need to be completed has been extended to allow the permit holder additional time to undertake further planting or identify more suitable areas for the offset.

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

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback;
- undertake slow, progressive one-directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- commence construction no later than three months after undertaking clearing to reduce the risk of erosion;
- undertake offsite planting of vegetation to mitigate the potential impacts from salinity in the catchment.

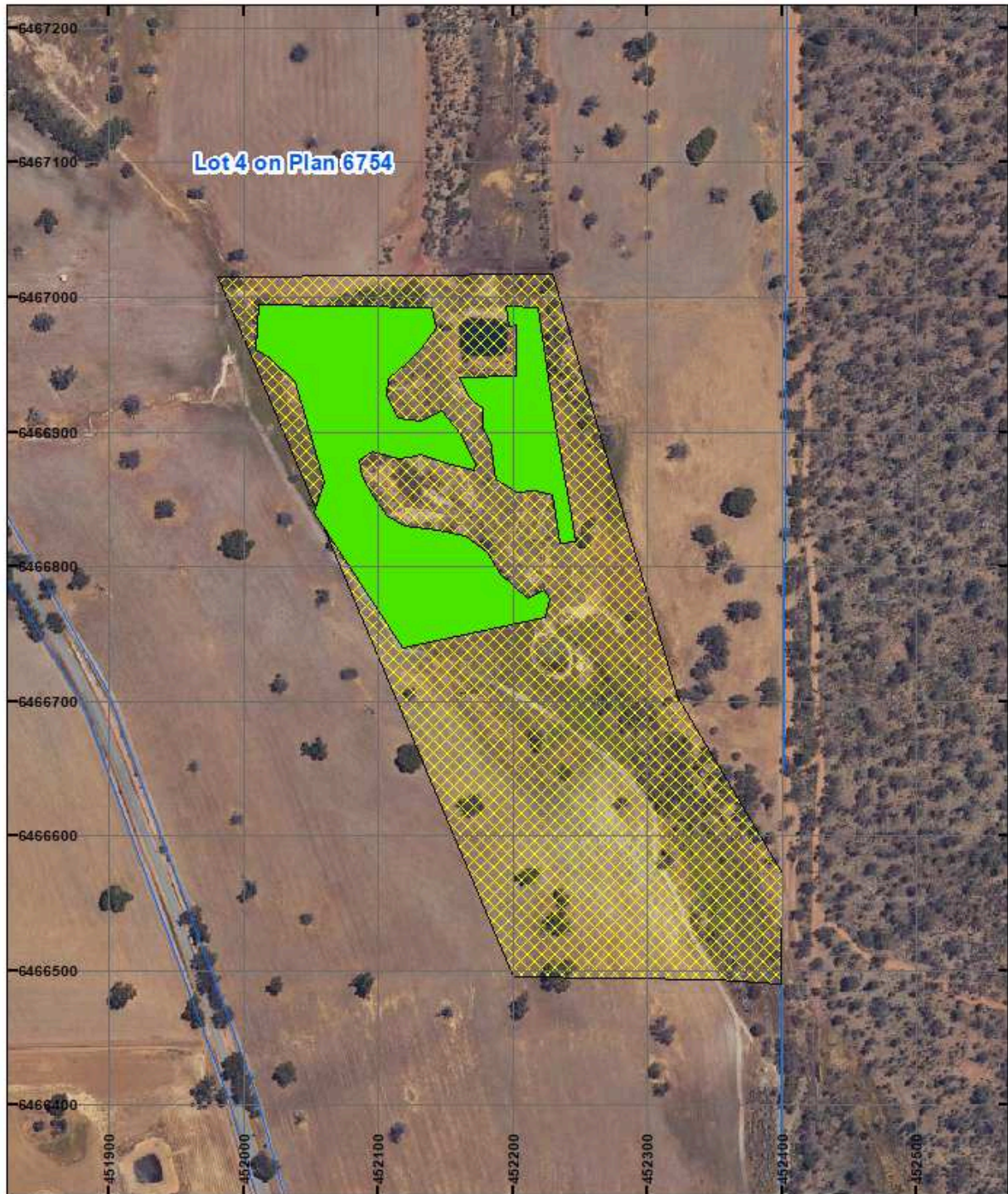
The assessment has not changed since the assessment for CPS 6900/1, except in the case of principle (b). The Delegated Officer determined that the proposed change to the permit boundary is not likely to lead to an unacceptable risk to environmental values however, the required offset should stay the same and not be reduced.

## **1.5. Site map**

A site map of proposed clearing is provided in Figure 1 below.



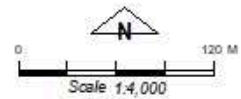
Figure 1. Map of the application area. The yellow area indicates the areas approved under CPS 6900/1 and the green areas are the new boundary applied for under CPS 6900/2.



**LEGEND**

- Cadastre
- Clearing Instruments**
- Areas subject to conditions 9 and 10
- Proposed amended area.

Orthophotography sourced from Landgate



Geocentric Datum Australia 1994

*Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.*

Information stored from this map should be confirmed with the data custodian acknowledged by the agency acronym in this legend.



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**Figure 2. Map of the application area. The yellow area indicates the areas approved under CPS 6900/1 and the green areas are the new boundary applied for under CPS 6900/2.**

## 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)
- *Mining Act 1978* (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 2014)
- *Procedure: Native vegetation clearing permits* (DWER, October 2021)
- *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, 2020)

## 3. Detailed assessment of application

### 3.1. Avoidance and mitigation measures

The applicant will undertake progressive rehabilitation of cleared areas at the quarry to limit the amount of area that remains uncleared at any one time. No clearing has been undertaken to date for this permit, so the proposed amendment will not have an increased impact above the current permit. The applicant has also previously undertaken revegetation of cleared farmland approximately 10 kilometres east of the permit area to mitigate the impacts of salinity in the catchment. Whilst not the primary purpose of the offset planting, it also contains species of plants which are suitable food sources for threatened black cockatoo species. The assessment of CPS 6900/1 did not consider the offset requirements for the loss of foraging habitat for black cockatoos. Whilst the revegetation planting was not originally intended to be an offset for impacts to black cockatoos, the application of the offsets metric was employed to demonstrate that the impact of the clearing of 5 hectares of black cockatoo foraging habitat is adequately mitigated by the current rehabilitation and offset planting (see Appendix F).

### 3.2. Assessment of impacts on environmental values

The assessment against the clearing principles identified that the impacts of the proposed clearing present a risk to biological values (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.

A review of current environmental information (Appendix C) reveals that the assessment against the clearing principles has changed from the Clearing Permit Decision Report CPS 6900/1. The amendment area contains foraging habitat for threatened black cockatoo species and based on current information in relation to threats to these species the clearing was considered to be at variance to principle (b) rather than not likely to be at variance. Overall the vegetation within the amended permit boundary has similar values to the original permit boundary and the proposed amendment will not have any additional impacts.

#### 3.2.1. Biological values - Clearing Principle (b)

##### Assessment

The habitat within the application area comprised of open Jarrah and Marri woodland (PGV Environmental, 2019). The application area is located within the Mundaring Weir Catchment Area which is part of an extensive tract of uncleared vegetation. Smith et al. (2007) confirm that virtually all the native forest within the catchment has been previously logged. There are several species of conservation significant fauna which have been identified as potentially occurring within the application area (PGV Environmental, 2019; GIS Database). The majority of these species are likely to utilise the area as a smaller part of a greater range. The expansion of the existing quarry is likely to have some impact on fauna habitat. For the majority of fauna species the impact is unlikely to be significant in a regional context, as the application area is relatively small and it is within a large expanse of similar native vegetation (GIS Database).

The application area occurs within the known ranges of three Threatened species of Black Cockatoo: Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) (Vulnerable); Carnaby's Cockatoo (*Zanda latirostris*) (Endangered); and Baudin's Cockatoo (*Zanda baudinii*) (Endangered) (DSEWPAC, 2012; GIS Database). There are three key components of Black Cockatoo habitat: foraging habitat; roosting habitat; and breeding habitat. There are records of roosting within 4.5 kilometres of CPS 6900/2

the permit boundary however, a survey of the mining tenement did not find any evidence of roosting (PGV Environmental, 2019; GIS Database).

Black Cockatoos nest in large hollows in mature eucalypt trees including Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*) (DSEWPAC, 2012). Research has indicated that it takes between 100 and 200 years for a tree to grow to a size where it could develop a hollow large enough to be suitable for breeding of Black Cockatoos (DEC, 2008; DPaW, 2013; DSEWPAC, 2012). The populations of all three Threatened species of Black Cockatoo are declining due to habitat destruction (DSEWPAC, 2012), and nest hollow shortage is considered a significant threat to breeding success and the long-term survival of Black Cockatoo populations (DEC, 2008, DPaW, 2013). Given the long history of timber harvesting throughout the northern jarrah forest, any mature trees containing hollows that may support Black Cockatoo breeding are considered significant, and clearing of these trees should be avoided.

There are no records of Black Cockatoo breeding within the local area (10 kilometre radius) however, they are known to breed within the Mundaring State Forest (GIS Database). For a breeding site to be viable, there must be sufficient foraging habitat available within 6 to 12 kilometres of a nesting site (DSEWPAC, 2012). Suitable Black Cockatoo foraging species occur within the application area and adjacent areas, and all three Black Cockatoo species may forage in the area (PGV Environmental, 2019). Foraging evidence of Forest Red-tailed Black Cockatoos (chewed Marri nuts) was recorded during the survey, and a flock of seven Forest Red-tailed Black Cockatoos were observed foraging in a Jarrah tree (PGV Environmental, 2019). A small flock of White-tailed Black Cockatoos were also observed flying over the eastern part of the tenement (PGV Environmental, 2019). Black Cockatoo breeding could occur within the application area if suitable nesting hollows were available.

PGV Environmental (2019) undertook a black cockatoo habitat assessment over mining leases 70/1113 and 70/1347 (an area of approximately 65.2 hectares). Habitat trees were defined as Jarrah and Marri trees with a diameter at breast height (DBH) of greater than 50 centimetres and Wandoo trees with a DBH of greater than 30 centimetres as these trees have a greater potential to have or develop hollows in the long term (PGV Environmental, 2019). The assessment recorded trees from five 50 by 50 metre sample sites considered to be representative of the main vegetation types (PGV Environmental, 2019). None of these plots were located within the permit area. Based on the numbers of trees recorded within the plots, the number of habitat trees was estimated for the entire tenement boundaries. PGV Environmental (2019) estimated that there are 21 potential habitat trees per hectare within the Jarrah/Marri woodland habitat which would equate to 122 trees estimated within the amendment area. DMIRS officers undertook a site inspection of the application area on 17 November 2021. During the inspection, the amendment area was traversed and potential habitat trees recorded. There were 31 potential habitat trees identified within the permit area suggesting that the density of amendment area is less than other areas on the tenements. Several trees had visual hollows however no evidence of breeding or Black Cockatoo utilisation was observed. DMIRS officers also used a drone to investigate any potential hollows within the amendment area. None of the hollows within the habitat trees would be suitable for Black Cockatoo breeding (see Appendix G).

Based on the current evidence, the application area is not likely to contain breeding habitat for Black Cockatoos. The area contains foraging habitat and the applicant has already commenced revegetation of cleared areas outside of the application to minimise the period of reduced food availability.

The Chuditch has not been recorded within the application area but is known to occur in the local area (GIS Database). They are a highly mobile species with a core home range (area contained by den locations) in Jarrah forest of around 90 hectares. Chuditch are known to den in hollow logs and can utilise up to 180 different den sites within their core range (Western Wildlife, 2021). There were no hollow logs observed by the assessing officer within the amendment area during the site inspection. The amendment area would only form a small part of their larger range and is not likely to represent significant habitat for Chuditch.

The Brush-tailed Phascogale have been previously recorded in the local area and have the potential to occur within the amendment area (GIS Database). They are known to utilise tree hollows and stumps as nest sites and individual phascogales may use up to 40 different sites within a year (Western Wildlife, 2021). The application area will only be utilised as a part of a much larger home range (20-40 hectares for females and 100 hectares for males) and is not likely to be significant for this species at a local or regional level given the expansive tract of vegetation within the State Forest.

### Conclusion

Based on the above assessment, the proposed clearing will result in the clearing of vegetation significant for conservation significant fauna species, namely Black Cockatoos. However, the current application already approves the same amount of clearing so the proposed amendment will not have any additional impact on these species. The Permit Holder has also previously undertaken offset plantings within the local area which will minimise the longer term impact of the proposed clearing on these species.

### Conditions

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

- Undertake slow, directional clearing to allow any fauna to disperse ahead of the clearing activity should they occur at the time of clearing.

## **3.2.2. Land and water resources - Clearing Principle (g)**

### Assessment

Based on soil landscape mapping over the amendment area, there is a risk of land degradation from the proposed clearing (DPIRD, 2023). The soils on Mining Lease 70/836 consist of quartz sands with small but variable amounts of duricrust (Landform Research, 1998). The sand is very porous, with no surface water runoff and low levels of water retention through summer (Landform Research, 1998). The high porosity of the sandy soils is likely to minimise the risk of water erosion, however, due to the sandy nature of the soils there is a potential for wind erosion to occur should native vegetation be removed.

Given the high porosity of the soils within the application area it is likely that a high proportion of rainfall that occurs on site will infiltrate to groundwater. Groundwater recharge and discharge influence the quality and flow of surface water that enters into the nearby Wariin Brook (situated approximately 210 metres north of the application) which is ultimately held by Mundaring Weir on the Helena River (Smith et al., 2007). The assessment of CPS 6900/1 identified that the proposed clearing had the potential to increase groundwater recharge which could increase the amount of brackish to saline groundwater discharge into Wariin Brook. Conditions were placed on the permit to establish a vegetation offset within the catchment to ensure that salinity levels within the catchment do not increase. There are also conditions placed on the mining tenements in accordance with the *Mining Act 1978* that require the rehabilitation of pit areas which will also help mitigate the impact of salinity from clearing.

The soils and land degradation risks within the amendment area are similar to the area assessed under CPS 6900/1. Therefore, the land degradation risks would not be expected to be greater than the original assessment and can be adequately managed by the conditions currently on the permit.

#### Conclusion

Based on the above assessment, the proposed clearing has the potential to cause land degradation in the form of wind erosion and increased salinity. However, the proposed amendment will not change the risk of land degradation from what was previously approved and managed by the current permit conditions.

#### Conditions

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

- A staged clearing condition to ensure that any areas cleared are mined and not left open to minimise wind erosion risk.
- The establishment of a revegetation offset within the catchment to help mitigate the impact of salinity from clearing.

### 3.2.3. Land and water resources - Clearing Principle (i)

#### Assessment

The application area is located within the Mundaring Weir Catchment Area. This catchment has been subject to *Country Areas Water Supply Act 1947* (CAWS Act) native vegetation clearing controls since December 1978. The application area is located in Zone A, a very high salinity risk part of the catchment (Department of Water, 2016a).

The Mundaring Weir is located approximately 17 kilometres south-west of the application area (GIS Database). The Mundaring Reservoir supplies the Goldfields and Agricultural areas. The reservoir has a desired potable saline limit of 500 milligrams per litre TDS (Total Dissolved Solids) (Smith et al., 2007), and this resource has always been sensitive to even small areas of clearing. The small residual clearings within the catchment total only 3% but remain a significant concern for the salinity of inflow to the reservoir (Smith et al., 2007).

The application area is located within the Helena River sub-catchment of the Mundaring Weir Catchment. This sub-catchment is known to contribute 63% of the reservoirs salt load and only 30% of the inflow. The salinity of water entering the Mundaring Reservoir from the Helena River sub-catchment alone has been measured at approximately 1,500 milligrams/litre TDS. The Mundaring Reservoir inflow salinity, with a mean of 510 milligrams/litre TDS, is above the desired potable limit (Smith et al., 2007).

A seepage area is located approximately 1.2 kilometres west of the application area and this area is situated immediately adjacent to a previously mined area on Mining Lease 70/233. Topographic contour information demonstrates that the seepage area is located down slope from the application area (GIS Database). This area is clearly evident in aerial imagery and located approximately 80 metres from Wariin Brook (GIS Database). The salinity of the water at the seep has been measured at 950 milligrams/litre TDS (MWES, 2009).

Tuma Holdings set up two groundwater monitoring bores in 2009 to measure the water level and salinity content of each bore. Both groundwater monitoring bores are located west and down gradient of the application area. Groundwater salinity from these bores was measured as 2,940 milligrams/Litre TDS and 3,480 milligrams/Litre TDS (Department of Water, 2016b). Another monitoring bore was set up approximately 200 metres east of the existing quarry and measured groundwater salinity of 2,280 milligrams/Litre TDS (Department of Water, 2016b).

Tuma Holdings interpretation of flow and salt movement in the area is that salt load to the groundwater of the paleochannel aquifer appears to occur from lateral inflow from the cleared farmland area to the south of the application area and not from quarry activities (Department of Water, 2016b). Whilst it is only based on one site, the Department of Water (2016b) agreed with the interpretation.

The Department of Water (2016a) identified that the application area is located in Zone A of the Mundaring Weir Catchment area and would normally oppose any proposed clearing because there would be an increased salinisation of water resources following the removal of native vegetation. Taking into account the history of Tuma Holdings mining on Mining Lease 70/836, the Department of Water (2016a) considered that any salinity impact from extending clearing onto Mining Lease 70/1113 could be mitigated by pit rehabilitation and the establishment of a vegetation offset of an equivalent area.

A vegetation offset condition was placed on CPS 6900/1 (referred to herein as the southern area). An offset of revegetation planting was also previously established for adjacent clearing permit CPS 4187/4 (referred to herein as the northern areas). The proposed offset planting for this permit expanded the planting area and incorporated the existing offset area for CPS 4187/4. A total of area 19.5 hectares was required to be planted to offset salinity impacts for both clearing permits. To date a total area of approximately 10.88 hectares has been planted with the required species. Planting of the northern areas was

undertaken in 2011 with additional planting undertaken in 2016. Planting of part of the southern area was undertaken in 2019 and 2020. Areas were planted at 1,000 stems per hectares to ensure that the 850 stems per hectare target listed on the condition would be achieved. Monitoring of the offset planting showed that the planted areas were on track to achieve the 850 stem/hectare target in the northern areas (Landform Research, 2016). The areas in the southern areas have not had as much success and most of the plantings failed in two successive years due to flooding (Tuma Holdings, 2022). Tuma Holdings (2022) also advised that the unplanted areas also have a higher level of salinity which would minimise the success of any plantings. DMIRS has inspected the offset planting on several occasions and confirm that the planting within the southern planting area have not achieved as higher success of survival as the northern planting areas and the area is more prone to waterlogging.

The proposed amendment of the permit boundary will not have an additional impacts on the catchment given the amount of clearing will remain the same. The amendment to reduce the size of the offset planting will reduce the mitigation of this offset. It is acknowledged that the revegetation area was attempted to planted on two separate occasions and was not successful in this location. However, the offset planting has not achieved the target planting rates or objective of reducing salinity in the catchment and the Department of Water and Environmental Regulation is not supportive of a reduction in the offset area at this time (DWER, 2023).

#### Conclusion

Based on the above assessment, the reduction in the proposed offsite is not considered appropriate based on rehabilitation success to date. However, it is acknowledged that there has been mitigating circumstances to achieving the offset targets and the required date to complete the offset has been extended to allow the permit holder additional time to explore other options including undertaking additional planting, investigating the use of alternative species which may have better chances of survival within the current area, and considering alternative offset sites.

#### Conditions

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

- The establishment of a revegetation offset within the catchment to help mitigate the impact of salinity from clearing.

The timeframe to complete the revegetation offset and associated fencing has been amended to 31 August 2025.

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

The permit area is within the South West Native Title Settlement area (DPLH, 2023). This settlement resolves Native Title rights and interests over an area of approximately 200,000 square kilometres within the south west of Western Australia. The mining tenure has been granted in accordance with the future act regime of the *Native Title Act 1993* and the nature of the act (i.e. the proposed clearing activity) has been provided for in that process, therefore the granting of a clearing permit is not a future act under the *Native Title Act 1993*.

There is one registered Aboriginal Cultural Heritage sites within the application area (DPLH, 2023). It is the proponent's responsibility to comply with the *Aboriginal Heritage Act 1972* and ensure that no Aboriginal Cultural Heritage sites are damaged through the clearing process.

Other relevant authorisations required for the proposed land use include:

- A Mining Proposal / Mine Closure Plan approved under the *Mining Act 1978*.

The application area is within an area mapped as a significant geological supply under State Planning Policy 2.4: Planning for Basic Raw Materials. Under this policy significant geological supply areas have been identified by DMIRS as having State significance due to the size of the resource, relative scarcity, demand and/or location near growth areas and transport routes (Western Australian Planning Commission, 2021).

It is noted that the proposed clearing may impact on Carnaby's Cockatoos, Baudin's Cockatoos and Forest Red-tailed Black Cockatoos which are a protected matter under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). The proponent may be required to refer the project to the (Federal) Department of Climate Change, Energy, the Environment and Water for environmental impact assessment under the EPBC Act. The proponent is advised to contact the Department of Climate Change, Energy, the Environment and Water for further information regarding notification and referral responsibilities under the EPBC Act.

It is the proponent's responsibility to liaise with the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions, to determine whether a Works Approval, Water Licence, Bed and Banks Permit, or any other licences or approvals are required for the proposed works.

**End**



## Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
The proposed permit boundary was amended to include as area which was previously covered by CPS 4187/4 which has now expired.	The application was advertised for an additional 21 days and the amended area considered as part of the assessment.
The permit holder also requested that the amendment application consider the reduction in the area required to undertake offset planting and fencing as currently required by the conditions of the permit. They also provided updated shapefiles of the offset planting area.	The application was advertised for an additional 21 days and the request considered as part of the assessment.

## Appendix B. Details of public submissions

Summary of comments	Consideration of comment
Submission received from the Shire of Northam saying that there were no objections to the proposed amendment.	Submission noted.

## Appendix C. Site characteristics

### C.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is part of an expansive tract of native vegetation in the intensive land use zone of Western Australia. It is adjacent to the existing quarry and surrounded by native forest.</p> <p>Aerial imagery indicates the local area (10 kilometre radius from the centre of the area proposed to be cleared) retains approximately 74.5 per cent of the original native vegetation cover (GIS Database).</p>
Ecological linkage	The application area does not form part of an ecological linkage (GIS Database).
Conservation areas	The application area is located within the Mundaring State Forrest (GIS Database)
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation association: 3003: Medium forest; jarrah &amp; marri on laterite with wandoo in valleys, sandy swamps with teatrees and Banksia.</p> <p>A flora and vegetation survey was conducted over the application area by PGV Environmental during September 2019. The following vegetation association was recorded within the application area (PGV Environmental, 2019):</p> <p><b>EmCc (1):</b> <i>Eucalyptus marginata</i> (Jarrah)/<i>Corymbia calophylla</i> (Marri) Woodland over <i>Hibbertia hypericoides</i>/<i>Hakea costata</i>/<i>Patersonia occidentalis</i>/<i>Lepidosperma leptostachyum</i>/<i>Lyginia barbata</i> Open Low Heath/Sedgeland.</p>
Vegetation condition	<p>The vegetation survey and DMIRS site inspection indicate the vegetation within the proposed clearing area is in excellent (Keighery, 1994) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix E. Representative photos are available in Appendix G.</p>
Climate and landform	The application area is relatively flat and is mapped within elevation of 250-255 metres AHD (GIS Database). The average annual rainfall (Bickley) is 1096.1 millimetres (BoM, 2023).
Soil description	The soil is mapped as soil landscape units 253WnPN and 253WnYA1 which are described as (DPIRD, 2023):

Characteristic	Details
	<ul style="list-style-type: none"> <li>- 253WnPN: hallow upper gently to sloping valleys. Alluvial red and yellow duplex and uniform fine soils which are often gravelly. Salinity prone especially in upper reaches. E. wandoo woodland with some E. rudis &amp; camaldulensis, Acacia and Titree</li> <li>- 253WnYA1: Well drained gently undulating lateritic uplands with moderately deep to deep fine gravelly brownish sands, pale brown sands and earthy sands</li> </ul>
Land degradation risk	Mapping of land qualities within the application area indicate that there is a high risk of land degradation, in particular subsurface acidification (see land degradation table).
Waterbodies	There are no watercourses or wetlands within the application area (GIS Database).
Hydrogeography	The application area is located within the Mundaring Weir Catchment Area Public Drinking Water Source Area (PDWSA) (GIS Database). The mapped groundwater salinity is 1,000-3,000 milligrams per litre total dissolved solids which is described as marginal (GIS Database).
Flora	There are no records of any Threatened or Priority flora within the amendment area (GIS). There are records of 16 species of conservation significant flora within 10 kilometres of the amendment area (GIS Database).
Ecological communities	There are no records of any Threatened or Priority Ecological Communities in the local area (GIS Database).
Fauna	There are records of 12 fauna species of conservation significance within the local area (GIS Database). Over 70% of the records were of black cockatoo species (GIS Database).

### C.2. Vegetation extent

	Pre-European area (ha)	Current extent (ha)	Extent Remaining %	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA Managed Lands
IBRA Bioregion - Jarrah Forest	4,506,660	2,399,838	~53	1,673,614	~37
IBRA Subregion - Northern Jarrah Forest	1,898,781	1,108,380	~58	769,587	~41
Local Government – - Shire of Northam	143,131	33,813	~24	8,622	~6
Beard vegetation associations - State					
3003	66,452	39,062	~59	18,083	~27
Beard vegetation associations - Bioregion					
3003	66,452	39,062	~59	18,083	~27
Beard vegetation associations - subregion					
3003	66,452	39,062	~59	18,083	~27

Government of Western Australia (2019)

### C.3. Flora analysis table

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

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia drummondii</i> subsp. <i>affinis</i>	Priority 3	Y	Y	Y	<7	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
<i>Acacia horridula</i>	Priority 3	Y	Y	Y	<10	Y
<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i>	Priority 3	Y	Y	Y	<10	Y
<i>Cyanicula ixioides</i> subsp. <i>candida</i>	Priority 2	Y	Y	Y	<1	Y
<i>Cyanicula ixioides</i> subsp. <i>ixioides</i>	Priority 4	Y	Y	Y	<8	Y
<i>Cyanothamnus tenuis</i>	Priority 4	N	Y	N	<9	Y
<i>Grevillea hislopii</i>	Priority 2	N	N	N	<5	Y
<i>Grevillea pimeleoides</i>	Priority 4	Y	Y	Y	<7	Y
<i>Meionectes tenuifolia</i>	Priority 3	N	N	N	<7	Y
<i>Stylidium asteroideum</i>	Priority 3	N	N	N	<7	Y
<i>Stylidium rubricalyx</i>	Priority 3	N	N	N	<8	Y
<i>Synaphea diabolica</i>	Priority 3	Y	Y	Y	<4	Y
<i>Synaphea rangiferops</i>	Priority 3	Y	Y	Y	<7	Y
<i>Thelymitra yorkensis</i>	Priority 3	Y	Y	Y	<10	Y
<i>Thysanotus cymosus</i>	Priority 3	Y	Y	Y	<4	Y
<i>Trithuria australis</i>	Priority 4	N	N	N	<7	Y

#### C.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
<i>Calyptrorhynchus banksii</i> naso (Forest Red-tailed Black Cockatoo)	VU	Y	Y	<8	Y
<i>Dasyurus geoffroyi</i> (Chuditch)	VU	Y	Y	<6	N
<i>Falco peregrinus</i> (Peregrine Falcon)	OS	Y	Y	<3	N
<i>Falsistrellus mackenziei</i> (Western False Pipistrelle)	Priority 4	Y	Y	<10	N
<i>Hydromys chrysogaster</i> (Water-rat)	Priority 4	N	N	<9	N
<i>Notamacropus irma</i> (Western Brush Wallaby)	Priority 4	Y	Y	<6	N
<i>Phascogale tapoatafa wambenger</i> (South-western Brush-tailed Phascogale)	CD	Y	Y	<5	N
<i>Synemon gratiosa</i> (Graceful Sunmoth)	Priority 4	N	N	<9	N
<i>Zanda baudinii</i> (Baudin's Cockatoo)	EN	Y	Y	<5	Y
<i>Zanda latirostris</i> (Carnaby's Cockatoo)	EN	Y	Y	<2	Y

#### C.5. Land degradation risk table

Risk categories	Land Unit 1
Wind erosion	66% of the map unit has a high to extreme hazard
Water erosion	26% of the map unit has a very high to extreme hazard
Salinity	10% of the map unit has a moderate to extreme risk
Subsurface Acidification	99% of the map unit has a high susceptibility
Flood risk	25% of the map unit has a moderate to high hazard
Water logging	32% of the map unit has a moderate to very high to risk
Phosphorus export risk	36% of the map unit has a high to extreme hazard

**Appendix D. 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>There are no known records of Threatened or Priority Ecological Communities, Threatened flora or Priority flora within the application area (PGV Environmental, 2019; GIS Database). The vegetation within the amendment area contains a similar level of biodiversity as the previous permit boundary.</p>	<p>Not likely to be at variance (as per CPS 6900/1)</p>	<p>No</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 area proposed to be cleared contains foraging habitat for Forest Red-tailed Black-Cockatoo, Carnaby’s Cockatoo and Baudin’s Black-Cockatoo. Other species of conservation significance may be present within the amendment area however, it would only form a small part of a larger range.</p>	<p>At variance (changed from CPS 6900/1)</p>	<p>Yes <i>Refer to Section 3.2.1, above.</i></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>According to available databases, there are no records of any Threatened flora species within the local area (10 kilometre radius) (GIS Database). No Threatened flora species have been recorded by flora surveys on Mining Lease 70/836 (Bioscience 2012, Landform Research, 1998; PGV Environmental, 2019).</p>	<p>Not likely to be at variance (as per CPS 6900/1)</p>	<p>No</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>There are no records of any Threatened Ecological Communities (TECs) within the application area (GIS Database). The flora survey over the application area did not identify any vegetation communities which area which are considered to be a TEC (PGV, Environmental, 2019).</p>	<p>Not likely to be at variance (as per CPS 6900/1)</p>	<p>No</p>
<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 the 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>The application area occurs within the Mundaring State Forest, a large expanse of native forest (GIS Database). Because of it’s size and lack of fragmentation, the Mundaring State forest represents an area of consolidated habitat (in combination with adjoining areas of Wandoo and Helena National Parks) is considered to be significant in a greater area that has been extensively cleared.</p>	<p>At variance (changed from CPS 6900/1)</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 application area is located within the Mundaring State Forest which is vested by the Conservation Commission for the purpose of State Forest (GIS Database). Wandoo National Park is located approximately 3 kilometres east of the application area (GIS Database), and Woottating Nature Reserve, Beechina Nature Reserve, Beechina North Nature Reserve and Inkpen Road Nature Reserve are located within 10 kilometres of the application area (GIS Database).</p>	<p>May be at variance (as per CPS 6900/1)</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>The application area is located directly adjacent to an existing sand mining operation. The Mundaring State Forest covers an area in excess of 50,000 hectares and the proposed clearing will not impact on any ecological linkages to any of the surrounding conservation areas (GIS Database).</p> <p>Phytophthora dieback is known within the Mundaring State Forest with areas of inferred infestation within 10 kilometres of the application area (GIS Database). A flora survey did not observe any indications of dieback in the area, however, the proposed clearing activities have the potential to introduce and spread dieback and weeds within the Mundaring State Forest (PGV Environmental, 2019).</p> <p><b>Conditions</b> Potential impacts from the spread of dieback and weeds may be minimised by the implementation of a dieback and weed management condition.</p>		
<b>Environmental value: land and water resources</b>		
<p><b>Principle (f):</b> <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><b>Assessment:</b> According to available databases, there are no mapped watercourses within the permit area (GIS Database). There is no vegetation within the permit area which has been identified as being riparian vegetation (PGV Environmental, 2019).</p>	Not at variance (changed from CPS 6900/1)	No
<p><b>Principle (g):</b> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><b>Assessment:</b> The mapped soils highly susceptible to wind erosion if vegetation is cleared.</p>	May be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><b>Principle (i):</b> <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><b>Assessment:</b> The amendment area is located within a high salinity risk part of the Mundaring Weir Catchment Area which is subject to <i>Country Areas Water Supply Act 1947</i> (CAWS Act) native vegetation clearing controls.</p>	At variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><b>Principle (j):</b> <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><b>Assessment:</b> There are no water courses or waterbodies within or in close proximity to the application area (GIS Database). The application area is on sandy soils (PGV Environmental, 2019), and water from rain events is likely to quickly infiltrate or runoff, with flooding considered unlikely.</p>	Not likely to be at variance (as per CPS 6900/1)	No

### Appendix E. Vegetation condition rating scale

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

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

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

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.

Condition	Description
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

## Appendix F. Offset metric calculation

Environmental value to be offset			
Calculation	Score (Area)		Rationale
<b>Conservation significance</b>			
Description	Carnaby's Cockatoo Foraging Habitat		The application area will clear 5 ha of significant foraging habitat for black cockatoos.
Type of environmental value	Species (flora/fauna)		All three species of threatened black cockatoo species (Carnaby's Cockatoo, Baudin's Cockatoo, Forest Red-tailed Black Cockatoo) have the potential utilise the application area as foraging habitat.
Conservation significance of environmental value	Rare/threatened species - endangered		Carnaby's Cockatoo and Baudin's Cockatoo are listed as Endangered and Forest Red-tailed Cockatoo is listed as Vulnerable.
Landscape-level value impacted	yes/no		No
<b>Significant impact</b>			
Description	Clearing of 5 ha of significant foraging habitat		
Significant impact (hectares) / Type of feature	5.00		
Quality (scale) / Number	8.00		The area of foraging habitat contains suitable species for black cockatoo feeding. Evidence of foraging has been observed in the local area.
<b>Rehabilitation credit</b>			
Description	Rehabilitation of cleared areas.		The cleared areas will be rehabilitated following mining.
Proposed rehabilitation (area in hectares)	5.00		
Current quality of rehabilitation site / Start number (of type of feature)	0.00		The entire area will be cleared and cleared areas will have no value following mining.
Future quality WITHOUT rehabilitation (scale) / Future number WITHOUT rehabilitation	1.00		It is assumed that there will be some natural recruitment of native vegetation without any revegetation being undertaken.
Future quality WITH rehabilitation (scale) / Future number WITH rehabilitation	5.00		It is expected that the revegetation would achieve this quality as a minimum.
Time until ecological benefit (years)	20.00		Taking into account the time for mining to occur, it is expected that the foraging values of revegetation would be present after 20 years.
Confidence in rehabilitation result (%)	0.9		Rehabilitation has been successfully undertaken at the site.
<b>Offset</b>			
Description	Revegetation of a previously cleared area.		
Proposed offset (area in hectares)	10.88		This value represents more than 100% of the significant residual impact.
Current quality of offset site / Start number (of type of feature)	0.00		The entire area was cleared for farming and have no foraging value.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	0.00		It is assumed that the area would continue to be utilised for farming without the revegetation undertaken.
Future quality WITH offset (scale) / Future number WITH offset	5.00		It is expected that the revegetation would achieve this quality as a minimum.
Time until ecological benefit (years)	10.00		Given the current growth of vegetation, it is expected that the foraging values of revegetation would be present after 10 years.
Confidence in offset result (%)	0.8		Rehabilitation to date has demonstrated that is tracking towards targets.
Duration of offset implementation (maximum 20 years)	20.00		The planted vegetation is proposed to remain in perpetuity so 20 years has been selected.
Time until offset site secured (years)	0.00		The areas have already been planted.
Risk of future loss WITHOUT offset (%)	30.0%		Given the land is zoned as rural, there is a higher potential of the area being cleared than areas in conservation estate.
Risk of future loss WITH offset (%)	30.0%		Given the land is zoned as rural, there is a higher potential of the area being cleared than areas in conservation estate.
Offset ratio (Conservation area only)	N/A		

**Appendix G. Photographs of tree hollows within the amendment area**



Plate 1: Example of hollows within the proposed amendment area.



Plate 2: Example of hollows within the proposed amendment area.



Plate 3: Example of hollows within the proposed amendment area.



Plate 4: Example of hollows within the proposed amendment area.





Plate 5: Example of hollows within the proposed amendment area.



Plate 6: Example of hollows within the proposed amendment area.



Plate 7: Example of hollows within the proposed amendment area.

## Appendix H. Sources of information

### H.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)
- Bush Forever (Regional Scheme) (DPLH-022)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- Clearing Regulations – Schedule One Areas (DWER-057)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- 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 (DPIRD-027)

- Soil Landscape Mapping – Rangelands (DPIRD-064)
- WA Now Aerial Imagery

Restricted GIS Databases used:

- Black Cockatoo WTBC Breeding
- Black Cockatoo FRTBC Breeding
- Black Cockatoo BC Roosts
- Black Cockatoo BC Feeding SCP
- Black Cockatoo Feeding JF
- Black Cockatoo Feeding Areas Buffered
- Black Cockatoo Baudins Distribution
- Black Cockatoo Forest Red Tail Distribution
- Black Cockatoo Carnabys Distribution
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

## H.2. References

- Bioscience (2012) ML70/836 & ML70/1113 Vegetation, Flora and Fauna Report & Dieback and Cockatoo Report. Report prepared for Action Sand Supplies, by Bioscience, November 2012.
- Bureau of Meteorology (BoM) (2023) Bureau of Meteorology Website – Climate Data Online, Bickley. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (28 July 2023).
- Department of Environment and Conservation (DEC) (2008) Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-Tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan. Department of Environment and Conservation, Perth, Western Australia.
- Department of Environment Regulation (DER) (2014) *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: [https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2\\_assessment\\_native\\_veg.pdf](https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf)
- Department of Parks and Wildlife (DPAW) (2013) Carnaby's cockatoo (*Calyptorhynchus latirostris*) Recovery Plan. Western Australian Wildlife Management Program No. 52. Department of Parks and Wildlife, Perth, Western Australia, October 2013.
- Department of Planning, Lands and Heritage (DPLH) (2023) Aboriginal Heritage Inquiry System. Department of Planning, Lands and Heritage. <https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS> (Accessed 28 July 2023).
- Department of Primary Industries and Regional Development (DPIRD) (2023) NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Government of Western Australia. URL: <https://maps.agric.wa.gov.au/nrm-info/> (Accessed 5 April 2023).
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012) EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (Endangered) *Calyptorhynchus latirostris*, Baudin's cockatoo (Vulnerable) *Calyptorhynchus baudinii*, Forest red-tailed black cockatoo (Vulnerable) *Calyptorhynchus banksii naso*. Department of Sustainability, Environment, Water, Population and Communities (now the Department of Agriculture, Water and Environment), Canberra.
- Department of Water (2016a) Advice received in relation to Clearing Permit Application CPS 6900/1, Department of Water, Western Australia, March 2016.
- Department of Water (2016b) Advice received in relation to Mining Lease Application M 70/1113, Department of Water, Western Australia, March 2016.
- Department of Water and Environmental Regulation (DWER) (2021) Procedure: Native vegetation clearing permits. Joondalup. Available from: [https://dwer.wa.gov.au/sites/default/files/Procedure\\_Native\\_vegetation\\_clearing\\_permits\\_v1.pdf](https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.pdf)
- Department of Water and Environmental Regulation (DWER) (2023) Advice received in relation to Clearing Permit Application CPS 6900/2. Department of Water and Environmental Regulation, Western Australia, November 2023.
- Environmental Protection Authority (EPA) (2016) Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment. Available from: [http://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey\\_Dec13.pdf](http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf)
- Environmental Protection Authority (EPA) (2016) Technical Guidance – Terrestrial Fauna Surveys. Available from: [https://www.epa.wa.gov.au/sites/default/files/Policies\\_and\\_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf](https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf)
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Landform Research (1998) Vegetation Study and Rehabilitation Plan, ML 70/836, The Lakes. Report prepared for Action Sand Supplies, by Landform Research, 21 July 1998.

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PGV Environmental (2019) M 70/1347 and M 70/1113, Goods Road and Cobb Road, Woottating, Flora, Vegetation and Black Cockatoo Habitat Assessment. Prepared for Tuma Holdings, by PGV Environmental, 9 October 2019.

Smith, R. A., Bari, M. A., Dixon, R. N. M. & Rowlands, D. W. (2007) Helena River Salinity Situation Statement, Western Australia Department of Water, Water Resource Technical Series, no WRT 34, 190p.

Tuma Holdings (2022) Additional information provided for clearing permit amendment 6900/2, 15 August 2022.

Western Australian Planning Commission (2021) State Planning Policy 2.4, Planning for Basic Raw Materials. Prepared by the Department of Planning, Lands and Heritage on behalf of the Western Australian Planning Commission, July 2021.

Western Wildlife (2021) Pickering Brook Quarry, Kings Mill Road: Basic Vertebrate Fauna Survey and Targeted Black-cockatoo Habitat Survey 2021. Prepared for B & J Catalano, by Western Wildlife, September 2021.

## 4. Glossary

### Acronyms:

<b>BC Act</b>	<i>Biodiversity Conservation Act 2016</i> , Western Australia
<b>BoM</b>	Bureau of Meteorology, Australian Government
<b>DAA</b>	Department of Aboriginal Affairs, Western Australia (now DPLH)
<b>DAFWA</b>	Department of Agriculture and Food, Western Australia (now DPIRD)
<b>DCCEEW</b>	Department of Climate Change, Energy, the Environment and Water, Australian Government
<b>DBCA</b>	Department of Biodiversity, Conservation and Attractions, Western Australia
<b>DER</b>	Department of Environment Regulation, Western Australia (now DWER)
<b>DMIRS</b>	Department of Mines, Industry Regulation and Safety, Western Australia
<b>DMP</b>	Department of Mines and Petroleum, Western Australia (now DMIRS)
<b>DoEE</b>	Department of the Environment and Energy (now DCCEEW)
<b>DoW</b>	Department of Water, Western Australia (now DWER)
<b>DPaW</b>	Department of Parks and Wildlife, Western Australia (now DBCA)
<b>DPIRD</b>	Department of Primary Industries and Regional Development, Western Australia
<b>DPLH</b>	Department of Planning, Lands and Heritage, Western Australia
<b>DRF</b>	Declared Rare Flora (now known as Threatened Flora)
<b>DWER</b>	Department of Water and Environmental Regulation, Western Australia
<b>EP Act</b>	<i>Environmental Protection Act 1986</i> , Western Australia
<b>EPA</b>	Environmental Protection Authority, Western Australia
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Federal Act)
<b>GIS</b>	Geographical Information System
<b>ha</b>	Hectare (10,000 square metres)
<b>IBRA</b>	Interim Biogeographic Regionalisation for Australia
<b>IUCN</b>	International Union for the Conservation of Nature and Natural Resources – commonly known as the World Conservation Union
<b>PEC</b>	Priority Ecological Community, Western Australia
<b>RIWI Act</b>	<i>Rights in Water and Irrigation Act 1914</i> , Western Australia
<b>TEC</b>	Threatened Ecological Community

### Definitions:

{**DBCA (2019) Conservation Codes for Western Australian Flora and Fauna. Department of Biodiversity, Conservation and Attractions, Western Australia**}:-

#### **T**                    **Threatened species:**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

**Threatened fauna** is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

**Threatened flora** is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

#### **CR**                    **Critically endangered species**

Threatened species considered to be “*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

**EN Endangered species**

Threatened species considered to be “*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

**VU Vulnerable species**

Threatened species considered to be “*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*”.

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

**Extinct Species:**

**EX Extinct species**

Species where “*there is no reasonable doubt that the last member of the species has died*”, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

**EW Extinct in the wild species**

Species that “*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*”, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

**Specially protected species:**

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

**MI Migratory species**

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

**CD Species of special conservation interest (conservation dependent fauna)**

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

**OS**

**Other specially protected species**

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

**P**

**Priority species:**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

**P1**

**Priority One - Poorly-known species**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

**P2**

**Priority Two - Poorly-known species**

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

**P3**

**Priority Three - Poorly-known species**

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

**P4**

**Priority Four - Rare, Near Threatened and other species in need of monitoring**

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

**Principles for clearing native vegetation:**

- (a) Native vegetation should not be cleared if it comprises a high level of biological diversity.
- (b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.
- (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.
- (d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.
- (e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

- (f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.
- (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.
- (h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.
- (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.
- (j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.