



Clearing Permit Decision Report

1. Application details and outcomes

1.1. Permit application details

Permit number:	9286/2
Permit type:	Purpose Permit
Applicant name:	Urban Resources Ltd
Application received:	29 November 2022
Application area:	30.78 hectares
Purpose of clearing:	Sand Extraction
Method of clearing:	Mechanical Removal
Tenure:	Mining Lease 70/1262
Location (LGA area/s):	City of Rockingham
Colloquial name:	Karnup Sand Project

1.2. Description of clearing activities

Urban Resources Ltd proposes to clear up to 30.78 hectares of native vegetation within a boundary of approximately 30.78 hectares, for the purpose of mining sand. The project is located adjacent to Stakehill Road, approximately 48 kilometres south of Perth, within the City of Rockingham.

The application is to allow for sand extraction for use predominately in the construction industry (Strategen-JBS&G, 2021).

1.3. Decision on application and key considerations

Decision:	Grant
Decision date:	20 December 2022
Decision area:	30.78 hectares of native vegetation

1.4. Reasons for decision

On 2 June 2022, clearing permit CPS 9286/1 was granted to clear up to 30.83 hectares of native vegetation for the purpose of sand extraction.

There was one appeal lodged against the grant of the permit (Appeal Number: 21 of 2022). The appeal focused on a 6.5 hectare area of remnant vegetation, contending that it has significant environmental values and should be avoided rather than offset. The appellant also believed that the clearing of this remnant is inconsistent with land use planning for the region. The appellant sought for the area of remnant vegetation to be retained.

This clearing permit amendment gives effect to the determination of the Minister for Environment (Minister) that the decision to grant the permit was justified, but allow the appeal to the extent that the offset requirements on the permit be amended to ensure that the identified significant residual impacts of the clearing are appropriately counterbalanced, consistent with the WA offsets framework (Minister for Environment; Climate Action, 2022).

The permit is also being amended to correct an administrative error in the amount of clearing authorised to clear. During the course of the assessment of CPS 9286/1, the permit application was amended to be clearing 30.78 hectares of native vegetation within a permit boundary of 30.78 hectares. However, the original area applied to clear of 30.83 hectares was incorrectly stated on the permit.

Given the above, the Delegated Officer decided to grant a clearing permit to reflect the Minister's determination and correct the error on the permit. The assessment has not changed from the determination of Clearing Permit CPS 9286/1.

1.5. Site map

A site map of proposed clearing is provided in Figures 1 and 2 below.



Figure 1. Map of the application area. The yellow area indicates the area within which conditional authorised clearing can occur under the granted clearing permit.

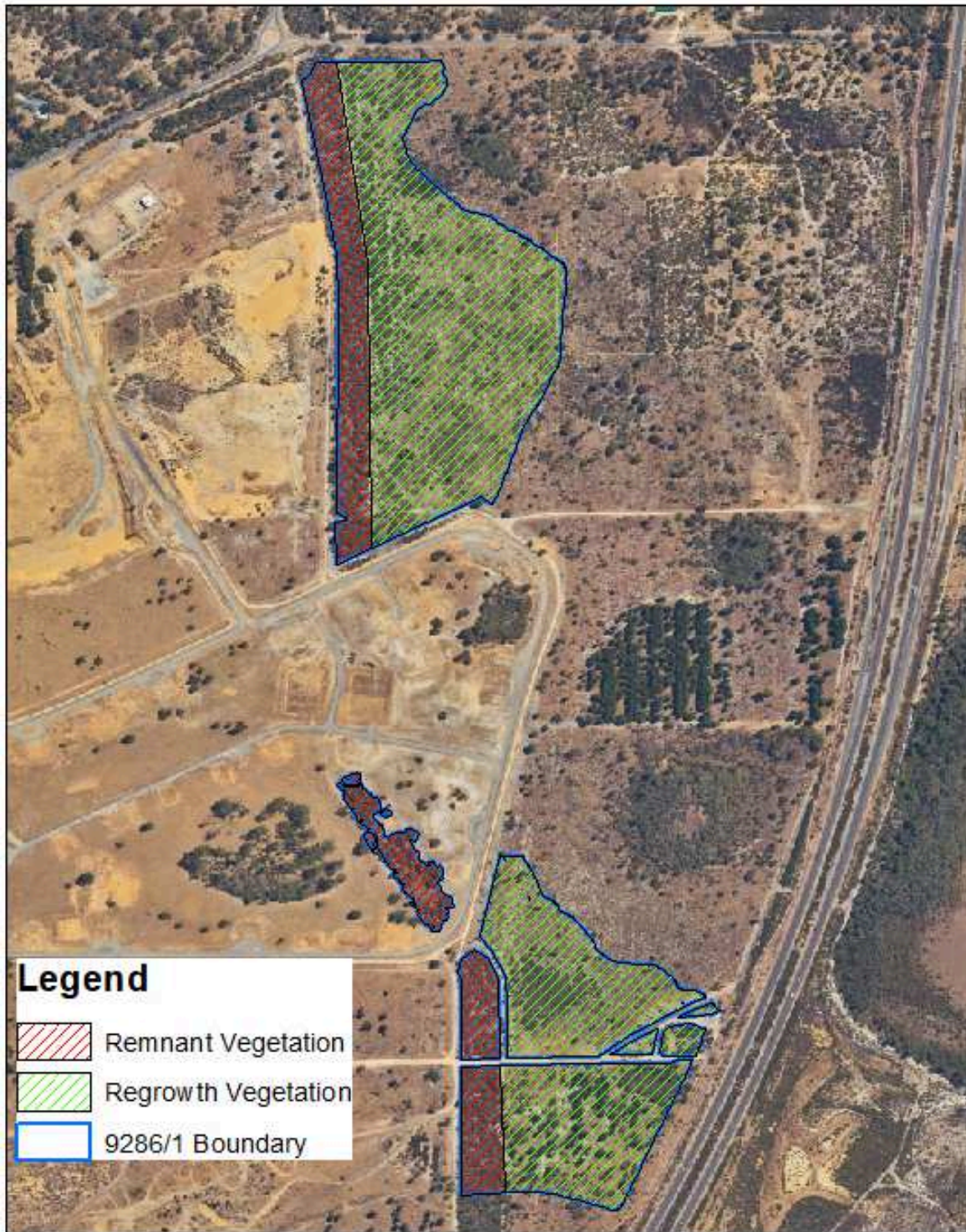


Figure 2. Map of the application area showing areas of remnant vegetation.

2. Detailed assessment of application

2.1. Avoidance and mitigation measures

Urban Resources designed the application area to avoid areas of wetlands to the east of the permit boundary and provide a suitable buffer to these wetlands. These wetland areas have significant environmental values and are also more likely to support species of threatened flora. The application area was also reduced to allow for a 40 metre setback from Stakehill Road.

Mitigation measures proposed for the clearing activities include (Strategen-JBS&G, 2020):

- Staged clearing and retention of tree stumps as long as possible prior to mining to assist with soil stabilisation and reduce surface water flow velocities;
- Progressive rehabilitation following clearing;
- Designated vehicle routes and appropriate speed limits to be enforced to minimise fauna vehicle interactions; and
- Activities with high dust-causing potential, such as stripping, will not be carried out in sensitive areas during adverse wind conditions.

After consideration of avoidance and mitigation measures, it was determined that offsets were necessary to counterbalance the significant residual impacts to threatened fauna and threatened ecological communities. In accordance with the Government of Western Australia's Environmental Offsets Policy and Environmental Offsets Guidelines, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided are summarised in Section 3.

2.2. Assessment of impacts on environmental values

The amendment is a result of an appeal determination made by the Minister regarding the grant of clearing permit CPS 9286/1 and to correct an error in the amount of clearing authorised by the permit. The Minister determined that the offset requirements on CPS 9286/1 did not appropriately counterbalance the significant residual impacts of the clearing and that additional offsets should be included on the permit. Changes to the offset are detailed below in Section 3.

The assessment against the clearing principles outlined in Schedule 5 of the *Environmental Protection Act 1986* has not changed and can be found in the decision report prepared for CPS 9286/1.

2.3. Relevant planning instruments and other matters

The assessment against planning instruments and other matters has not changed and can be found in the decision report prepared for CPS 9286/1.

To correct an error on the permit and to give effect to a decision of the Minister under the *Environmental Protection Act 1986* (the EP Act), the Chief Executive Officer of DWER or their delegates may amend a clearing permit under sections 51K(e) and 51K(h) of the EP Act. Section 105(aa) of the EP Act states that amendments made under this section of the EP Act are not appealable. On this basis, the above mentioned amendments made by the Delegated Officer are not available for third party appeal.

3. Suitability of offsets

Through the detailed assessment outlined in the decision report for CPS 9286/1, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 2.1:

- The loss of 6.49 hectares of black cockatoo foraging habitat;
- The loss of 6.49 hectares of native vegetation that is representative of the federally listed Banksia Woodlands of the Swan Coastal Plain TEC and state listed Banksia Woodlands of the Swan Coastal Plain PEC;

To counterbalance the above impacts, the permit conditioned the permit holder to provide \$352,740 as a monetary contribution to fund the purchase of a 43.71 hectare land parcel in the nearby area, to be conserved in perpetuity. The land acquired will contain the following values:

- 43.71 hectares of native vegetation containing significant foraging habitat for black cockatoos; and
- 43.71 hectares of native vegetation that is representative of the federally listed Banksia Woodlands of the Swan Coastal Plain TEC and state listed Banksia Woodlands of the Swan Coastal Plain PEC.

In assessing whether the proposed offset is adequate and proportionate to the significance of environmental values being impacted, a calculation using the WA Environmental Offsets Metric was undertaken. The calculation indicated that when combined, the proposed offsets would address 100 percent of the significant residual impacts of clearing and is consistent with the WA Environmental Offsets Policy September 2011.

During the determination of the appeal against CPS 9286/1, the Minister determined that the offset calculation should be revised and updated to:

- Reflect up to date peer-reviewed research on the conservation status of Baudin's cockatoo; and
- Remove the 'onsite rehabilitation credit' from the calculation of the offset given the potential uncertainty around the long term security of the rehabilitation.

Having made these revisions to the calculation, the Minister determined that the revised offset will require the permit holder to provide \$560,058 as a monetary contribution to fund the purchase of a 69.4 hectare land parcel in the nearby area, to be conserved in perpetuity. The land acquired will contain the following values:

- 69.4 hectares of native vegetation containing significant foraging habitat for black cockatoos; and
- 65.68 hectares of native vegetation that is representative of the federally listed Banksia Woodlands of the Swan Coastal Plain TEC and state listed Banksia Woodlands of the Swan Coastal Plain PEC.

The proposed offset meets the threshold of offsetting 100 percent of the significant residual impacts and revised offset calculations are available at Appendix D. Collaboration between DWER and DBCA has identified numerous nearby freehold parcels that contain appropriate values for purchase.

End

Appendix A. Site characteristics

A.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is a 30.78 hectare area of native vegetation, occurring across a number of patches as a result of previous clearing for a pine plantation. The majority of the vegetation was previously covered by pine plantation but approximately 6.49 hectares of the vegetation has not been previously cleared (see Section 1.5). The proposed clearing area is surrounded by an existing sand quarry to the west, cleared pine plantation to the south and east and remnant vegetation to the north.</p> <p>Spatial data indicates the local area (10 kilometre radius from area proposed to be cleared) retains approximately 29 percent of the original native vegetation cover.</p>
Ecological linkage	<p>The remnant vegetation consists of three separate remnants separated by gaps of approximately 330 metres and 60 metres, and runs in a corridor approximately 50 metres wide. This strip of remnant vegetation links with a similar corridor to the north known as the Baldivis Tramway Reserve. This reserve is a narrow strip of vegetation approximately 22 kilometres long which was originally set aside for a tramline between Jandakot and Karnup but was never cleared (City of Rockingham, 2021).</p>
Conservation areas	<p>Part of the application area is within Reserve 37090 which is vested in the Department of Biodiversity, Conservation and Attractions and the Department of Mines, Industry Regulation and Safety for the purposes of forestry and explosives (GIS Database).</p>
Vegetation description	<p>The vegetation of the application area is broadly mapped as the following Beard vegetation association (GIS Database):</p> <p>1001: Medium very sparse woodland; jarrah with low woodland banksia and casuarina.</p> <p>A flora and vegetation survey was conducted over the application area and adjacent areas by Strategen during May 2015. The following vegetation associations were recorded within the application area (Strategen-JBS&G, 2021):</p> <p>VT1: <i>Macrozamia fraseri</i>, <i>Daviesia triflora</i> and <i>Acacia stenoptera</i> mid open shrubland over <i>Lyginia barbata</i>, <i>Conostylis aculeata</i> and <i>Phlebocarya ciliata</i> low open sedgeland with <i>Xylomelum occidentale</i> and <i>Eucalyptus rudis</i> occurring as isolated trees.</p> <p>VT2: <i>Banksia menziesii</i>, <i>B. attenuata</i>, <i>Allocasuarina fraseriana</i> and <i>Eucalyptus marginata</i> open woodland over <i>Kunzea glabrescens</i>, <i>Acacia pulchella</i> and <i>Macrozamia fraseri</i> mid sparse shrubland over <i>Hibbertia hypericoides</i>, <i>Conostephium pendulum</i> and <i>Gompholobium tomentosum</i> low sparse shrubland.</p> <p>VT3: <i>Jacksonia sternbergiana</i> and <i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> mid shrubland over <i>Conostylis aculeata</i> and <i>Lyginia barbata</i> low sparse sedgeland.</p> <p>There were also parts of the permit area mapped as 'cleared areas' (Strategen-JBS&G, 2021).</p>
Vegetation condition	<p>The vegetation survey (Strategen, 2015) indicates the vegetation within the proposed clearing area is in very good to good (Keighery, 1994) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix C.</p>
Climate and landform	<p>The application area is mapped within elevations of 5-10 metres AHD. The annual average rainfall (Mandurah) is 649.2 millimetres (BoM, 2022).</p>
Soil description	<p>The soils and landforms around the Karnup area are described in DPIRD's Coastal Plain South soil surveys (DPIRD, 2021). The area within the permit boundary has been mapped as the Bassendean B2 Phase unit. This soil-landscape system is described as being mainly flat to very gently undulating sandplain with soils that are mainly well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan at 1-2 metres (DPIRD, 2021).</p>
Land degradation risk	<p>The sandy topsoils within the permit area may be prone to wind erosion if they are dry and loose with little or no groundcover however, the subdued nature of the terrain decreases the exposure to the wind and the likelihood of erosion (DPIRD, 2021). The soils in the permit area are dominated by rapidly drained soils which are positioned on gentle slopes which reduced the likelihood of water erosion (DPIRD, 2021). There is also a low risk of the clearing leading to increased salinity causing land degradation (DPIRD, 2021).</p>

Characteristic	Details
Waterbodies	The desktop assessment and aerial imagery indicated that there are no waterbodies or wetlands within the area proposed to be cleared (GIS Database).
Hydrogeography	There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database).
Flora	There are records of 6 priority flora species within 5 kilometres, the closest of which are 200 metres from the application area and on the same soil type.
Ecological communities	The Banksia Woodlands of the Swan Coastal Plains community is mapped within the application area. This community is listed as a Threatened Ecological Community under the EPBC Act and a Priority Ecological Community at a state level.
Fauna	There are records of six fauna species of conservation significance within the local area (10 kilometre radius). The most common records were of the quenda. There is also a known black cockatoo roost site within 3 kilometres of the application area.

A.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 – Swan Coastal Plain	1,501,222	579,813	~39	222,917	~18
Beard vegetation associations - State					
1001	57,410	12,661	~22	1,796	~6
Beard vegetation associations - Bioregion					
1001	57,410	12,661	~22	1,796	~6
Heddle vegetation complexes					
Karrakatta Complex-Central and South	53,081	12,467	~23	4,283	~8
Serpentine River Complex	19,855	1,940	~10	517	~3

Government of Western Australia (2019)

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>The majority of the application area is previously cleared pine plantation and does not support a high diversity of flora and fauna. The 6.49 hectare area of remnant vegetation provides habitat for threatened black cockatoo species.</p> <p>A 6.49 hectare portion of the application area is mapped as, and is representative of the 'Banksia Woodlands of the Swan Coastal Plain' (Priority 3) priority ecological community (PEC).</p>	<p>At variance</p> <p>As per CPS 9286/1</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<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 6.49 hectares of foraging habitat for threatened black cockatoo species. It also contains remnant vegetation in a highly cleared landscape which provides linkage values and habitat for fauna in the local area.</p>	<p>At variance</p> <p>As per CPS 9286/1</p>	<p>No</p>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared may contain habitat for flora species listed under the BC Act. The proposed clearing is not likely to impact on these species.</p>	<p>Not likely to be at variance</p> <p>As per CPS 9286/1</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>The permit area contains 6.49 hectares of native vegetation considered representative of the Banksia Woodlands of the Swan Coastal Plain TEC. This TEC is listed as Endangered under the EPBC Act.</p>	<p>At variance</p> <p>As per CPS 9286/1</p>	<p>No</p>
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The vegetation proposed to be cleared is considered to be part of a significant ecological linkage within an area that has been extensively cleared.</p>	<p>At variance</p> <p>As per CPS 9286/1</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>Part of the application area is within Reserve 37090 which is vested in the Department of Biodiversity, Conservation and Attractions and the Department of Mines, Industry Regulation and Safety for the purposes of forestry and explosives (GIS Database). The site previously comprised a pine plantation that was cleared between 2006 to 2010 (Strategen-JBS&G, 2021). It is not anticipated that this reserve will be managed for conservation purposes into the future as the area has been zoned for urban development and parks and recreation with plans for some areas to be turned into residential areas (City of Rockingham, 2021; Strategen-JBS&G, 2021).</p>	<p>Not likely to be at variance</p> <p>As per CPS 9286/1</p>	<p>No</p>
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>There are no watercourses or wetlands within the area proposed to clear (Strategen-JBS&G, 2021; GIS Database). There are several wetland areas in close proximity (within 100 metres) to the east of the permit area (Strategen-JBS&G, 2021; GIS Database). The proposed clearing will not clear any vegetation growing in association with these wetland areas (Strategen-JBS&G, 2021). Mining is not proposed below the water table and surface runoff rarely occurs in the area so the proposed clearing is not likely to significantly impact on these wetlands (DPIRD, 2021; Strategen-JBS&G, 2021).</p>	<p>Not at variance</p> <p>As per CPS 9286/1</p>	<p>No</p>

Assessment against the clearing principles	Variance level	Is further consideration required?
<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 soils and landforms around the Karnup area are described in DPIRD’s Coastal Plain South soil surveys (DPIRD, 2021). The area within the permit boundary has been mapped as the Bassendean B2 Phase unit. This soil-landscape system is described as being mainly flat to very gently undulating sandplain with soils that are mainly well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan at 1-2 metres (DPIRD, 2021).</p> <p>The sandy topsoils within the permit area may be prone to wind erosion if they are dry and loose with little or no groundcover however, the subdued nature of the terrain decreases the exposure to the wind and the likelihood of erosion (DPIRD, 2021). Potential impacts from wind erosion will be minimised by the implementation of a staged clearing condition.</p> <p>The soils in the permit area are dominated by rapidly drained soils which are positioned on gentle slopes which reduced the likelihood of water erosion (DPIRD, 2021). There is also a low risk of the clearing leading to increased salinity causing land degradation (DPIRD, 2021).</p>	<p>Not likely to be at variance</p> <p>As per CPS 9286/1</p>	<p>No</p>
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>There are no watercourses or wetlands within the area proposed to clear (GIS Database). Surface runoff rarely occurs in the area as the infiltration capacity of the sandy soil is rarely exceeded by the rainfall intensity (DPIRD, 2021). The proposed clearing is unlikely to result in significant changes to surface water flows.</p> <p>There are no Public Drinking Water Source Areas within or in close proximity to the application area (GIS Database). The majority of the permit area was previously covered by pine plantation. The proposed clearing is unlikely to cause deterioration in the quality of underground water.</p> <p>Based on the above, the proposed clearing is not likely to be at variance to this Principle.</p>	<p>Not likely to be at variance</p> <p>As per CPS 9286/1</p>	<p>No</p>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>There are no permanent water courses or waterbodies within the application area (GIS Database). Surface runoff rarely occurs in the area as the infiltration capacity of the sandy soil is rarely exceeded by the rainfall intensity. The likelihood of flooding in this landscape is considered to be low (DPIRD, 2021).</p> <p>Based on the above, the proposed clearing is not likely to be at variance to this Principle.</p>	<p>Not likely to be at variance</p> <p>As per CPS 9286/1</p>	<p>No</p>

Appendix C. Vegetation condition rating scale

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

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

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

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

Appendix D. Offset calculator value justification

Offset calculator values for residual impacts to foraging habitat for black cockatoos.

Environmental value to be offset			
Calculation	Score (Area)		Rationale
Conservation significance			
Description	Black cockatoo foraging habitat		The application area will clear 6.49 ha of significant foraging habitat for black cockatoo species.
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 - critically endangered		Carnaby's Cockatoo and Baudin's Cockatoo are listed as Endangered in WA and Forest Red-tailed Cockatoo is listed as Vulnerable. The IUCN Red List conservation status for Baudin's Cockatoo has recently been updated to Critically Endangered.
Landscape-level value impacted	yes/no		No
Significant impact			
Description	6.49 ha of black cockatoo foraging habitat		
Significant impact (hectares) / Type of feature	6.49		
Quality (scale) / Number	7.00		The area of foraging habitat is mostly in a very good condition and contains suitable species for black cockatoo feeding. Evidence of foraging has been observed in the area and there are breeding and roosting sites within 12 km of the permit area
Rehabilitation credit			
Description	0		No rehabilitation credit has been applied given to the uncertainty surrounding the final land use of the area.
Proposed rehabilitation (area in hectares)	0.00		
Current quality of rehabilitation site / Start number (of type of feature)	0.00		
Future quality WITHOUT rehabilitation (scale) / Future number WITHOUT rehabilitation	0.00		
Future quality WITH rehabilitation (scale) / Future number WITH rehabilitation	0.00		
Time until ecological benefit (years)	0.00		
Confidence in rehabilitation result (%)	0		
Offset			
Description	Purchase of land for conservation		
Proposed offset (area in hectares)	69.40		This value represents at least 100% of the significant residual impact.
Current quality of offset site / Start number (of type of feature)	7.00		It is assumed that an offset site will provide the same value that the area proposed to be cleared.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	7.00		It is assumed that the offset vegetation will retain the same value into the future.
Future quality WITH offset (scale) / Future number WITH offset	7.00		It is assumed that the offset vegetation is likely to remain the same without ongoing management measures committed to be the applicant.
Time until ecological benefit (years)	1.00		As the offset is purchasing existing vegetation, the benefit would be realised once the offset site is secured (estimated at 1 year).
Confidence in offset result (%)	0.95		There is a high level of confidence that conservation (in perpetuity) would successfully mitigate the future risk of loss of the site.
Duration of offset implementation (maximum 20 years)	20.00		The offset site would be protected in perpetuity and therefore the maximum value of 20 years has been selected.
Time until offset site secured (years)	1.00		It is expected that the land for acquisition for conservation could be made within 1 year.
Risk of future loss WITHOUT offset (%)	20.0%		Assumed that the land acquired would be zoned rural or similar, and not be subject to any existing planning approvals.
Risk of future loss WITH offset (%)	10.0%		The future conservation (in perpetuity) of the site would result in a substantial increased security and reduce the risk of loss.
Offset ratio (Conservation area only)	N/A		

Offset calculator values for residual impacts to the Banksia Woodland of the Swan Coastal Plain TEC.

Environmental value to be offset		
Calculation	Score (Area)	Rationale
Conservation significance		
Description	Banksia Woodlands of the Swan Coastal Plain	The application area will clear 6.49 ha of Banksia Woodlands TEC.
Type of environmental value	Ecological community	
Conservation significance of environmental value	Rare/threatened species - endangered	Banksia Woodlands of the Swan Coastal Plain is listed as a TEC under the federal EPBC Act and state listed as a PEC
Landscape-level value impacted	yes/no	No
Significant impact		
Description	6.49 ha of Banksia Woodlands TEC	
Significant impact (hectares) / Type of feature	6.49	
Quality (scale) / Number	7.00	The area of vegetation is mostly in a very good condition.
Rehabilitation credit		
Description	0	No rehabilitation credit has been applied given the uncertainty surrounding the final land use of the area.
Proposed rehabilitation (area in hectares)	0.00	
Current quality of rehabilitation site / Start number (of type of feature)	0.00	
Future quality WITHOUT rehabilitation (scale) / Future number WITHOUT rehabilitation	0.00	
Future quality WITH rehabilitation (scale) / Future number WITH rehabilitation	0.00	
Time until ecological benefit (years)	0.00	
Confidence in rehabilitation result (%)	0	
Offset		
Description	Purchase of land for conservation	
Proposed offset (area in hectares)	65.68	This value represents 100% of the significant residual impact.
Current quality of offset site / Start number (of type of feature)	7.00	It is assumed that an offset site will provide the same value that the area proposed to be cleared.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	7.00	It is assumed that the offset vegetation will retain the same value into the future.
Future quality WITH offset (scale) / Future number WITH offset	7.00	It is assumed that the offset vegetation is likely to remain the same without ongoing management measures committed to be the applicant.
Time until ecological benefit (years)	1.00	As the offset is purchasing existing vegetation, the benefit would be realised once the offset site is secured (estimated at 1 year).
Confidence in offset result (%)	0.95	There is a high level of confidence that conservation (in perpetuity) would successfully mitigate the future risk of loss of the site.
Duration of offset implementation (maximum 20 years)	20.00	The offset site would be protected in perpetuity and therefore the maximum value of 20 years has been selected.
Time until offset site secured (years)	1.00	It is expected that the land for acquisition for conservation could be made within 1 year.
Risk of future loss WITHOUT offset (%)	20.0%	Assumed that the land acquired would be zoned rural or similar, and not be subject to any existing planning approvals.
Risk of future loss WITH offset (%)	10.0%	The future conservation (in perpetuity) of the site would result in a substantial increased security and reduce the risk of loss.
Offset ratio (Conservation area only)	N/A	

Appendix E. Photographs of the application area

Figure 3. Photographs of the application area taken during a site visit on 17 August 2021











Appendix F. Sources of information

F.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)

- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- 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)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments – Catchments (DWER-028)
- Hydrography – Inland Waters – Waterlines
- Hydrography, Linear (DWER-031)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Pre-European Vegetation Statistics
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- 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)

F.2. References

- BoM (2022) Bureau of Meteorology Website – Climate Data Online, Mandurah. Bureau of Meteorology. <http://www.bom.gov.au/climate/data/> (Accessed 27 April 2022).
- City of Rockingham (2021) Submission in relation to clearing permit application 9286/1. City of Rockingham, 21 June 2021.
- Department of Primary Industries and Regional Development (DPIRD) (2021) Advice received in relation to Clearing Permit Application CPS 9286/1 Office of the Commissioner of Soil and Land Conservation, Department of Primary Industries and Regional Development, Western Australia, June 2021.
- 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
- DPaW (2013) Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan. Department of Parks and Wildlife, October 2013.
- Government of Western Australia (2019) 2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions. <https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics>
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Minister for Environment; Climate Action (2022) Appeal Number 021 of 2022. Minister's Appeal Determination: Appeals Against the Grant of Clearing Permit CPS 9286/1, Karnup Sand Project, Mining Lease 70/1262, City of Rockingham.
- Strategen (2015) Karnup Sand Mining Project, Environmental Investigations. Prepared for Urban Resources, by Strategen, June 2015.
- Strategen-JBS&G (2020) Urban Resources Pty Ltd Karnup Sand Mining Project (M70/1262) Mining Proposal. Prepared for Urban Resources, by Strategen-JBS&G, 2 September 2020.
- Strategen-JBS&G (2021) Karnup Sand Mining Project – Native Vegetation Clearing Permit application. Prepared for Urban Resources, by Strategen-JBS&G, 10 May 2021.

4. Glossary

Acronyms:

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