



Native Vegetation Clearing Permit Application Supporting Documentation – Boundary Road Sand Mine – Mining Lease 70/1329

Urban Resources Pty Ltd

Report

JBS&G 65372 | 153,465

18 August 2023





We acknowledge the Traditional Custodians of Country throughout Australia and their connections to land, sea and community.

We pay respect to Elders past and present and in the spirit of reconciliation, we commit to working together for our shared future.

Caring for Country The Journey of JBS&G
Artist: Patrick Caruso, Eastern Arrernte

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Abbreviations

Term	Definition
DBCA	Department of Biodiversity, Conservation and Attractions
DMIRS	Department of Mines, Industry Regulation and Safety
DMP	Department of Mines and Petroleum
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986</i>
FPC	Forest Products Commission
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
NVCP	Native Vegetation Clearing Permit Application
PEC	Priority Ecological Community
PMST	Protected Matters Search Tool
TEC	Threatened Ecological Community

Executive Summary

Urban Resources Pty Ltd (hereafter referred to as Urban Resources) owns and operates the Boundary Road Sand Mine located on Mining Lease 70/1329 in the Gngara Pine Plantation in the locality of Mariginiup. The Project was approved by the former Department of Mines and Petroleum (DMP) via a Mining Proposal in August 2017. The approved mining operation involves extraction of approximately 1,000,000 tonnes of sand annually over a 24-year mine life (EnviroWorks Consulting, 2017).

Urban Resources held native vegetation clearing permit CPS 8070/1 over part of Mining Lease 70/1329, authorising the clearing of up to 17.73 hectares of native vegetation for the purpose of mineral production. Permit 8070/1 expired on 31 July 2023.

This clearing permit application is required to ensure Urban Resources' future sand mining operations on Mining Lease 70/1329 remain compliant with the native vegetation clearing provisions of the *Environmental Protection Act 1986* (EP Act) and associated Regulations.

The application area has been subject to numerous disturbance events, including:

- Clearing;
- Planting of pines;
- Thinning/Pruning/Coppicing of pines;
- Harvesting of pines; and
- Grubbing of stumps.

Consequently, the application area is in a Completely Degraded condition, consisting of minimal native vegetation regrowth and a number of weed species since pine plantation harvesting was undertaken in 2018, stumps were subsequently grubbed in 2019 and topsoil stripping and subsequent mining activities commenced in 2020. The areas are of negligible significance for flora, fauna or ecological communities and the proposed clearing will not adversely affect surface water or groundwater resources, or adversely impact conservation values. This permit application has been made as the limited re-growth vegetation present in the proposed sand mining areas technically constitutes 'native vegetation' as defined in the EP Act and no known clearing exemptions apply.

1. Purpose and Background

Until recently, Urban Resources held clearing permit CPS 8070/1 over part of Mining Lease 70/1329, authorising the clearing of up to 17.73 hectares of native vegetation clearing for the purpose of mineral production. Permit 8070/1 expired on 31 July 2023.

Urban Resources engaged the services of JBS&G Australia Pty Ltd (JBS&G) to assist in the preparation of a native vegetation clearing permit application (NVCP) to ensure future sand mining operations on Mining Lease 70/1329 remain compliant with the native vegetation clearing provisions of the EP Act and associated Regulations.

2. Project Location and Description

Urban Resources owns and operates the Boundary Road Sand Mine, located on Mining Lease 70/1329 within the Gnamptarra-Moore River State Forest (Reserve No. 65). The Project occurs in the locality of Mariginiup and the Local Government Areas of both the City of Wanneroo and City of Swan, north of Perth and approximately 8 km northeast of Wanneroo.

The Project was approved by the former Department of Mines and Petroleum (DMP) on 17 August 2017 via Mining Proposal Registration ID 52507. The approved operation involves extraction of approximately 1,000,000 tonnes of sand annually over the 24-year mine life (EnviroWorks Consulting, 2017).

3. Existing Environment

The existing environment of the Boundary Road Sand Mine is described in approved Mining Proposal Registration ID 52507, which is publicly available.

In summary, review of historic aerial imagery indicates the application area was cleared of its original native vegetation in the late 1960's for the establishment of part of the Gnamptarra Pine Plantation. Pine trees were present in the application area for several decades and were harvested by the Forest Products Commission in 2018. Since that time, a mixture of weeds and native disturbance opportunist species have started colonising the area. This vegetation, which completely lacks structural characteristics to be classified as a vegetation community, will require clearing to enable future sand extraction activities.

On 29 June 2023, a Senior Ecologist from JBS&G inspected the proposed clearing area to support this clearing permit application. Representative photographs taken during the inspection are provided below and show the completely degraded condition of the area (see Plates 1 – 5 below):



Plate 1: Active sand mining operations in the background, with minimal re-growth vegetation in the foreground representative of areas subject to this clearing permit application.

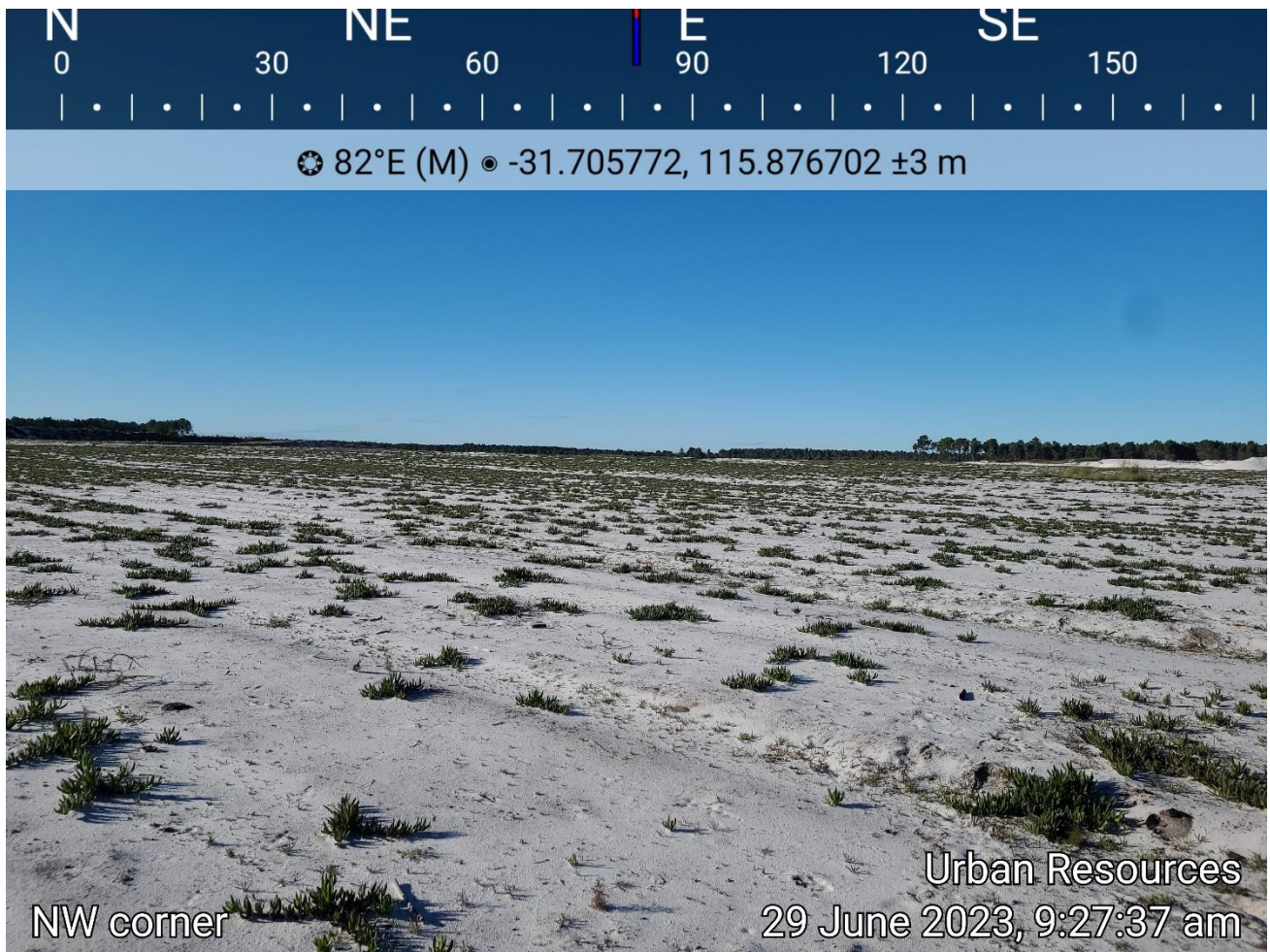


Plate 2: North-west corner of clearing permit application area showing minimal vegetation re-growth. Trees in the background do not form part of this clearing permit application.

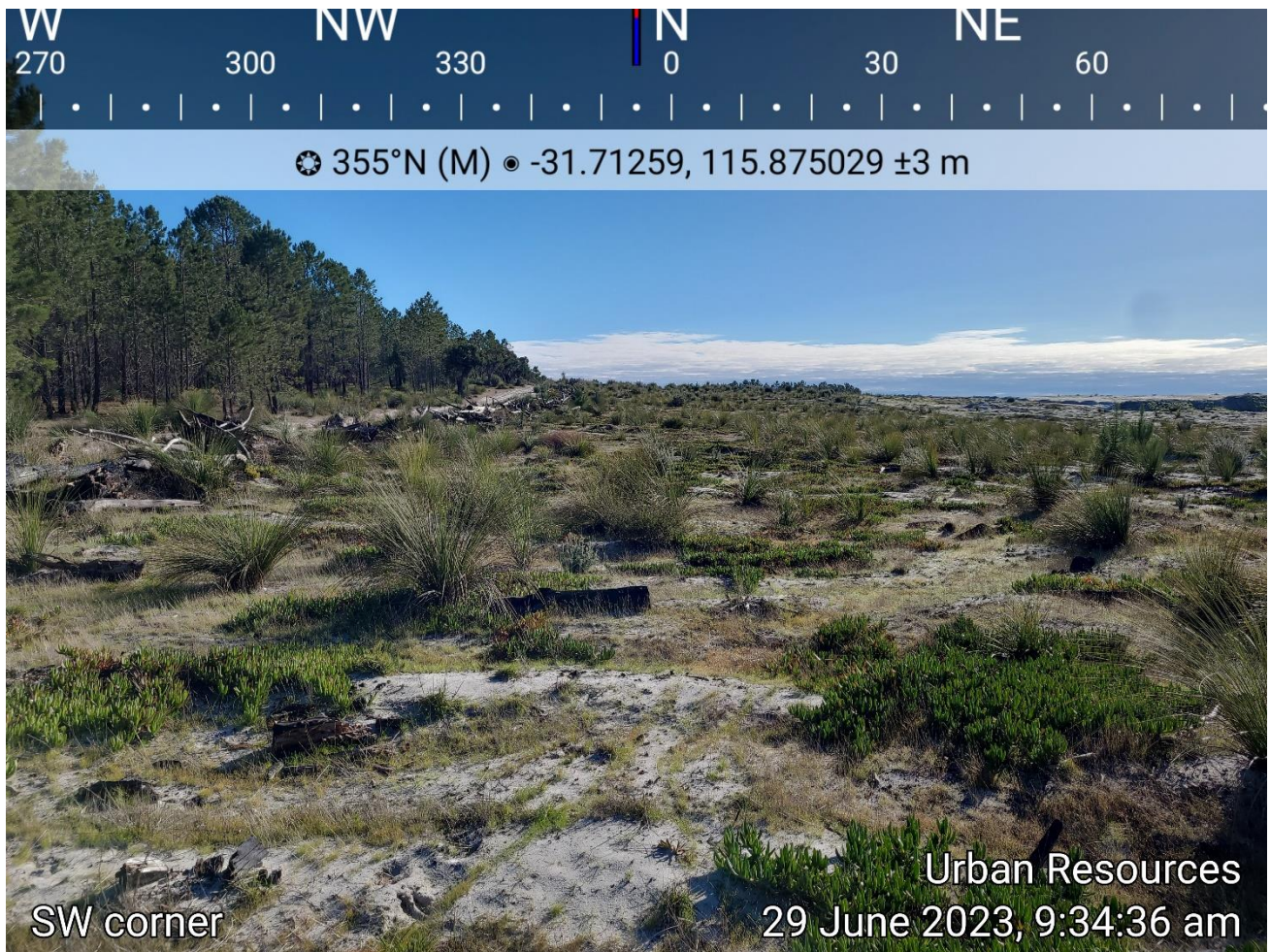


Plate 3: Re-growth vegetation in the south-west corner of the clearing permit application area. Pine trees are not part of the application.

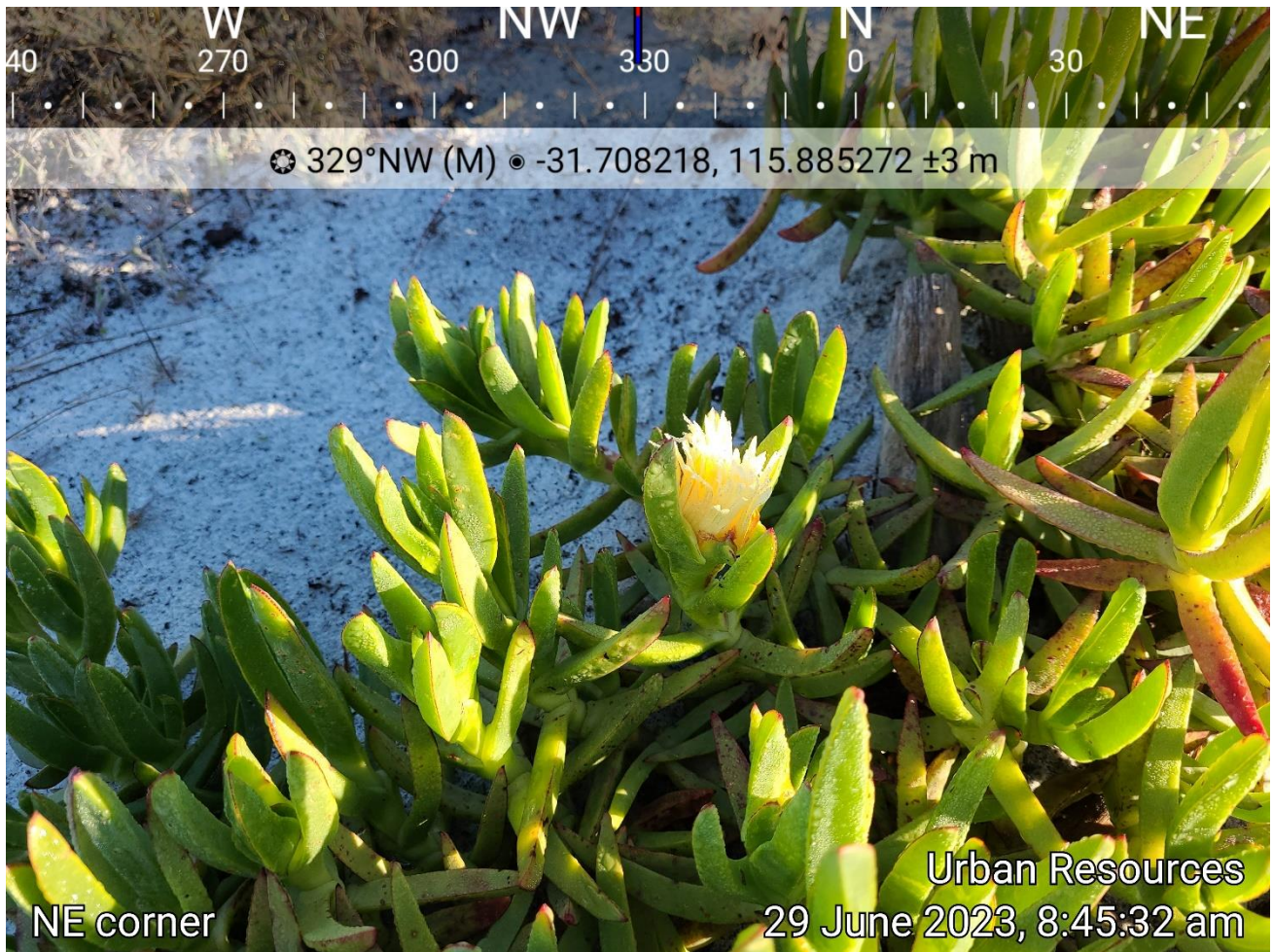


Plate 4: *Carpobrotus edulis** commonly observed in the proposed clearing area

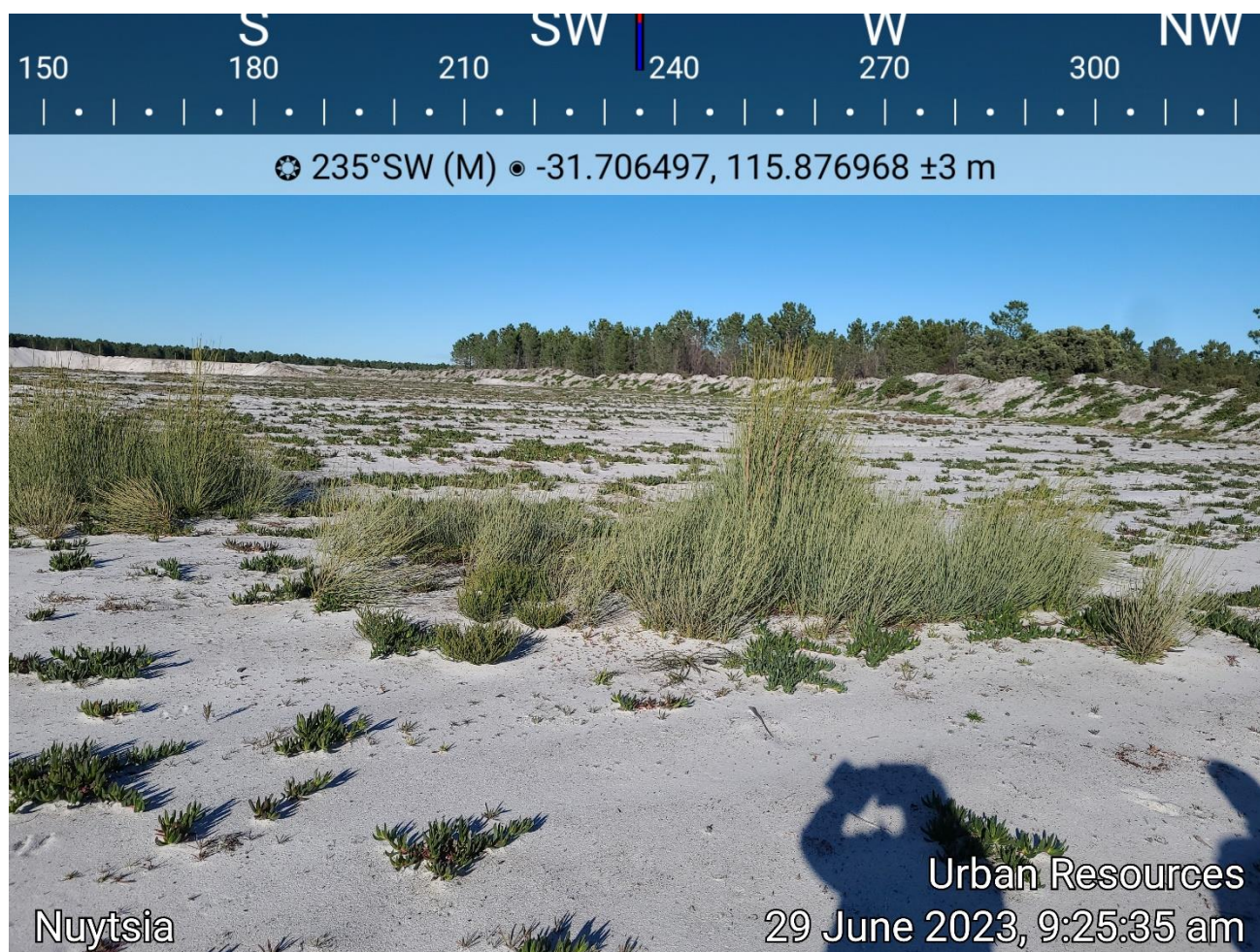


Plate 5: *Nuytsia* suckers observed amongst the minimal re-growth vegetation to be cleared. Larger stands of trees in the background do not form part of this clearing permit application.

4. Proposed Native Vegetation Clearing

Review of historic aerial imagery indicates the original native vegetation in the application area was cleared in the late 1960's to establish part of the Gngara Pine Plantation.

This clearing permit application seeks authorisation to clear the minimal native vegetation regrowth that has established since pine plantation harvesting was undertaken in the area by the Forest Products Commission (FPC) in 2018, stumps were grubbed in 2019 and since topsoil stripping commenced in 2020. The application area consists of three small polygons, as shown in **Figure 4-1**, totalling an area of approximately 20.36ha. Spatial data of the application area has also been provided to the Department of Mines, Industry Regulation and Safety (DMIRS) in Esri shapefile format, in support of this clearing permit application.

The application area abuts the existing, approved sand extraction areas on the tenement, and recently expired clearing permit 8070/1.



Figure 4-1: Proposed Clearing Area

5. Assessment of Clearing Principles and other matters

An assessment of the Clearing Principles and other matters is provided below in Table 1. To support this assessment, JBS&G has undertaken a literature review, including reference to the previous clearing permit decision report (DMP, 2018), the approved Mining Proposal (EnviroWorks Consulting, 2017), a local vegetation survey (Strategen, 2018) and other relevant publications (refer to the reference list in section 7). Desktop searches of the following DBCA databases were also undertaken, using a 10 km buffer around the proposed clearing area:

1. Threatened and Priority Flora List (TPFL)
2. Western Australian Herbarium (WA Herb) records
3. Threatened, Specially Protected and Priority Fauna
4. Threatened and Priority Ecological Communities.

A search of the Commonwealth Government’s Protected Matters Search Tool (PMST) was also undertaken.

The database searches produced a list of conservation significant flora, fauna and ecological communities that have previously been recorded within a 10 km radius of the proposed clearing area. A suitably qualified Senior Ecologist from JBS&G has completed a desktop likelihood assessment of these species occurring in the proposed clearing area, on the basis of habitat information and regional distribution (refer to Attachment 1).

Complementing the database searches and likelihood assessment, the JBS&G Senior Ecologist undertook a site inspection of the proposed clearing area on 29 June 2023 with the objectives of:

- making observations of the extent and condition of re-growth vegetation in the proposed clearing area;
- making observations relevant to any of the conservation significant flora, fauna and ecological communities deemed likely to occur within the proposed clearing area; and
- deciding whether formal flora, vegetation and/or fauna assessments of the proposed clearing area are necessary to support this clearing permit application.

Findings of the site inspection are provided in Attachment 1, and have informed the assessment of the Clearing Principles, in conjunction with information gathered through the desktop assessment.

Table 1: Assessment of Clearing Principles and other matters

Clearing Principle	Assessment	Level of Variance
a) Native vegetation should not be cleared if it comprises a high level of biodiversity	<p>The proposed clearing area is not comprised of a high level of biological diversity. The original native vegetation was cleared in the late 1960’s for the establishment of part of the Gngarara pine plantation. Pine trees (<i>Pinus pinaster</i>) were harvested from the proposed clearing area in 2018, stumps were grubbed in 2019 and topsoil stripping commenced in 2020 in preparation for approved sand mining operations. The area currently consists of an abundance of weeds and limited native vegetation re-growth which has emerged since the pine harvesting and topsoil stripping activities ceased in this area.</p> <p>JBS&G’s site inspection found that the application area is in a Completely Degraded condition using Keighery’s (1994) scale for assessing vegetation condition, specifically</p>	Not likely to be at variance to this Principle.

Clearing Principle	Assessment	Level of Variance
	<p>the structure of the vegetation is no longer intact and the area is completely or almost completely without native species. Flora taxa present at low densities included common native species which are capable of growing in disturbed areas. Key structural species, including Banksia and other tree species (except for <i>Nuytsia floribunda</i> suckers), were absent from the regrowth.</p> <p>Native vegetation regrowth species observed on M70/1329 included:</p> <p>?<i>Eremaea pauciflora</i> <i>Acacia pulchella</i> var. <i>glaberrima</i> <i>Adenanthos cygnorum</i> <i>Conostylis aculeata</i> <i>Crassula colorata</i> <i>Daviesia incrassate</i> <i>Gompholobium tomentosum</i> <i>Haemodorum spicatum</i> <i>Jacksonia floribunda</i> <i>Macrozamia riedlei</i> <i>Nuytsia floribunda</i> (suckers) <i>Petrophile longifolia</i> <i>Podotheca gnaphalioides</i> <i>Scholtzia involucrata</i> <i>Stirlingia latifolia</i> <i>Xanthorrhoea preissii</i>.</p> <p>A number of weed species were also observed, including:</p> <p>*<i>Arctotheca calendula</i> *<i>Briza maxima</i> (dead) *<i>Carpobrotus edulis</i> (yellow flowered) *<i>Dittrichia graveolens</i> *<i>Euphorbia peplus</i> *<i>Gladiolus caryophyllaceus</i> *<i>Hypochaeris glabra</i> *<i>Pelargonium capitatum</i> *<i>Phytolacca octandra</i> *<i>Pinus pinaster</i> *<i>Poaceae</i> spp. (seedlings) *<i>Raphanus raphanistrum</i> *<i>Ursinia anthemoides</i> *<i>Wahlenbergia capensis</i> (dead)</p> <p>A number of conservation significant flora species have previously been recorded within a 10 km radius of the proposed clearing area (refer to the likelihood assessment in Attachment 1). However, it is unlikely that conservation significant flora would be present in the application area, or that the area would represent significant habitat for</p>	

Clearing Principle	Assessment	Level of Variance
	<p>such flora, given the long history of disturbance and Completely Degraded vegetation condition.</p> <p>The minimal vegetation present is not representative of any Priority Ecological Community (PEC) or Threatened Ecological Community (PEC).</p> <p>The sparse and immature status of the vegetation is very unlikely to provide any significant habitat for fauna, lacking shelter and refuge areas and lacking mature Black Cockatoo foraging species.</p>	
<p>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.</p>	<p>A search of Government databases listed 11 Priority fauna taxa, 17 Threatened fauna taxa and a further 18 Migratory bird species as occurring within 10 km of the proposed clearing area (refer to Attachment 1).</p> <p>Of the above list, three species were considered likely to occur in the proposed clearing area based on proximity of recent nearby records:</p> <ul style="list-style-type: none"> • <i>Zanda latirostris</i> (Carnaby's Black Cockatoo; formerly <i>Calyptorhynchus latirostris</i>) (Endangered; Endangered), recorded 145 m north; • <i>Isoodon fusciventer</i> (Quenda) (P4), recorded 2.2 km east • <i>Hylaeus globuliferus</i> (Woolybush Bee) (P3), recorded 2.2 km north-east in the Melaleuca Conservation Park in 1996. <p>The proposed clearing area also occurs within the known range of <i>Calyptorhynchus banksii naso</i> (the Forest Red-tailed Black Cockatoo) (Vulnerable; Vulnerable). Forest Red-tailed Black Cockatoos prefer Eucalypt woodland containing Marri and Jarrah (DAWE, 2022; Groom, 2011; Johnstone & Kirkby, 2011).</p> <p>Carnaby's Black Cockatoo prefer to forage upon Banksia woodland and Pine Plantation, though they forage on a wide range of species. They roost in tall Eucalypts near water (DAWE, 2022; Groom, 2011; Johnstone & Kirkby, 2011).</p> <p>Quenda prefer dense, scrubby, often swampy vegetation (DEC, 2012).</p> <p>Woolybush Bees prefer Banksia woodlands containing <i>Adenanthos</i> species (Houston, 2018).</p> <p>A site inspection undertaken by a Senior Ecologist from JBS&G on 29 June 2023 observed that the preferred habitat for the above-listed species is not present in the proposed clearing area. Although the Quenda may potentially nocturnally forage in the proposed clearing area, it does not contain adequate vegetation cover for Quenda to be considered significant habitat.</p>	<p>Not likely to be at variance to this Principle.</p>

Clearing Principle	Assessment	Level of Variance
	<p>The minimal re-growth native vegetation present in the proposed clearing area is too immature to provide any foraging, nesting or roosting habitat for Black Cockatoo species. Notably, key structural species, including Banksia and other tree species, were absent from the regrowth and there was minimal Black Cockatoo foraging vegetation species present. Following the site inspection, JBS&G completed a Black Cockatoo foraging habitat assessment of the proposed clearing area using the DAWE (2022) scoring tool. The results are provided in Attachment 1 and conclude the proposed clearing area contains no Black Cockatoo foraging habitat.</p> <p>The Completely Degraded nature of the application area, including lack of structural species and limited shelter, means the area is very unlikely to provide a significant habitat for any other fauna species.</p>	
<p>c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.</p>	<p>A search of DBCA’s Threatened and Priority Flora List, Western Australian Herbarium records and the Commonwealth’s Protected Matters Search Tool shows there are no records of Threatened Flora within the proposed clearing area. The only Threatened flora species considered likely to occur, based on nearby records, was <i>Caladenia huegelii</i>, which has been recorded approximately 1.9 kilometres north of the proposed clearing area (refer to Attachment 1).</p> <p><i>Caladenia huegelii</i>, can only be detected during a three-week period from late September to mid-October. <i>Caladenia huegelii</i> relies on a symbiotic association with a mycorrhizal fungus for seed germination and a nutrient supply throughout its life cycle (DEC, 2008). It is pollinated by a Thynnid Wasp species, occurring in Banksia woodlands, which needs be present in order for the orchid to reproduce (DEC, 2008). Given the absence of Banksia woodland and the numerous soil disturbances in the proposed clearing area, it is highly unlikely that soil mycorrhiza are intact or that pollinators are present. It is also highly unlikely that any <i>C. huegelii</i> tubers remain from prior to the pine plantation being established.</p> <p>No other Threatened flora taxa were considered to possibly occur. No orchid leaves or other conservation taxa were observed during the Site inspection. Although the likelihood assessment identified several conservation significant flora species as possibly occurring at the site based on habitat presence (preferred soil and hydrology), the disturbance history of the site makes it unlikely that any of these taxa would be present.</p>	<p>Not likely to be at variance to this Principle.</p>

Clearing Principle	Assessment	Level of Variance
<p>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.</p>	<p>A search of Government Databases shows 13 conservation significant ecological communities (TEC's and PEC's) have previously been recorded near the proposed clearing area. JBS&G concluded none of these were considered likely to occur in the proposed clearing area, which has been entirely cleared for pine plantation historically (refer to Attachment 1).</p> <p>Mining Lease 70/1329 intersects the buffer for nearby <i>Banksia Woodlands of the Swan Coastal Plain ecological community</i>. However, JBS&G did not observe any <i>Banksia</i> species during a site inspection of M70/1329 on 29 June 2023 and the regrowth vegetation present can best be described as scattered, low regrowth of indigenous native species and weeds. Native species which act as weeds were also present in large numbers, specifically the daisy <i>Podothea gnaphalioides</i> and the tiny succulent <i>Crassula colorata</i>.</p> <p>The condition of the vegetation was Completely Degraded, using Keighery's (1994) scale for assessing vegetation condition, specifically, the structure of the vegetation was no longer intact and the area was almost completely without native species. The vegetation was not representative of the <i>Banksia Woodlands of the Swan Coastal Plain ecological community</i> or any other TEC.</p>	<p>Not at variance to this Principle.</p>
<p>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.</p>	<p>According to Geoscience Australia (2004), the proposed clearing area occurs entirely within the Bassendean 949 pre-European Vegetation Association. This vegetation association has greater than 30% remaining at the state, Interim Biogeographic Regionalisation for Australia (IBRA) region, IBRA subregion and Local Government Area (LGA) scales (Government of Western Australia, 2018).</p> <p>It is noted that the original native vegetation in the area was cleared in the late 1960's for the establishment of part of the Gnangara Pine Plantation. Since the pines were harvested in 2018, stumps grubbed in 2019 and topsoil stripping commenced in 2020, an abundance of weeds and very limited native re-growth has started to colonise the application area. What is present is not representative of any pre-European vegetation association or community and has no value as a remnant or ecological corridor.</p>	<p>Not at variance to this Principle.</p>
<p>f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.</p>	<p>The proposed clearing area does not contain any watercourses or wetlands, or any vegetation growing in an environment associated with a watercourse or wetland.</p> <p>Some geomorphic wetlands occur throughout the Gnangara pine plantation, however approved sand mining operations have been purposely located to avoid impacts to these areas, and this is adequately conditioned through</p>	<p>Not at variance to this Principle.</p>

Clearing Principle	Assessment	Level of Variance
	existing, approved mining proposal commitments and tenement conditions.	
<p>g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.</p>	<p>Desktop mapping shows the application area is associated with subdued dune-swale terrain with limestone at depth (Northcote et al, 1968). Chief soils are white sandy soils (Northcote et al, 1968). Generally, these soils have a high risk of wind erosion and a low risk of water erosion due to the high infiltration rates associated with sands.</p> <p>It is noted that the application area has already been cleared of its original native vegetation long ago and has been subject to subsequent further soil disturbance through the pine harvesting process and topsoil stripping activities in advance of approved sand mining operations.</p> <p>The application area intercepts areas categorised as 'low' to 'moderate' Acid Sulphate Soil (ASS) risk (Strategen, 2018). ASS are likely to occur at depths of three metres or greater. The soil exposed from clearing native vegetation is not likely to form acid on exposure to air.</p> <p>Prior to progressive sand mining, Urban Resources will push up and stockpile the minimal native vegetation regrowth, strip and then either stockpile or respread the underlying topsoil. Use of the topsoil is problematic as it is weed infested, therefore Urban Resources is currently trialling cultivation and spraying before replanting vegetation.</p> <p>The proposed clearing activities are very minimal and are unlikely to result in appreciable land degradation of soils that have already been highly disturbed by past land use practices.</p>	<p>Not likely to be at variance to this Principle.</p>
<p>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.</p>	<p>The application area is located within the Gngangara-Moore River State Forest Reserve No. 65, which is managed by the Department of Biodiversity, Conservation and Attractions (DBCA). The Gngangara-Moore River State Forest covers an area in excess of 70,000 hectares; however a large portion is covered by pine plantations (DMIRS, 2018). The application area is a cleared Pine (<i>Pinus pinaster</i>) plantation, where the original native vegetation was cleared in the late 1960's to establish the plantation. Given this, the proposed clearing area is not likely to provide a significant ecological linkage, and the proposal is not likely to impact the environmental values of the conservation area (DMIRS, 2018).</p>	<p>Not likely to be at variance to this Principle.</p>
<p>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.</p>	<p>No surface water features are present in the application area and the clearing of minimal native vegetation re-growth is unlikely to have any effect upon surface water.</p> <p>The proposed clearing area is located in the Gngangara Public Drinking Water Source Area. However, the proposed vegetation to be cleared is immature re-growth and is</p>	<p>Not likely to be at variance to this Principle.</p>

Clearing Principle	Assessment	Level of Variance
	unlikely to have any effect on groundwater levels or quality (DMIRS, 2018).	
<p>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.</p>	<p>There are no watercourses or wetlands within the application area.</p> <p>The minimal regrowth vegetation present is not growing in association with any low-lying areas which may be prone to seasonal inundation.</p> <p>The application area is predominately comprised of leached Bassendean sands, which are generally considered to have high infiltration rates and therefore a low risk of water logging (DMIRS, 2018).</p> <p>Given the soils are well drained and that average annual evaporation rate (1,800 - 2,000 millimetres) is well above the annual rate of rainfall (732.8 millimetres), the risk of flooding is very low.</p>	<p>Not likely to be at variance to this Principle.</p>
<p>Planning Instrument, Native Title, previous EPA decision or other matter</p>	<p>The proposed clearing area is highly disturbed and was first cleared of its original native vegetation in the late 1960's for the establishment of part of the Gnangara Pine Plantation. Pine plantations were present in the application area for several decades and were harvested by FPC in 2018, before stumps were grubbed in 2019 and topsoil stripping commenced in 2020 in readiness for the approved sand mining operations. No Aboriginal heritage sites are known from the area and are very unlikely to be present given the extensive history of site disturbance.</p> <p>As part of assessing and approving Mining Proposal Reg ID 52507, DMIRS concluded the Project did not require referral to the Environmental Protection Authority (EPA). Any areas of sensitivity in the local area, including Bush Forever sites and Geomorphic Wetlands, have been retained and are adequately managed via existing approvals.</p> <p>The clearing permit application area is the source of an important basic raw material for the Perth metropolitan area.</p>	<p>Not applicable.</p>

6. Conclusions and Recommendations

This clearing permit application has been submitted to ensure future sand mining operations, which have already been assessed and approved under the *Mining Act 1978*, remain compliant with the native vegetation clearing provisions of the *Environmental Protection Act 1986* and associated Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

The original native vegetation in the proposed clearing area was removed in the late 1960's for the establishment of part of the Gngara Pine Plantation. Since pines were harvested in the proposed clearing area in 2018, stumps grubbed in 2019 and topsoil stripping commenced in 2020, some limited native vegetation regrowth has established that will require removal to facilitate future sand mining. Observations made by a Senior Ecologist from JBS&G during a site inspection confirm the vegetation lacks key structural characteristics and doesn't resemble a vegetation community. Similarly, the vegetation provides negligible habitat values for fauna and there are no other values or sensitivities associated with it that would prevent the issuing of a native vegetation clearing permit.

7. References

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- Strategen (2018) Native Vegetation Clearing Permit Application – Supporting Documentation, Boundary Road Sand Mine. Prepared for Urban Resources, By Strategen Environmental Consultants Pty Ltd, April 2018.

8. Attachment 1 – Site Inspection & Likelihood Assessment

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June site inspection of Hawkins Road and Seismic Road clearing areas

25 July 2023

Stephen Elliott
Urban Resources
Via email: stephen@urbanresources.com.au

June site inspection of Hawkins Road (M70/1284) and Seismic Road (M70/1329) clearing areas

Dear Stephen,

Urban Resources Pty Ltd (Urban Resources) operates two sand quarries on Crown Land in the Gngangara-Moore River State Forest (F65) at Seismic Road, Melaleuca and Hawkins Road, Jandabup. The Seismic Road site (M70/1329) straddles the border between City of Wanneroo and City of Swan. The Hawkins Road site (M70/1284) is entirely within City of Wanneroo. Urban Resources commissioned JBS&G to undertake a Site Inspection and prepare clearing permit applications associated with future sand extraction at the two Sites. The objective of the Site Inspection was to describe Site attributes which need to be considered in the clearing assessment process. Prior to the Site Inspection a desktop review was undertaken to consider the likelihood of conservation significant flora, fauna and vegetation occurring at the Sites. This assessment considered the likely habitat present at the sites and the disturbance history of the sites.

The Sites have been subject to numerous disturbance events, including clearing, planting of pines, thinning/pruning/coppicing of pines, harvesting of pines, grubbing of stumps and stripping of topsoil. Aerial photography (Landgate, 2023) indicates these activities occurred from the late 1960's through to 2023 (Table 1).

Table 1: Significant disturbance events within proposed clearing areas (Landgate, 2023)

Site	Activity	Date
Seismic Road	Clearing	Late 1960's
	Planting of pines	Late 1960's
	Clearing of pines	2018
	Grubbing of stumps	2019
	Stripping of topsoil	2020-2023
Hawkins Road	Clearing	Late 1960's
	Planting of pines	Late 1960's
	Clearing of pines	2008-2010
	Grubbing of stumps	2021
	Stripping of topsoil	2022

The two Sites occur entirely within the Bassendean 949 pre-European Vegetation Association (Geoscience Australia, 2004) (Table 2).

Table 2: Extent remaining of pre-European Vegetation Associations (Government of Western Australia, 2018)

Vegetation Association	Scale	Pre-European Extent (ha)	Current Extent (ha)	% Remaining
Bassendean 949	Western Australia	218,193.94	123,104.02	56.42
Low woodland; Banksia	Swan Coastal Plain IBRA Region	209,983.26	120,287.93	57.28
	Perth IBRA Sub-region	184,475.82	104,128.96	56.45
	City of Wanneroo	37,138.40	17,196.34	46.30
	City of Swan	16,235.19	7,970.07	49.09

Database Searches

Searches of Government databases were requested to generate lists of conservation significant vascular terrestrial flora, fauna and Threatened and Priority Ecological Communities previously recorded within, and nearby the Sites (Table 3).

Table 3: Database searches conducted for the desktop assessment

Custodian	Database	Taxonomic group	Buffer
DBCA	Western Australian Herbarium (WA Herb) records	Flora	10 km
DBCA	Threatened and Priority Flora List (TPFL) taxa	Flora	10 km
DBCA	Communities	Ecological Communities	10 km
DBCA	Threatened, Specially Protected and Priority Fauna	Fauna	10 km
DCCEEW	Protected Matters Search Tool (PMST)	Flora, Fauna and Communities	10 km

Conservation Significant Flora

Following receipt of the database searches, habitat and flowering information were collated for the species identified as potentially occurring in the area, and a likelihood of their presence in the Sites was determined on the basis of habitat information and regional distribution.

Government databases listed 31 Priority flora taxa and 21 Threatened flora taxa as occurring within 10 km of the Sites (Attachment A). Of these, two were assessed as likely to occur in the Sites, 17 as possibly occurring in the Sites and 28 as unlikely to occur. Four taxa were aquatic or wetland plants, which could not occur in the Sites, which contain no surface water features.

The two taxa considered likely to occur were:

- *Caladenia huegelii* (WA: Critically Endangered; Commonwealth: Endangered), occurring 1.9 km north of the Seismic Road Site; and
- *Pimelea calcicola* (P3), occurring 0.8 km south of the Hawkins Road Site.

Conservation significant flora taxa identified as possibly occurring at the Sites included the Threatened orchid taxon *Caladenia huegelii*, which can only be detected during a three-week period from late September to mid-October. *Caladenia huegelii* relies on a symbiotic association with a mycorrhizal fungus for seed germination and a nutrient supply throughout its life cycle (DEC, 2008). It is pollinated by a Thynnid Wasp species, occurring in Banksia woodlands, which needs be present in order for the orchid to reproduce (DEC, 2008). Given the absence of Banksia woodland and the numerous soil disturbances at the Sites, it is highly unlikely that soil mycorrhiza remains intact, or that pollinators are present. It is also highly unlikely that any *C. huegelii* tubers remain from prior to the Pine plantation being established.

No other Threatened flora taxa were considered to possibly occur at the Sites. No orchid leaves, *Pimelea* species or other conservation taxa were observed during the Site inspection. Although the likelihood

assessment identified several species as possibly occurring at the site based on habitat presence (preferred soil and hydrology), the disturbance history of the site makes it unlikely that any of these taxa would be present.

Conservation Significant Ecological Communities

Thirteen conservation significant ecological communities were recorded as occurring near the Sites (Table 4). None of these were considered likely to occur at the Sites which have been entirely cleared for pine plantation historically. Both Sites overlap the buffer for nearby *Banksia Woodlands of the Swan Coastal Plain ecological community*.

Table 4: Ecological communities identified by database searches

Community ID	Community Name	State Category	Commonwealth Category
Banksia WL SCP	Banksia Woodlands of the Swan Coastal Plain ecological community	Priority 3	Endangered
SCP23b	• Swan Coastal Plain <i>Banksia attenuata</i> - <i>Banksia menziesii</i> woodlands	Priority 3	Endangered
SCP20a	• <i>Banksia attenuata</i> woodlands over species rich dense shrublands	Critically Endangered	Endangered
SCP22	• <i>Banksia ilicifolia</i> woodlands	Priority 3	Endangered
SCP21c	• Low lying <i>Banksia attenuata</i> woodlands or shrublands	Priority 3	Endangered
SCP24	• Northern Spearwood shrublands and woodlands	Priority 3	Not listed
Tuart woodlands	Tuart (<i>Eucalyptus gomphocephala</i>) woodlands and forests of the Swan Coastal Plain	Priority 3	Critically Endangered
SCP25	• Southern <i>Eucalyptus gomphocephala</i> - <i>Agonis flexuosa</i> woodlands	Priority 3	Not listed
SCP26a	<i>Melaleuca huegelii</i> - <i>M. systema</i> shrublands of limestone ridges	Critically Endangered	(Nominated as Critically Endangered)
Muchea Limestone	Shrublands and woodlands on Muchea Limestone of the Swan Coastal Plain	Endangered	Endangered
SCP18	Shrublands on calcareous silts of the Swan Coastal Plain	Critically Endangered	Not listed
Mound Springs SCP	Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain)	Critically Endangered	Endangered
SCP10a	Shrublands on dry clay flats	Endangered	Critically Endangered

Conservation Significant Fauna

Government databases listed 11 Priority fauna taxa, 17 Threatened fauna taxa and a further 18 Migratory bird species as occurring within 10 km of the Sites (Attachment A).

Of these, three were considered likely to occur in the Sites based on proximity of recent nearby records:

- *Zanda latirostris* (Carnaby's Black Cockatoo; formerly *Calyptorhynchus latirostris*) (WA: Endangered; Commonwealth: Endangered), recorded 145 m north of the Seismic Road Site and 670 m south-west of the Hawkins Road Site;
- *Isoodon fusciventer* (Quenda) (P4), recorded 2.2 km east of the Seismic Road Site and 1.8 km south-west of the Hawkins Road Site;
- *Hylaeus globuliferus* (Woolybush Bee) (P3), recorded 2.2 km north-east of the Seismic Road Site in the Melaleuca Conservation Park in 1996.

The sites also occur within the known range of *Calyptorhynchus banksii naso* (the Forest Red-tailed Black Cockatoo) (WA: Vulnerable; Commonwealth: Vulnerable). Forest Red-tailed Black Cockatoos prefer Eucalypt woodland containing Marri and Jarrah. None of this habitat was present at the Site.

Carnaby's Black Cockatoo prefer to forage upon Banksia woodland, native Eucalypts and Pine Plantation, though they forage on a wide range of species. They roost in tall Eucalypts near water. None of this habitat was present at the Sites which had been historically cleared.

Quenda prefer dense, scrubby, often swampy vegetation (DEC, 2012). Although they may nocturnally forage in the Sites, the Sites do not contain adequate vegetation cover for Quenda.

Woollybush Bees prefer Banksia woodlands containing *Adenanthos* species. Females forage upon *Adenanthos* flowers and males perch on the highest fronds of the bushes (Houston, 2018). Isolated sapling *Adenanthos cygnorum* were present at the Sites.

Site Inspection

On 29th June 2023, a Senior Ecologist from JBS&G attended Urban Resources Seismic Road and Hawkins Road sand quarries to evaluate regrowth vegetation in proposed clearing areas.

There was substantial evidence of soil disturbance with depressions remaining where pine stumps were grubbed and windrows around the exterior to prevent unauthorised access by the public. Photo locations and photographs of proposed clearing areas are presented in Attachments B and C.

Both sites contained scattered, low regrowth of indigenous native species and weeds. Native species which act as weeds were also present in large numbers, specifically the daisy *Podotrochea gnaphalioides* and the tiny succulent *Crassula colorata*.

The condition of the vegetation was Completely Degraded, using Keighery's (1994) scale for assessing vegetation condition, specifically, the structure of the vegetation was no longer intact and the area was 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 and shrubs.

Flora taxa present at very low densities at both sites included common native species which are capable of growing in disturbed areas (Table 5). Key structural species, including Banksia and other tree species (except for *Nuytsia floribunda* suckers), were absent from the regrowth.

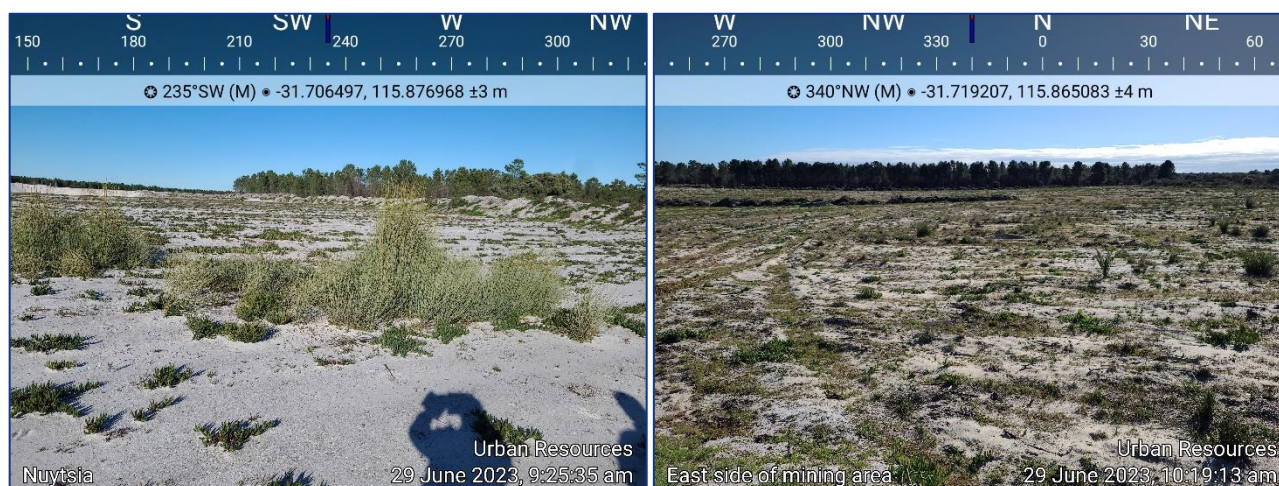


Plate 1 Seismic Road Site (left) and Hawkins Road Site (right)

Table 5: Plant taxa observed during the Site Inspection

Site	Native species	Introduced species
Seismic Road	<i>?Eremaea pauciflora</i>	* <i>Arctotheca calendula</i>
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	* <i>Briza maxima</i> (dead)
	<i>Adenanthos cygnorum</i>	* <i>Carpobrotus edulis</i> (yellow flowered)
	<i>Conostylis aculeata</i>	* <i>Dittrichia graveolens</i>
	<i>Crassula colorata</i>	* <i>Euphorbia peplus</i>
	<i>Daviesia incrassata</i>	* <i>Gladiolus caryophyllaceus</i>
	<i>Gompholobium tomentosum</i>	* <i>Hypochaeris glabra</i>
	<i>Haemodorum spicatum</i>	* <i>Pelargonium capitatum</i>
	<i>Jacksonia floribunda</i>	* <i>Phytolacca octandra</i>
	<i>Macrozamia riedlei</i>	* <i>Pinus pinaster</i>
	<i>Nuytsia floribunda</i> (suckers)	* <i>Poaceae</i> spp. (seedlings)
	<i>Petrophile longifolia</i>	* <i>Raphanus raphanistrum</i>
	<i>Podotheca gnaphalioides</i>	* <i>Ursinia anthemoides</i>
	<i>Scholtzia involucrata</i>	* <i>Wahlenbergia capensis</i> (dead)
<i>Stirlingia latifolia</i>		
<i>Xanthorrhoea preissii</i>		
Hawkins Road	<i>?Calytrix</i> sp.	* <i>Carpobrotus edulis</i> (yellow flowered)
	<i>Acacia pulchella</i> var. <i>glaberrima</i>	* <i>Poaceae</i> spp.
	<i>Acacia saligna</i>	* <i>Ehrharta calycina</i>
	<i>Burchardia congesta</i>	* <i>Gladiolus caryophyllaceus</i>
	<i>Hibbertia subvaginata</i>	* <i>Pentameris airoides</i>
	<i>Hypocalymma ?robustum</i>	* <i>Dittrichia graveolens</i>
	<i>Hypocalymma</i> sp.	* <i>Pelargonium capitatum</i>
	<i>Hypolaena exsulca</i>	* <i>Ursinia anthemoides</i>
	<i>Jacksonia furcellata</i>	* <i>Briza maxima</i>
	<i>Lyginia imberbis</i>	* <i>Sonchus oleraceus</i>
	<i>Podotheca gnaphalioides</i>	
	<i>Xanthorrhoea preissii</i>	



Plate 1. *Carpobrotus edulis at Seismic Road

Black Cockatoo Habitat

At the time of the site inspection, the vegetation present at the sites had little to no value for Black Cockatoos (Table 6). The tallest plants present were mid-shrubs and only isolated, immature forage species were present (DAWE, 2022; Groom, 2011; Johnstone & Kirkby, 2011). No Eucalypts or Banksia were present and no mature Pines.

Table 6: DAWE (2022) scoring tool

Starting Score	Baudin's Black Cockatoo	Carnaby's Black Cockatoo	Forest Red-tailed Black Cockatoo
0	0	0	0
	<p>Start at a score of 10 if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. This tool only applies to sites equal to or larger than 1 hectare in size.</p>	<p>Start at a score of 10 if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as <i>Banksia</i> spp. (including <i>Dryandra</i> spp.), <i>Hakea</i> spp. and <i>Grevillea</i> spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation.</p> <p>This tool only applies to sites equal to or larger than 1 hectare in size.</p>	<p>Start at a score of 10 if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. This tool only applies to sites equal to or larger than 1 hectare in size.</p>
Attribute	Context adjustor (attributes reducing functionality of foraging habitat)		
Foraging potential	-2	-2	-2
	Subtract 2 from your score if there is no evidence of feeding debris on your site.		
Connectivity	0	0	0
	Subtract 2 from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.		
Proximity to breeding	0	0	0
	Subtract 2 if you have evidence to conclude that your site is more than 12 km from breeding habitat		
Proximity to roosting	0	0	0
	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.		
Impact from significant plant disease	0	0	0
	Subtract 1 if your site has disease present (e.g. Phytophthora spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.		
Total Score	0 (-2)	0 (-2)	0 (-2)
Appraisal	<p>The sites contain no black cockatoo foraging habitat. Vegetation at the site consisted of scattered native shrubs and herbs, with key structural species absent. The site was in Completely Degraded condition. The nearest roosting site's buffers overlap both the Hawkin's Road and Seismic Road sites (DBCA, 2022a). The nearest confirmed breeding site is 6.7 km southwest of the Hawkin's Road Site (DBCA, 2022b). The local area (within 12 km and immediately adjacent to the sites) contains ample foraging habitat because the sites are within the Gngangara Pine Plantation.</p>		

Should you require clarification, please contact the undersigned on 08 9380 3100 or by email rpratt@jbsg.com.au.

Yours sincerely:

A handwritten signature in blue ink, appearing to read "Rachael Pratt".

Rachael Pratt
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JBS&G Australia Pty Ltd

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Attachment A Database search results and likelihood assessment

Table A.1 Likelihood of occurrence assessment; categories and definitions

Likelihood	Definition
Present	The taxon has been recorded within the Site.
Likely	The Site contains suitable habitat for the taxon and it is likely the taxon may occur based on presence of a recent historical record close to the Site (within 2.5 km).
Possible	The Site contains suitable habitat for the taxon but there is no other information to suggest that the taxon may occur within or close to the Site, or habitat information is lacking for the taxon.
Unlikely	The Site does not contain suitable habitat for the taxon, regional records suggest the taxon does not occur near the Survey Area ¹ , or the site contains suitable habitat for the taxon within which thorough targeted searches were completed and conclusion has been made that the taxon is unlikely to be present.
Absent	Habitats present within the Site preclude the possibility of this taxon occurring. E.g. aquatic taxa at a Site where no seasonally inundated areas occur.

Table A.2 Consolidated flora database searches and likelihood assessment

Taxa FAMILY	WA	Cth	Description	Likelihood of Presence
<i>Acacia benthamii</i> FABACEAE	P2	Not listed	Shrub, ca 1 m high. Flowers yellow, Aug to Sep. Sand. Typically on limestone breakaways.	Unlikely based on habitat preferences
<i>Andersonia gracilis</i> ERICACEAE	VU	EN	A slender shrub up to 50 cm tall with few, spreading branches. Pink to pale mauve flowers are clustered in ovoid or oblong groups of 4 to 14 on terminal heads. Occurs on seasonally damp, black sandy clay flats near or on the margins of swamps, often on duplex soils supporting low open heath vegetation.	Unlikely based on habitat preferences
<i>Anigozanthos humilis</i> subsp. <i>chrysanthus</i> HAEMODORACEAE	P4	Not listed	Rhizomatous, perennial, herb, 0.2-0.4(-0.8) m high. Flowers yellow, Jul to Oct. Grey or yellow sand. Leaves flat, 50-170 mm long, 3-10 mm wide; bristles or hairs on the leaf margin present. Flowers in July, August, September or October.	Possible based on regional distribution
<i>Anigozanthos viridis</i> subsp. <i>terraspectans</i> HAEMODORACEAE	VU	VU	Rhizomatous, perennial, herb, 0.05-0.2 m high. Flowers green/yellow-green, Aug to Sep. Grey sand, clay loam. Winter-wet depressions.	Unlikely based on habitat preferences
<i>Austrostipa mundula</i> POACEAE	P3	Not listed	Perennial grass to 0.6 m high.	Possible based on regional distribution

¹ This situation may arise when the Protected Matters Search Tool identifies the potential for a taxon to occur but the known range of the taxon does not extend to within 10 km of the Site, or when distribution records indicate that the taxon occurs only in a narrow band along a geological or hydrogeological feature that does not include the Site.

Taxa FAMILY	WA	Cth	Description	Likelihood of Presence
<i>Baeckea</i> sp. Limestone (N. Gibson & M.N. Lyons 1425) MYRTACEAE	P1	Not listed	Shrub. Flowers pale pink. Limestone.	Unlikely based on habitat preferences
<i>Banksia mimica</i> PROTEACEAE	VU	EN	Prostrate, lignotuberous shrub, 0.15-0.4 m high. Flowers yellow-brown, Dec or Jan to Feb. White or grey sand over laterite, sandy loam.	Unlikely based on habitat preferences
<i>Caladenia huegelii</i> ORCHIDACEAE	CR	EN	Tuberous, perennial, herb, 0.25-0.6 m high. Flowers green & cream & red, Sep to Oct. Grey or brown sand, clay loam.	Likely based on nearby records
<i>Calectasia elegans</i> DASYPOGONACEAE	P2	Not listed	Clonal perennial, with stilt roots to 8 cm long, stems to 0.45 m high. Flowers blue, Jul-Oct. Deep, grey, quartz sand in habitats that have experienced infrequent fires. Banksia woodlands.	Possible based on habitat preferences
<i>Chamelaucium lullfitzii</i> MYRTACEAE	VU	Not listed	Spindly, erect shrub to 2 m high. White flowers appear from September to December. Plants grow on white, grey, or yellow sands in low open banksia woodland.	Unlikely based on regional distribution
<i>Conostylis bracteata</i> HAEMODORACEAE	P3	Not listed	Rhizomatous, tufted or shortly proliferous perennial, grass-like or herb, 0.2-0.45 m high. Flowers yellow, Aug to Sep. Sand, limestone. Consolidated sand dunes.	Possible based on habitat preferences
<i>Cyathochaeta teretifolia</i> CYPERACEAE	P3	Not listed	Rhizomatous, clumped, robust perennial, grass-like or herb (sedge), to 2 m high, to 1.0 m wide. Flowers brown, Dec-Jan. Grey sand, sandy clay. Swamps, creek edges.	Unlikely based on habitat preferences
<i>Dampiera triloba</i> GOODENIACEAE	P3	Not listed	Erect perennial, herb or shrub, to 0.5 m high. Flowers blue, Aug to Dec.	Possible based on regional distribution
<i>Darwinia foetida</i> MYRTACEAE	EN	CR	Erect or spreading shrub to 0.7 m high. Flowers brown, Oct to Nov. Grey-black sandy rises in winter-damp to wet clay flats.	Unlikely based on regional distribution
<i>Diuris micrantha</i> ORCHIDACEAE	VU	VU	Tuberous, perennial, herb, 0.3-0.6 m high. Flowers yellow & brown, Sep to Oct. Brown loamy clay. Winter-wet swamps, in shallow water.	Absent based on habitat preferences
<i>Diuris purdiei</i> ORCHIDACEAE	EN	EN	Tuberous, perennial, herb, 0.15-0.35 m high. Flowers yellow, Sep to Oct. Grey-black sand, moist. Winter-wet swamps.	Absent based on habitat preferences
<i>Drakaea elastica</i> ORCHIDACEAE	CR	EN	Tuberous, perennial, herb, 0.12-0.3 m high. Flowers red & green & yellow, Oct to Nov. White or grey sand. Low-lying situations adjoining winter-wet swamps.	Unlikely based on habitat preferences
<i>Drakaea micrantha</i> ORCHIDACEAE	EN	VU	Tuberous, perennial, herb, 0.15-0.3 m high. Flowers red & yellow, Sep to Oct. White-grey sand.	Unlikely based on regional distribution

Taxa FAMILY	WA	Cth	Description	Likelihood of Presence
<i>Drosera patens</i> DROSERACEAE	P1	Not listed	Fibrous-rooted, rosetted perennial, herb, to 0.05 m high. Flowers white, Dec or Feb. Sandy soils. Margins of winter-wet depressions, swamps and lakes.	Absent based on habitat preferences
<i>Drosera x badgerupii</i> DROSERACEAE	P2	Not listed	Rosetted, short-lived perennial, herb. Flowers yellow-green.	Possible based on regional distribution
<i>Drosera x sidjamesii</i> DROSERACEAE	P1	Not listed	Fibrous-rooted perennial, herb, to 0.06 m high. Flowers green-pink, Nov to Dec or Jan to Mar. Peaty sand. Along lake margins, close to winter high-water line.	Unlikely based on habitat preferences
<i>Eleocharis keigheryi</i> CYPERACEAE	VU	VU	A rhizomatous, clumped, perennial sedge growing to 0.4 m high. Green flowering stalks appear from August to November. This species is a water plant which appears in creeks and claypans.	Absent based on habitat preferences
<i>Eryngium pinnatifidum</i> subsp. <i>Palustre</i> (G.J. Keighery 13459) APIACEAE	P3	Not listed	Erect perennial, herb, 0.15-0.5 m high. Flowers white/blue, Oct to Nov. Clay, sandy clay. Claypans, seasonally wet flats.	Unlikely based on habitat preferences
<i>Eucalyptus argutifolia</i> MYRTACEAE	VU	VU	(Mallee), 1.5-4 m high, bark smooth. Flowers white, Mar to Apr. Shallow soils over limestone. Slopes or gullies of limestone ridges, outcrops.	Unlikely based on habitat preferences
<i>Grevillea christineae</i> PROTEACEAE	EN	EN	An erect, rounded shrub up to 1 m tall, with wiry, zig-zagging branches and creamy-white flowers. Often occurs on narrow, weed-infested road verges, which in many places are almost the only surviving representatives of the natural vegetation in those areas. Prefers moist areas such as drainage lines or outcropping granite.	Unlikely based on habitat preferences
<i>Grevillea curviloba</i> ² PROTEACEAE	CR/EN	EN	Prostrate to erect shrub, 0.1-2.5 m high. Flowers white-cream, Aug to Oct. Grey sand, sandy loam. Winter-wet heath.	Unlikely based on habitat preferences
<i>Hydrocotyle striata</i> ARALIACEAE	P1	Not listed	Herb. Clay. Springs.	Unlikely based on habitat preferences
<i>Hypolaena robusta</i> RESTIONACEAE	P4	Not listed	Dioecious rhizomatous, perennial, herb, ca 0.5 m high. Flowers Sep to Oct. White sand. Sandplains.	Possible based on habitat preferences
<i>Jacksonia sericea</i> FABACEAE	P4	Not listed	Low spreading shrub, to 0.6 m high. Flowers orange, usually Dec or Jan to Feb. Calcareous & sandy soils.	Possible based on habitat preferences
<i>Macarthuria keigheryi</i> MACARTHURACEAE	EN	EN	Erect or spreading perennial, herb or shrub, 0.2-0.4 m high, 0.3-0.6 m wide.	Unlikely based on regional distribution

² Listed as *Grevillea curviloba* subsp. *curviloba* and *G. curviloba* subsp. *Incurva*, but has been amalgamated to *G. curviloba* (WAH, 1998-).

Taxa FAMILY	WA	Cth	Description	Likelihood of Presence
			Flowers Sep to Dec or Feb to Mar. White or grey sand.	
<i>Marianthus paralius</i> PITOSPORACEAE	EN	EN	Almost prostrate, eventually scandent, woody shrub. Flowers red, Sep to Nov. White sand over limestone. Low coastal cliffs.	Unlikely based on habitat preferences
<i>Melaleuca</i> sp. Wanneroo (G.J. Keighery 16705) MYRTACEAE	EN	EN	Erect shrub, up to 2.5 m high, 2-3 m wide. Flowers Yellow, Nov to Dec. Leaves that are 15-20 mm long, flat in cross section, approximately 3 mm wide, with a blunt-acute apex, hairy, with oil glands not prominent. Shallow soils over limestone on ridges.	Unlikely based on habitat preferences
<i>Millotia tenuifolia</i> var. <i>laevis</i> ASTERACEAE	P2	Not listed	Ascending to erect annual, herb, 0.02-0.1 m high. Flowers yellow, Sep to Oct. Granite or laterite soils.	Unlikely based on habitat preferences
<i>Netrostylis</i> sp. Chandala (G.J. Keighery 17055) CYPERACEAE	P2	Not listed	(Previously included in the <i>Tetraria capillaris</i> complex)	Possible based on regional distribution
<i>Paracaleana dixonii</i> ORCHIDACEAE	VU	EN	A tuberous perennial orchid from 90-200 mm high, with a single, small basal leaf. Brown-yellow-green-red flowers in the shape of a duck appear from October to December or January. Found in grey sand over granite.	Unlikely based on regional distribution
<i>Phlebocarya pilosissima</i> subsp. <i>pilosissima</i> HAEMODORACEAE	P3	Not listed	Shortly rhizomatous, compactly tufted perennial, grass-like or herb, 0.15-0.4 m high. Flowers cream-white, Aug to Oct. White or grey sand, lateritic gravel.	Possible based on habitat preferences
<i>Pimelea calcicola</i> THYMELAEACEAE	P3	Not listed	Erect to spreading shrub, 0.2-1 m high. Flowers pink, Sep to Nov. Sand. Coastal limestone ridges.	Likely based on nearby records
<i>Poranthera moorokatta</i> PHYLLANTHACEAE	P2	Not listed	Erect annual herb to 0.5 m high. Flowers pale pink, Sep to Nov. White and grey sands.	Possible based on habitat preferences
<i>Schoenus griffinianus</i> CYPERACEAE	P4	Not listed	Small, tufted perennial, grass-like or herb (sedge), to 0.1 m high. Flowers Sep to Oct. White sand.	Possible based on habitat preferences
<i>Stenanthemum sublineare</i> RHAMNACEAE	P2	Not listed	Erect shrub, to 0.1 m high. Flowers green, Oct to Dec. Littered white sand. Coastal plain.	Possible based on habitat preferences
<i>Stylidium longitubum</i> STYLIDIACEAE	P4	Not listed	Erect annual (ephemeral), herb, 0.05-0.12 m high. Flowers pink, Oct to Dec. Sandy clay, clay. Seasonal wetlands.	Unlikely based on habitat preferences
<i>Stylidium paludicola</i> STYLIDIACEAE	P3	Not listed	Reed-like perennial, herb, 0.35-1 m high. Flowers pink, Oct to Dec. Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland.	Unlikely based on habitat preferences

Taxa FAMILY	WA	Cth	Description	Likelihood of Presence
<i>Styloidium striatum</i> STYLIDIACEAE	P4	Not listed	Rosetted perennial, herb, 0.15-0.55 m high. Flowers yellow, Oct to Nov. Brown clay loam over laterite. Hillslopes. Jarrah/Marri forest, Wandoo woodland.	Unlikely based on habitat preferences
<i>Styloidium trudgenii</i> STYLIDIACEAE	P3	Not listed	Caespitose perennial, herb, 0.05-0.5 m high. Flowers Oct-Nov. Grey sand, dark grey to black sandy peat. Margins of winter-wet swamps, depressions.	Unlikely based on habitat preferences
<i>Styphelia filifolia</i> ERICACEAE	P3	Not listed	An erect shrub to 0.9 m high. Flowers white, Mar-May. Sandy soils, usually in Banksia or Jarrah woodland and low-lying situations.	Possible based on habitat preferences
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696) PROTEACEAE	CR	CR	Dense, clumped shrub, to 0.3 m high, to 0.4 m wide. Flowers yellow, Oct. Sandy with lateritic pebbles. Near winter-wet flats, in low woodland with weedy grasses.	Unlikely based on habitat preferences
<i>Thelymitra dedmaniarum</i> ORCHIDACEAE	CR	EN	Tuberous, perennial, herb, to 0.8 m high. Flowers yellow, Nov to Dec or Jan. Granite.	Unlikely based on habitat preferences
<i>Thelymitra stellata</i> ORCHIDACEAE	EN	EN	A tuberous, perennial orchid from 150-250 mm high. Its yellow and brown flowers appear from October to November. Occurs on sand, gravel and lateritic loam.	Unlikely based on regional distribution
<i>Thelymitra variegata</i> ORCHIDACEAE	P2	Not listed	Tuberous, perennial, herb, 0.1-0.35 m high. Flowers orange & red & purple & pink, Jun to Sep. Sandy clay, sand, laterite.	Possible based on habitat preferences
<i>Tripterococcus</i> sp. Brachylobus (A.S. George 14234) CELASTRACEAE	P4	Not listed	No description available.	Possible based on regional distribution
<i>Utricularia oppositiflora</i> LENTIBULARIACEAE	P3	Not listed	Herb. No description available.	Possible based on regional distribution

Table A.3 Consolidated fauna database searches and likelihood assessment

Taxon Common Name	WA status	Cth status	Habitat	Likelihood of Occurrence
BIRDS				
<i>Actitis hypoleucos</i> Common Sandpiper	MI	MI	Occurs in a wide variety of habitats on the shores of waterbodies (Pizzey & Knight, 1997). Shallow, pebbly, muddy or sandy edges of rivers and streams, coastal to far inland; dams, lakes, sewage ponds, margins of tidal rivers, waterways in mangroves or saltmarsh; mudflats; rocky or sandy beaches, causeways, riverside lawns, drains, street gutters.	Unlikely based on habitat preferences
<i>Apus pacificus</i> Fork-Tailed Swift	MI	MI	Airborne over a variety of habitats from rainforest to arid areas (Pizzey & Knight, 1997). Aerial: open country, from semi-deserts to coasts, islands; sometimes over forests, cities (Pizzey & Knight 2012).	Possible based on habitat preferences
<i>Botaurus poiciloptilus</i> Australasian Bittern	EN	EN	Occurs in or over water in tall reedbeds, sedges, rushes or Typha; drains in tussocky paddocks, occasionally saltmarsh or brackish wetlands (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Calidris acuminata</i> Sharp-Tailed Sandpiper	MI	MI	Tidal mudflats, saltmarshes, mangroves; shallow fresh, brackish or saline inland wetlands; floodwaters, irrigated pastures and crops; sewage ponds, saltfields (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Calidris canutus</i> Red Knot	EN	EN & MI	Tidal mudflats, sandflats, beaches, saltmarshes, flooded pastures and ploughed lands (Pizzey & Knight, 1997).	Unlikely based on habitat preferences
<i>Calidris ferruginea</i> Curlew Sandpiper	CR	MI	Tidal mudflats, saltmarsh, saltfields; fresh, brackish or saline wetlands and sewage ponds (Pizzey & Knight, 1997).	Unlikely based on habitat preferences
<i>Calidris melanotos</i> Pectoral Sandpiper	MI	MI	Shallow fresh waters, often with low grass or other herbage; swamp margins, flooded pastures sewage ponds; occasionally tidal areas, saltmarshes (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Calidris ruficollis</i> Red-Necked Stint	MI	MI	Tidal mudflats, saltmarshes; sandy or shelly beaches; saline and freshwater wetlands, coastal and inland; saltfields, sewage ponds (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Calidris subminuta</i> Long-Toed Stint	MI	MI	Tussocky, weedy margins of shallow wetlands, both coastal and inland, sewage ponds, weed on tidelines, tidal mudflats (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Calonectris leucomelas</i> Streaked Shearwater	MI	MI	A seabird seen mostly over offshore waters, occasionally over inshore waters. Does not breed in Australia (Menkhorst et al. 2019).	Unlikely based on habitat preferences

Taxon Common Name	WA status	Cth status	Habitat	Likelihood of Occurrence
<i>Calyptorhynchus banksii naso</i> Forest Red-Tailed Black Cockatoo	VU	VU	Marri, jarrah, wandoo, tuart and karri woodlands and forests, where they feed primarily on marri and jarrah (Johnstone, et al., 2010).	Likely based on nearby records
<i>Zanda baudinii</i> (formerly <i>Calyptorhynchus baudinii</i>) Baudin's Cockatoo	EN	EN	Eucalypt forests, especially marri-jarrah and karri forests, less commonly in woodlands of wandoo, blackbutt, flooded gum, yate, and cleared areas (Johnstone, et al., 2010).	Unlikely based on regional distribution
<i>Zanda latirostris</i> (formerly <i>Calyptorhynchus latirostris</i>) Carnaby's Cockatoo	EN	EN	Forests, woodlands and shrublands of Eucalyptus and Proteaceae species, where they feed primarily on Banksia, Hakea and marri, pine plantations and urban areas (Johnstone, et al., 2010; Pizzey & Knight, 1997).	Likely based on nearby records
<i>Charadrius leschenaultii</i> Greater Sand Plover, Large Sand Plover	VU	MI	Wide, sandy or shelly beaches; sandspits, tidal mudflats, reefs, sand cays, mangroves, saltmarsh, dunes, bare paddocks; seldom far inland (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Falco peregrinus</i> Peregrine Falcon	OS		Diverse habitats ranging from rainforest to the coast, alpine areas and arid shrublands (Pizzey & Knight, 1997). Cliffs, gorges, timbered watercourses, environs of rivers, wetlands, plains, open woodlands pylons, spires, buildings (Pizzey & Knight, 2012).	Possible based on habitat preferences
<i>Glareola maldivarum</i> Oriental Pratincole	MI	MI	Found in open country in the tropics and subtropics. Forages on the wing for insects. Does not breed in Australia (Menkhorst et al. 2019).	Unlikely based on regional distribution
<i>Ixobrychus dubius</i> Australian Little Bittern	P4		Reed and Typha choked areas of freshwater swamps, lakes and rivers; tussocks in wetland areas, including well-vegetated urban wetlands. Forages among dense, low swamp vegetation (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Ixobrychus flavicollis australis</i> (southwest subpop.) Black Bittern (Southwest Subpop.)	P2		Found in inland waters with tall, shady fringing vegetation (Menkhorst et al. 2019).	Unlikely based on habitat preferences
<i>Leipoa ocellata</i> Malleefowl	VU	VU	Mallee, Acacia, paperbark, sheoak and other scrubs, eucalypt woodland and coastal heaths, mainly on sandy or gravel soils (Pizzey & Knight, 2012).	Unlikely based on habitat preferences

Taxon Common Name	WA status	Cth status	Habitat	Likelihood of Occurrence
<i>Limosa lapponica</i> Bar-Tailed Godwit	MI	MI	Tidal mudflats, estuaries, sewage ponds, shallow river margins, brackish or saline inland lakes, flooded pastures and airfields (Pizzey & Knight, 1997).	Unlikely based on habitat preferences
<i>Limosa limosa</i> Black-Tailed Godwit	MI	MI	Shallow inland wetlands and on coast. Prefers sites with muddy substrates where it feeds by wading. Does not breed in Australia (Menkhorst et al. 2019).	Unlikely based on habitat preferences
<i>Motacilla cinerea</i> Grey Wagtail	MI	MI	Found along watercourses, in quarries, escarpments and rainforests. Also sewage ponds, ploughed fields and airfields (Pizzey and Knight, 1997).	Unlikely based on habitat preferences
<i>Numenius madagascariensis</i> Eastern Curlew	CR	CR & MI	Estuaries, tidal mudflats, sandspits, saltmarshes, mangroves, fresh or brackish lakes, grasslands near water (Pizzey & Knight, 1997).	Unlikely based on habitat preferences
<i>Oxyura australis</i> Blue-Billed Duck	P4		Well vegetated freshwater swamps, large dams, lakes (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Pandion haliaetus</i> Osprey	MI	MI	Littoral and coastal habitats and terrestrial wetlands. They are mostly found in coastal areas but occasionally travel inland along major rivers (DCCEEW, 2023).	Unlikely based on habitat preferences
<i>Plegadis falcinellus</i> Glossy Ibis	MI	MI	Well vegetated wetlands, wet pastures, ricefields, floodwaters, floodplains, brackish or saline wetlands, mangroves, mudflats and occasionally dry-grasslands (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Pluvialis squatarola</i> Grey Plover	MI	MI	Occurring almost entirely in coastal areas, inhabits sheltered bays, estuaries and lagoons with mudflats and sandflats, and occasionally on rocky coasts. They also occur around terrestrial wetlands such as near-coastal lakes and swamps, or salt-lakes (DCCEEW, 2023). Mudflats, saltmarsh; tidal reefs and estuaries; rarely inland (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Rostratula australis</i> Australian Painted Snipe	EN	EN	Well vegetated shallows and margins of wetlands, dams, sewage ponds; wet pastures, marshy areas, irrigation systems, melaleuca scrub, open woodland (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Thalasseus bergii</i> Crested Tern	MI	MI	Coastal, offshore waters; beaches, bays, inlets, tidal rivers, salt swamps, lakes and larger rivers (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Tringa glareola</i> Wood Sandpiper	MI	MI	Muddy wetland margins, tidal mangroves, margins of tidal mudflats, saltmarshes and sewage ponds (Pizzey & Knight, 2012).	Unlikely based on habitat preferences

Taxon Common Name	WA status	Cth status	Habitat	Likelihood of Occurrence
<i>Tringa nebularia</i> Common Greenshank	MI	MI	Mudflats, estuaries, saltmarshes, margins of lakes; wetlands, fresh and saline claypans, saltfields and sewage ponds (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
<i>Tringa stagnatilis</i> Marsh Sandpiper	MI	MI	Wetlands (freshwater, salt or brackish), sewage ponds, saltfields, bore drains, mangroves, tidal mudflats, estuaries (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
INVERTEBRATES				
<i>Hesperocolletes douglasi</i> Douglas's Broad-Headed Bee	CR	CR	Rottneest Island; Banksia woodland. Ground-nesting (TSSC 2018).	Unlikely based on habitat preferences
<i>Hylaeus globuliferus</i> Woolybush Bee	P3		This native bee is distributed across the south-west of western Australia, with 223 records in the Atlas of Living Australia (ALA 2023). <i>Hylaeus globuliferus</i> is known to be associated with <i>Adenanthos cygnorum</i> and <i>Banksia attenuata</i> amongst other native plants (Houston 2018)	Likely based on nearby records
<i>Idiosoma sigillatum</i> Swan Coastal Plain Shield-Backed Trapdoor Spider	P3		Clay soils and rocky areas or other sheltered habitats with increased moisture retention properties like gullies and drainage lines on southern facing slopes. Avoids dense leaf litter (DCCEEW, 2023).	Unlikely based on habitat preferences
<i>Leioproctus contrarius</i> A Short-Tongued Bee	P3		Occurs on the Swan Coastal Plain in association with flowers of Goodeniaceae spp. (DEC, 2009)	Possible based on habitat preferences
<i>Synemon gratiosa</i> Graceful Sunmoth	P4		Sedgeland, heathlands, woodlands and open forest where they breed on <i>Lomandra maritima</i> and <i>L. hermaphrodita</i> . Preferred foods include various grasses, sedges and mat-rushes (Gamblin, et al., 2011).	Unlikely based on habitat preferences
MAMMALS				
<i>Bettongia penicillata ogilbyi</i> Woylie, Brush-Tailed Bettong	CR	EN	Open, sclerophyllous forests and woodlands with a dense understorey/ground cover of tussock grasses or woody scrub (DBCA, 2017).	Unlikely based on habitat preferences
<i>Dasyurus geoffroii</i> Chuditch, Western Quoll	VU	VU	Forests, mallee shrublands, heathlands and woodlands (DBCA, 2017), with a preference for riparian locations in the jarrah forest (DEC, 2012).	Unlikely based on habitat preferences
<i>Hydromys chrysogaster</i> Water-Rat, Rakali	P4		Occurs in a variety of aquatic environments (Menkhorst & Knight, 2011).	Absent based on habitat preferences

Taxon Common Name	WA status	Cth status	Habitat	Likelihood of Occurrence
<i>Isoodon fusciventer</i> Quenda, Southwestern Brown Bandicoot	P4		Dense, scrubby, often swampy vegetation (DEC, 2012). Forest, woodland, shrub and heath communities, ideally with sandy soils and dense health vegetation in the lower stratum	Unlikely based on habitat preferences
<i>Macroderma gigas</i> Ghost Bat	VU	VU	Caves, crevices or old mine adits are used for roosting and nesting.	Unlikely based on habitat preferences
<i>Notamacropus irma</i> Western Brush Wallaby	P4		Open forest or woodland with a preference for seasonally inundated flats with low grasses and open, scrubby thickets (van Dyck, et al., 2013).	Unlikely based on habitat preferences
<i>Pseudomys shortridgei</i> Heath Mouse, Heath Rat, Dayang	VU	EN	Species-rich dry heathland, stringybark open forest with a healthy understorey, mixed scrub and mallee (van Dyck et al. 2013).	Unlikely based on habitat preferences
<i>Sternula nereis nereis</i> Fairy Tern	VU	VU	Coastal waters, bays, inlets, saline or brackish lakes, saltfields, sewage ponds near coast (Pizzey & Knight, 2012).	Unlikely based on habitat preferences
REPTILES				
<i>Neelaps calonotos</i> Black-Striped Snake, Black- Striped Burrowing Snake	P3		Coastal heaths and low shrublands in coastal and near coastal locations, where it feeds on lizards (Cogger, 2014). Sandy soils supporting heath and banksia/eucalypt woodland.	Likely based on nearby records
<i>Pseudemydura umbrina</i> Western Swamp Tortoise	CR	CR	Restricted to small, clay-based temporary swamps. Aestivates under dense, low vegetation during the dry months (Wilson & Swan, 2023).	Unlikely based on habitat preferences

Attachment B - Figures



- Legend**
- Proposed clearing area
 - Mining tenement
 - ↗ Photo point directions
 - Minor road

Scale: 1:7,000 at A4

Coord. Sys. GDA2020MGA Zone 50

Job Number: 65372

Client: Urban Resources Pty Ltd

Version: A Date: 21-Jul-2023

Drawn By: jcrute Checked By: DM

Bustard Road, Marigniuip, WA 6078

SEISMIC ROAD SITE AND PHOTO LOCATIONS

FIGURE 1





- Legend**
- Proposed clearing area
 - Mining tenement
 - ↗ Photo point directions

Scale: 1:4,000 at A4

Coord. Sys. GDA2020MGA Zone 50

Job Number: 65372

Client: Urban Resources Pty Ltd

Version: A Date: 21-Jul-2023

Drawn By: jcrute Checked By: DM

Amarante Road, Marigniu, WA 6078

HAWKINS ROAD SITE AND PHOTO LOCATIONS

FIGURE 2



Attachment C - Photos

Seismic Road





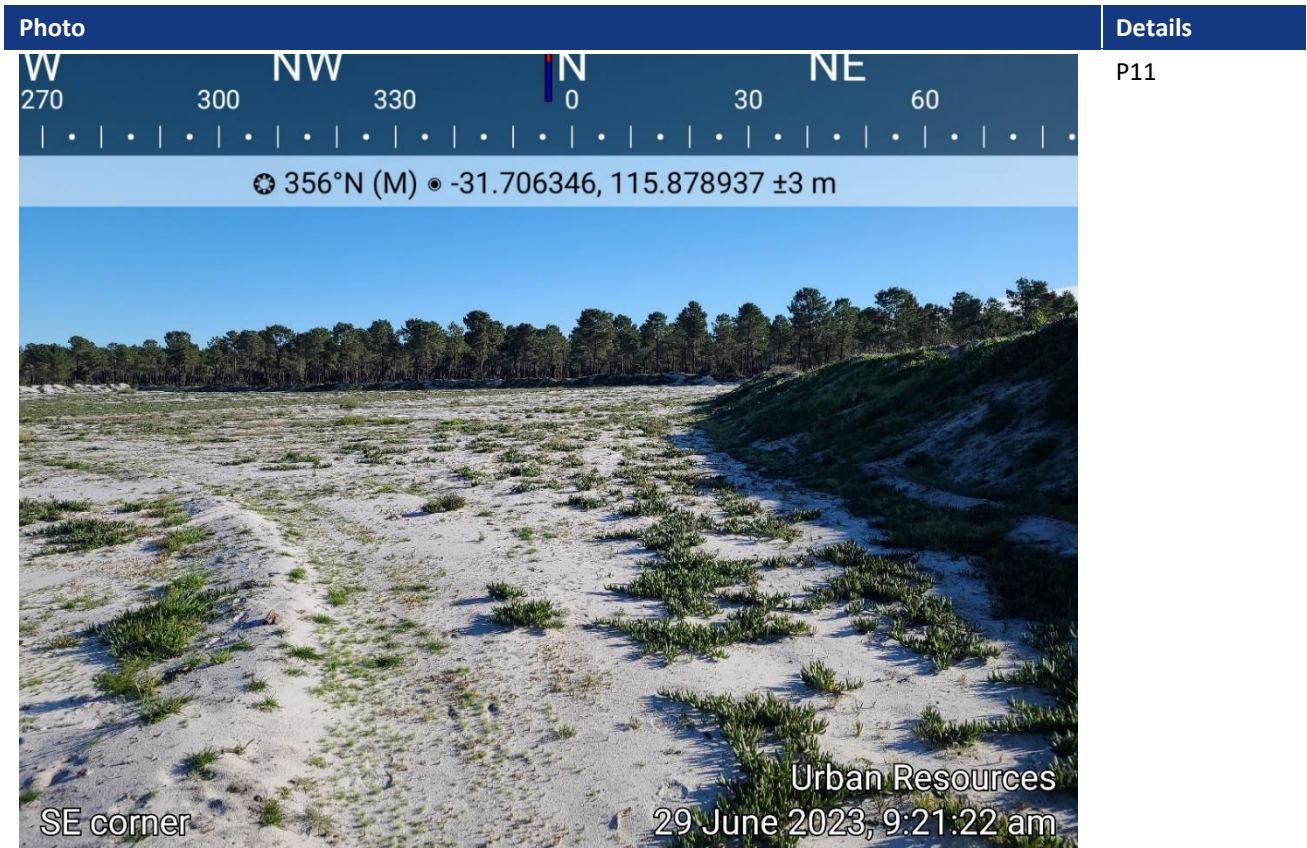
Photo	Details
<p data-bbox="172 309 1209 369">S SW W NW 150 180 210 240 270 300</p> <p data-bbox="389 421 983 454">☉ 234°SW (M) ● -31.70801, 115.885496 ±3 m</p>  <p data-bbox="177 1055 336 1088">NE corner</p> <p data-bbox="699 1010 1203 1093">Urban Resources 29 June 2023, 8:41:11 am</p>	<p data-bbox="1257 315 1302 338">P01</p>
<p data-bbox="161 1113 1209 1173">SE S SW W 150 180 210 240 270 300</p> <p data-bbox="379 1225 992 1258">☉ 220°SW (M) ● -31.708041, 115.885462 ±3 m</p>  <p data-bbox="177 1861 336 1895">NE corner</p> <p data-bbox="794 1816 1203 1899">Urban Resources 29 June 2023, 8:42:39 am</p>	<p data-bbox="1257 1120 1302 1142">P02</p>

Photo	Details
	<p>P03 *<i>Carpobrotus edulis</i></p>
	<p>P04 *<i>Carpobrotus edulis</i></p>







Photo


Details



P13



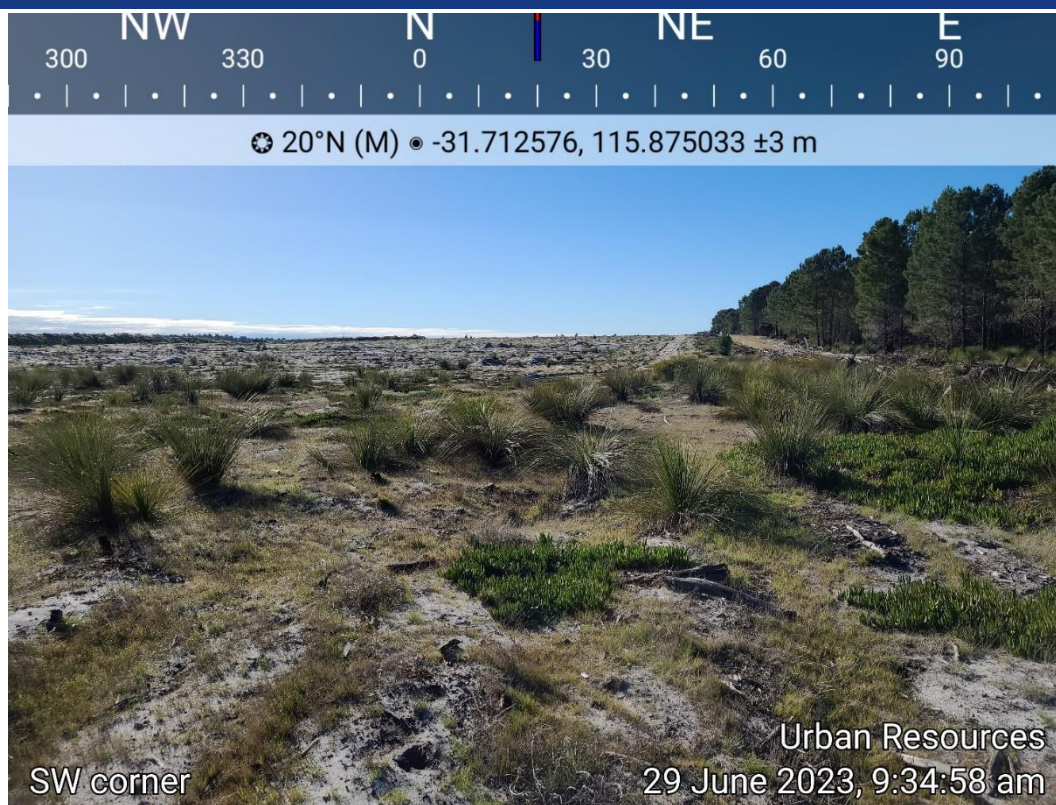
P14

Photo	Details
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<div style="display: flex; justify-content: space-between; border-bottom: 1px solid black; padding-bottom: 5px;"> NW 300 N 330 0 30 NE 60 E 90 </div> <div style="text-align: center; border-bottom: 1px solid black; padding: 5px;"> ☉ 28°N (M) ● -31.712582, 115.875028 ±3 m </div>  <div style="display: flex; justify-content: space-between; padding-top: 10px;"> SW corner Urban Resources 29 June 2023, 9:34:47 am </div>	<p>P16</p>
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Photo

Details



P17

Hawkins Road



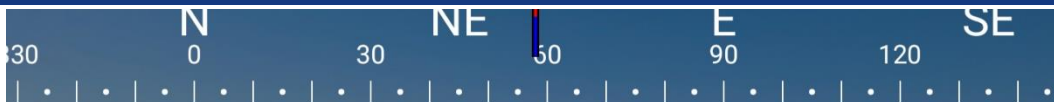
Photo	Details
<p>SW 210 240 W 270 300 NW 330 N 0</p> <p>288°W (M) • -31.719199, 115.865049 ±9 m</p>  <p>East side of mining area Urban Resources 29 June 2023, 10:18:36 am</p>	P18
<p>W 270 300 NW 330 N 0 NE 30 60</p> <p>340°NW (M) • -31.719207, 115.865083 ±4 m</p>  <p>East side of mining area Urban Resources 29 June 2023, 10:19:13 am</p>	P19

Photo Details



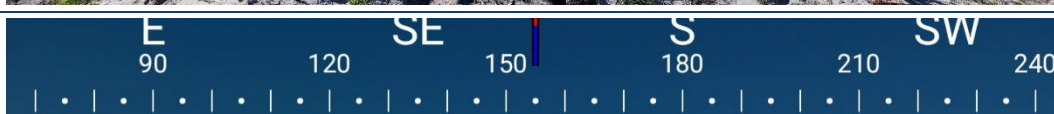
P20

58°NE (M) • -31.719207, 115.865083 ±5 m



East side of mining area

Urban Resources
29 June 2023, 10:19:19 am



P21


155°SE (M) • -31.719207, 115.865082 ±4 m



East side of mining area

Urban Resources
29 June 2023, 10:19:32 am

Photo	Details
<div style="background-color: #1a3d54; color: white; padding: 5px;"> <p style="text-align: center;">SW W NW N</p> <p style="text-align: center;">210 240 270 300 330 0</p> <hr style="border: 0; border-top: 1px dashed white;"/> <p style="text-align: center; color: white;">📍 279°W (M) ● -31.718215, 115.864831 ±6 m</p> </div>  <p style="text-align: right; color: white; font-weight: bold;">Urban Resources</p> <p style="text-align: right; color: white;">Centre 29 June 2023, 10:26:49 am</p>	<p>P22</p>

<div style="background-color: #1a3d54; color: white; padding: 5px;"> <p style="text-align: center;">SE S SW W</p> <p style="text-align: center;">120 150 180 210 240 270</p> <hr style="border: 0; border-top: 1px dashed white;"/> <p style="text-align: center; color: white;">📍 200°S (M) ● -31.718236, 115.864838 ±3 m</p> </div>  <p style="text-align: right; color: white; font-weight: bold;">Urban Resources</p> <p style="text-align: right; color: white;">Centre 29 June 2023, 10:27:06 am</p>	<p>P23</p>
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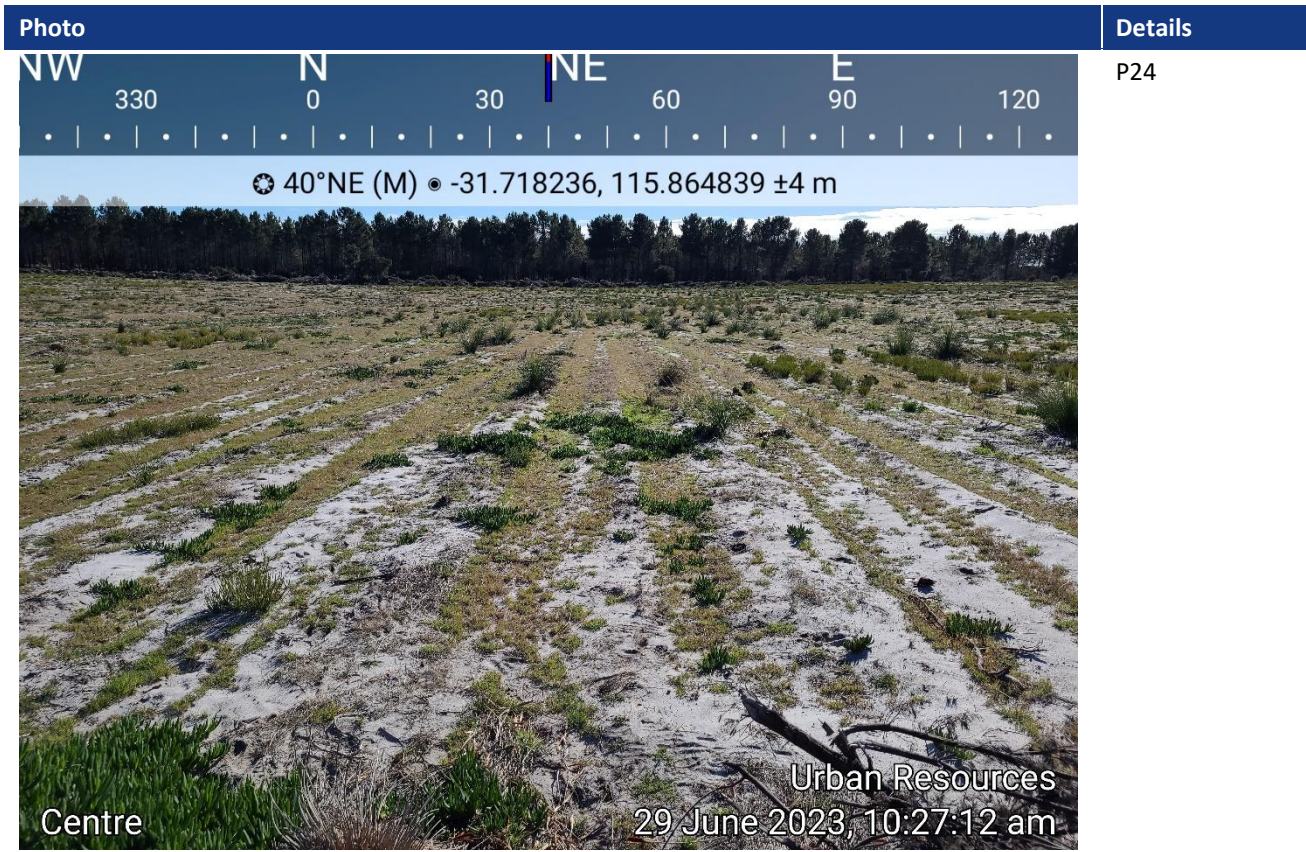




Photo	Details
<p data-bbox="145 248 1241 353">NW 330 N 0 NE 60 E 90</p> <p data-bbox="395 365 975 405">☀ 30°N (M) ● -31.718234, 115.864837 ±5 m</p>  <p data-bbox="159 1003 284 1048">Centre</p> <p data-bbox="774 958 1203 1048">Urban Resources 29 June 2023, 10:27:17 am</p>	<p data-bbox="1257 259 1302 293">P26</p>

<p data-bbox="145 1048 1241 1153">S 150 180 210 SW 240 W 270 300 NW</p> <p data-bbox="379 1171 991 1211">☀ 232°SW (M) ● -31.716719, 115.861687 ±3 m</p>  <p data-bbox="159 1809 480 1854">NW corner facing S</p> <p data-bbox="774 1765 1203 1854">Urban Resources 29 June 2023, 10:43:58 am</p>	<p data-bbox="1257 1059 1302 1093">P27</p>
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Photo	Details
 <p data-bbox="159 248 1222 353"> N 0 NE 30 60 E 90 120 SE 150 </p> <p data-bbox="399 358 973 403"> ☉ 87°E (M) ● -31.716719, 115.861687 ±3 m </p> <p data-bbox="159 996 1222 1048"> NW corner facing E Urban Resources 29 June 2023, 10:44:10 am </p>	<p data-bbox="1244 248 1292 291">P28</p>

 <p data-bbox="159 1048 1222 1131"> E 90 SE 120 150 S 180 </p> <p data-bbox="159 1131 1222 1176"> ☉ 144°SE (M) ● -31.717632, 115.861831 ±3 m </p> <p data-bbox="159 1792 1222 1852"> Urban Resources 29 June 2023, 10:46:26 am </p>	<p data-bbox="1244 1064 1292 1097">P29</p> <p data-bbox="1244 1097 1404 1164">*<i>Carpobrotus edulis</i></p>
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Photo

Details



P30

204°S (M) -31.719052, 115.861757 ±3 m



Urban Resources
29 June 2023, 10:50:29 am

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