

# **Population Survey**

Conospermum undulatum

Main Roads 18 July 2025

→ The Power of Commitment



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# **Executive Summary**

Main Roads Western Australia (Main Roads) is proposing to upgrade Tonkin Highway from south of Roe Highway to approximately 1 kilometre (km) north of Kelvin Road (Hale Road and Welshpool Road Proposal) and from approximately 1 km north of Kelvin Road south to Maddington Road (Kelvin Road Proposal). Both Tonkin Highway Grade Separated Interchanges proposals will result in potential direct impacts to *Conospermum undulatum*, a Threatened species listed as Vulnerable under both the State *Biodiversity Conservation Act 2016* (BC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

GHD Pty Ltd (GHD) was engaged by Main Roads to undertake a Targeted survey of all known accessible *Conospermum undulatum* populations, including survey of individuals within the vicinity of each subpopulation. The purpose of the survey was to provide up to date information on the number of individuals, subpopulation status and extent of the species across its range, as well as to characterise existing subpopulations.

This report documents the methods and results of the population survey. This report is subject to, and must be read in conjunction with, the limitations, assumptions and qualifications contained throughout the Report.

#### **Desktop assessment**

Conospermum undulatum is known to occur within a restricted area between the suburbs of High Wycombe and Martin, in the foothills of the Darling Scarp. It is found growing in sand and sandy clay soils, often over laterite, on flat or gently sloping sites. The populations have been severely fragmented due to land clearing, poor habitat quality, road and firebreak maintenance, inappropriate fire regimes, weeds, recreational activities and rabbit grazing (Department of Environment and Conservation (DEC) 2009).

The Department of Biodiversity, Conservation and Attraction (DBCA) Threatened and Priority Flora Database and WA Herbarium Database (DBCA 2023) list 35 populations / 135 subpopulations of *C. undulatum* occurring along the eastern extent of the Swan Coastal Plain bioregion and the western extent of the Jarrah Forest bioregion. From these records 11 subpopulations are presumed extinct. From the remaining 124 subpopulations the desktop assessment reports 13,060 individuals.

#### Survey results

GHD were granted access to 70 subpopulations and recorded a total of 11,919 individuals from 43 (of the 70) subpopulations. This total comprised of 10,503 adults, 640 juveniles and 776 seedlings. Of the 11,919 plants recorded 9,821 were considered healthy, 1,814 moderate and 284 were poor in health. No individuals were recorded from the remaining 27 subpopulations, confirming seven as extinct (previously identified as extinct in the DBCA records) and identifying an additional 20 subpopulations as extinct. When combining the GHD 2024 survey results for accessible subpopulations and desktop results for non-accessible populations there are a total of 104 extant subpopulations and 31 extinct subpopulations.

A total count for *C. undulatum* was estimated based on the GHD 2024 survey and the desktop results (for non-accessible subpopulations). The estimated count from the 104 extant subpopulations of *C. undulatum* is 16,413 individuals. This total is 3,353 more *C. undulatum* individuals than estimated from the desktop results.

The highest count of plants during the survey was 2,754 individuals, recorded within Maida Vale Reserve (subpopulations 1a and 1e). The next highest count was subpopulation 18g at DFES training school with 2,729 individuals. Population 18g also recorded the highest count of juveniles and seedlings and was considered the healthiest population. Pioneer Park, subpopulation 18l and k recorded the greatest count of plants considered to be in Moderate or Poor health.

The most commonly associated species recorded growing with *C. undulatum* were, for the upper stratum, *Allocasuarina fraseriana, Eucalyptus marginata* subsp. *marginata, Banksia menziesii* and *B. attenuata*. For the mid stratum, *Xanthorrhoea preissii*, *Lambertia multiflora* var. *darlingensis*, *Allocasuarina humilis* and *Adenanthos cygnorum* subsp. *cygnorum*. For the lower stratum *Hibbertia hypericoides, Mesomelaena pseudostygia, Dasypogon bromeliifolius* and *Stirlingia latifolia*.

GHD conducted soil samples at nine sites to determine *C. undulatum* preferred soil type, particle size and nutrient load. The results showed *C. undulatum* occurs in soil made up of 91<96% sand, with 4<7% clay. Over 50% of the

soil particle size ranged from 75µm <425µm. Results between samples taken from areas where *C. undulatum* was growing and areas where *C. undulatum* were not growing showed no significant difference between particle size or soil type. The Nitrate nutrient load for soil taken from areas where *C. undulatum* occurred was significantly higher than areas where *C. undulatum* was not recorded growing.

Several populations surveyed had confirmed dieback presence from historical testing, these were from Maida Vale Reserve (1a & e), Gooseberry Hill Road Bushland (b & c) and Sultana Road West Bushland (4h, i & j). Dieback is suspected to occur at Kelvin Rd within private property (16j), Smokebush Place (17), Bougainvillea Avenue Bushland (18h, t & y) and Welshpool Road Bushland (19b, c & d). *Conospermum undulatum* was recorded in dieback infested areas however numbers were noticeable sparser in the infested mapped areas when compared to the uninfested areas.

All subpopulations had been affected by fire at some time. The subpopulations with evidence of recent (<3 years) fire events included Hawkesvale Nature Reserve (2), Department of Fire and Emergency Services (DFES) - Fire Training School (18g), Smokebush Place (17) and Roe Highway Road reserve (18v). Subpopulations affected by a recent fire event appeared to have higher juvenile and seedling numbers than where a fire event was older (5 years +).

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## 1. Introduction

## 1.1 Background

Main Roads Western Australia (Main Roads) is proposing to upgrade Tonkin Highway from south of Roe Highway to approximately 1 kilometre (km) north of Kelvin Road (Hale Road and Welshpool Road Proposal) and from approximately 1 km north of Kelvin Road south to Maddington Road (Kelvin Road Proposal). Both Tonkin Highway Grade Separated Interchanges proposals will result in potential direct impacts to *Conospermum undulatum*, listed as Threatened (Vulnerable) under the State *Biodiversity Conservation Act 2016* (BC Act) and Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Main Roads commissioned GHD Pty Ltd (GHD) to undertake a Targeted survey of all known accessible *C. undulatum*, including survey of individuals within the vicinity of each sub-population. It is understood the results of the population survey will assist in the assessment of potential impacts on the species and provide information to support Offset Strategies for the proposals. The results of the survey will also provide critical information for the long-term management and improved conservation security of *C. undulatum*.

## 1.2 Purpose of this report

This report documents the methods and results of the Targeted *C. undulatum* survey. The purpose of the survey was to provide up to date information on the number of individuals, populations and extent of the species across its range as well as characterise existing populations.

#### 1.3 Location

Conospermum undulatum occurs on the eastern side of the Swan Coastal Plain (SCP) and extends into the Jarrah Forest Interim Biogeographic Regionalisation of Australia (IBRA) bioregion in the Local Government Areas (LGA) of Kalamunda, Gosnells, Belmont, Canning and Swan. The survey area included known populations that were accessible to the GHD survey team, as detailed in Section 2.2.2 and broadly illustrated in Appendix A, Figure 1.

## 1.4 Scope of works

The scope of works included:

- A desktop assessment of known C. undulatum populations through a review of supplied data to collate previous recorded plant numbers, plant growth stage, health and site characteristics (where reported) for each population
- A Targeted flora survey of known and accessible *C. undulatum* populations (excluding populations at Perth Airport)
- Preparation of a survey report (this document) to document the methods and results of the desktop assessment and field survey
- Provision of spatial/mapping data collected during the survey consistent with Index of Biodiversity Surveys for Assessments (IBSA) and Main Roads data standards.

## 1.5 Report limitations and assumptions

This report has been prepared by GHD for Main Roads and may only be used and relied on by Main Roads for the purpose agreed between GHD and Main Roads as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Main Roads arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as access, the location of services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

GHD has prepared this report on the basis of information provided by Main Roads and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

## 2. Methods

## 2.1 Desktop assessment

Prior to the commencement of the field survey, a desktop assessment was undertaken to identify known *C. undulatum* populations excluding populations on Commonwealth land associated with the Perth Airport. This included a review of the following data sources and technical reports made available by Main Roads:

- The Department of Biodiversity, Conservation and Attractions (DBCA) Threatened and Priority Flora List
   Database (TPFL) and WA Herbarium Database (C. undulatum records) (DBCA 2023)
- DBCA Perth Hills Korung National Park and Bougainvillea Avenue Bushland (C. undulatum records) (DBCA 2020)
- DBCA Swan Coastal Dundas Road Bushland and Hawkesvale Nature Reserve (*C. undulatum* records)
   (DBCA 2016)
- Main Roads Flora Database (C. undulatum records) (Main Roads n.d.)
- Sultana Road West C. undulatum Targeted survey spatial data (AECOM 2019)
- Tonkin Grade Separated Interchanges Biological Survey and Targeted Black Cockatoo Habitat Assessment (Woodman Environmental Consulting 2021)
- Hartfield Park Offset Area: Flora, Vegetation and Black-Cockatoo Survey (Western Environmental 2022)
- Vegetation Assessment: Clifford Street Bushland (Western Environmental 2023)
- Wavy-leaved smokebush (Conospermum undulatum) Recovery Plan (Department of Environment and Conservation 2009).

For each population/subpopulation identified, the below information was compiled (where available) using the data sources listed above as well as viewing geographic information system (GIS) spatial files largely sourced from Government of Western Australia (GoWA) (2024):

- Known survey dates and count of plants
- Last known population condition
- Landforms (DPIRD 064)
- Soil types (DPRID\_024)
- Broad scale vegetation types (Heddle et al. 1980, Webb 2016 and Mattiske & Havel 1998)
- Hydrology -minimum depth to groundwater (where reported) (DWER-095)).

## 2.2 Field survey

#### 2 2 1 Overview

GHD Senior Botanists Angela Benkovic (flora license no. FB62000080-3, Threatened Flora license no. TFL 2324-0083) and Alex Sleep (flora license no. FB62000557, TFL 048-2122) completed a Targeted flora survey for *C. undulatum* over 52 days from 17 October 2023 to 26 February 2024.

The survey methodology and data collection GHD employed was consistent with relevant aspects of Environmental Protection Authority (EPA) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016).

## 2.2.2 Survey locations

There are 135 *C. undulatum* subpopulations listed in the DBCA TPFL Database and WA Herbarium Database (DBCA 2023). Of these, four subpopulations are located at Perth Airport (DBCA 2023). GHD were granted access

to 70 of the 135 subpopulations. A list of the 70 subpopulations are provided in Appendix B and Appendix A, Figure 2.

#### 2.2.3 Data collection

Field data collection was undertaken using an S580 GNSS device with an accuracy of < 0.5 m. The GNSS device was used with the Arc GIS Collector App on Samsung tablets. The electronic forms in Collector were tailored to Main Roads spatial data requirements. Data was synced to the cloud at the conclusion of each field day. GPS devices were used to capture survey effort (track logs). Field photographs were stored and where applicable have been provided as part of the deliverable.

#### Targeted searches- Conospermum undulatum

Field survey methods involved walking transects spaced 25 metre (m) to > 2m apart depending on suitable habitat and presence of *C. undulatum* (Appendix A, Figure 2). A point was recorded for each juvenile or mature plant located in the field. Where saplings were observed a point was taken and a count of saplings within a 2 m radius was recorded. Landscape paint was used to mark the ground near each plant to ensure no double counts. Data collected for each *C. undulatum* individual included the parameters detailed in Table 1.

Table 1 Conospermum undulatum data collected during the population survey.

Aspect	Measurement
Collection attributes	Site name, personnel/recorder, date,
Location	Coordinates recorded in Geocentric Datum of Australia 2020 (GDA2020) datum using a S580 GNSS device with an accuracy of < 0.5 m.
Abundance	1 for Adult or Juvenile, multiple for saplings
Health	Healthy -No signs of plant stress, no dead growth Moderate - Signs of plant stress with dead foliage Poor - Individual in poor health and close to senescing / has senesced Extinct - No longer any evidence of the plant
Age	Adult - Multi stemmed > 0.5 tall Juvenile/ Re-sprouting - Re-sprouting from lignotuber (post-fire/disturbance) multi stemmed and less than 0.5 tall Seedling - One stem
Canopy	Full sun Dappled sun Shade
Flowering	Yes/No
Insects	Yes/No
Disease	Yes/No

#### Relevés – vegetation types

Relevé sampling was undertaken to identify and describe the broad, dominant vegetation types, assess vegetation condition, and complete low intensity sampling of vascular flora taxa associated with *C. undulatum* populations.

Forty relevés were completed for the Targeted survey. The locations of these relevés are illustrated in Appendix A, Figure 2. Field data for the relevés were recorded on a pro-forma data sheet and included the parameters detailed in Table 2.

Table 2 Relevé data collected during the population survey

Aspect	Measurement
Collection attributes	Site code, personnel/recorder, date, photograph of the site.
Physical features	Landform, slope, aspect, soil attributes, ground surface cover.
Location	Coordinates recorded in Geocentric Datum of Australia 2020 (GDA2020) datum using a S580 GNSS device with an accuracy of < 0.5 m.
Vegetation condition	Broad-scale vegetation condition using the condition rating scale adapted by EPA (2016) for the Southwest Botanical Province.
Disturbance	Level and nature of disturbances (e.g. weed presence, fire and time since last fire, impacts from grazing, infrastructure development activities).
Flora	List of dominant flora from each structural layer for relevés including stratum, average height and cover using National Vegetation Information System (NVIS) (NVIS Technical Working Group 2017).

#### Soil samples

One point was recorded for each Soil Sample Location (SSL). Soil samples were taken to a depth of 15 centimetres (cm) using a trowel. These samples were located near *C. undulatum* populations that appeared healthy and at locations within the same remnant vegetation that had no *C. undulatum* populations. At each SSL, a sample was taken for soil type and particle size and another sample was taken to analyse soil nutrients (Table 3). There were 18 SSL recorded within nine bushland remnants (Appendix A, Figure 2).

To determine soil type and particle size two plastic snap lock bags 500 grams (g) each were filled with soil to make up a combined weight of approximately 1 kilogram (kg). To analyse soil nutrients a 150 millilitre (mL) glass jar was filled with soil. In the field the soil samples were kept in a chilled cooler box. Soil samples were then refrigerated until being sent to ALS Global for analysis. One SSL consisted of plastic snap lock bags and one glass jar. The time between soil collection in the field and soil sample arrival at ALS Global was < 72 hours.

Table 3 Soil samples taken at each Soil Sample Location

Test	Container	Parameter
Soil type and particle size	2 x 500g Snap Lock Bag - Friable Asbestos/PSD Bag	Particle Sizing with Hydrometer + Soil Particle Density
Nutrients	1 x 150mL Soil Glass Jar -	Nitrite, Nitrate, Ammonia, Reactive Phosphorus, Total Nitrogen, Total Phosphorus

#### Soil data analysis

Soil samples collected where *C. undulatum* populations existed were compared with soil samples where *C. undulatum* populations were not present. The soil parameters between these groups were compared using two sample t-tests (Student's t-test) with two-tail P values. Tests were performed within a 95% confidence interval. Additionally, the mean, standard deviation and standard error for each parameter was completed. Data analysis was performed using MS Excel Data Analysis Tool.

## 2.2.4 Post survey data review

On completion of the field survey GHD reviewed the data collected in the field to ensure duplications, hybrids and points for *C. triplinervium* were removed from the *C. undulatum* data set. A check was also performed to ensure that any extinct records had a count of zero.

#### 2.3 Limitations

## 2.3.1 Desktop assessment

Discrepancies were encountered when reviewing the DBCA (2023) database counts of *C. undulatum*. There were several instances where mature, juvenile and seedling counts where inconsistent when compared to abundance or live totals. This report has used the largest count for each subpopulation from the DBCA dataset in the desktop assessment. The exception was when the 'PopStatus' field for the subpopulation was 'X'; as this defines the subpopulation as extinct.

The count data reported in Woodman Environmental Consulting (2021) and Western Environmental (2022; 2023) does not include counts for juvenile plants of *C. undulatum* as juveniles were not recorded as part of the surveys. It is unknown if count data reported in AECOM (2019) includes juvenile plants.

## 2.3.2 Field survey

The EPA (2016) Technical Guidance states that flora and vegetation survey reports for environmental impact assessment in WA should contain a section describing the limitations of the survey methods used. The limitations and constraints associated with this population survey are discussed in Table 4. Based on this assessment the main limitation for the population survey was land access. GHD were unable to conduct a full population survey as access was only given to 52% of the population.

Table 4 Population survey limitations

Aspect	Constraint	Comment	
Sources of information and availability of contextual information.	Nil	<ul> <li>Adequate information is available for the survey area, this includes:</li> <li>Vegetation complex mapping (Heddle et al. 1980, Mattiske and Havel 1998 and Webb et al. 2016)</li> <li>Previous reports (Department of Environment and Conservation (DEC) 2009, Woodman Environmental Consulting 2021, Western Environmenta 2022 &amp; 2023)</li> <li>Historical data: DBCA Threatened and Priority Flora Database and WA Herbarium Database (<i>C. undulatum</i> records) and Main Roads Flora Database (<i>C. undulatum</i> records)</li> </ul>	
Scope (what life forms were sampled etc.)	Nil	Vascular flora were sampled during the survey. Non-vascular flora were not surveyed.	
Proportion of flora and fauna collected and identified (based on sampling, timing and intensity)	Nil	The Conospermum undulatum population survey was undertaken between 17 October 2023 and 26 February 2024. The survey began during the recommended timing for flora surveys in the Southwest Interzone Botanical Province (Sept-Nov) (EPA 2016) and towards the end of the known flowering period for C. undulatum (May-Oct) (WA Herbarium, 1998-). However, C. undulatum can be easily identified without flowering material and low intensity sampling (relevés) were used to broadly describe the preferred habitat of C. undulatum.  The survey timing was considered appropriate for the purpose of the assessment. A flora species list is provided in Appendix C.	
Flora determination	Nil	Flora determination was undertaken by the survey botanists in the field. Species that could not be identified in the field were collected and identified at the WA Herbarium by Senior Botanist Angela Benkovic.  The taxonomy and conservation status of the WA flora is dynamic. This report was prepared with reliance on taxonomy and conservation status current at the time report development, but it should be noted this may change in response to ongoing research and review of International Union for Conservation Nature criteria.	
Completeness and further work which might be needed (e.g. was the relevant area fully surveyed)	Major (overall) Nil (of surveyed areas)	A complete population survey of <i>C. undulatum</i> was unable to be completed. Of the 135 populations/subpopulations, GHD were granted access to 70 (52%).	

Aspect	Constraint	Comment		
•		Of the 70 populations/subpopulations their extents were thoroughly surveyed on foot during the field survey in line with the scope.		
Mapping reliability	Nil	The vegetation was mapped using high-resolution aerial imagery obtained from Landgate, topographical features, previous broad scale mapping (Heddle et al. 1980, Mattiske and Havel 1998 and Webb et al. 2016) and field data. Data was recorded in the field using a hand-held S580 GNSS device with an accuracy of < 0.5 m.		
Timing/weather/ season/cycle	Minor	The field survey was conducted between 17 October 2023 and 26 February 2024. The closest weather station to the survey area for climatic data is Perth Airport (009021).		
		In the three months prior to the survey (July - September), Perth Airport weather station recorded a total of 230.8 mm of rainfall. This is 33% below the recorded average for the same period (344.9 mm) (Bureau of Meteorology (BoM) 2024).		
		The weather conditions recorded at Perth Airport during the survey was warm with little cloud cover. A summary of the climatic conditions are provided:		
		Maximum temperature range 22.4 - 44.6°C		
		Minimum temperature range 6.5 – 27.7°C		
		Rainfall total during the survey 10.2 mm.		
		The weather conditions recorded during the survey may have contributed to the poor health of some <i>C. undulatum</i> populations. A number of individuals appeared to be affected by lack of rain.		
Disturbances (e.g. fire, flood, accidental human intervention)	Nil	Some of the survey area has been subjected to historical disturbance events (e.g. clearing, anthropogenic activities associated with existing roads and infrastructure); however, these disturbances did not affect the results of the survey.		
Intensity (in retrospect, was the intensity	Nil	The vascular flora of the survey area was sampled in accordance with EPA (2016).		
adequate)		The survey area was sufficiently covered by the field botanists during the survey.		
Resources	Nil	Adequate resources were employed during the field survey. Fifty-two person days were spent undertaking the survey using two botanists.		
Access restrictions Major		The survey area was accessible by vehicle and on foot. Land holder permission to access 61 populations/subpopulations was not granted at the time of the survey.		
Experience levels		The botanists who executed the survey are practitioners suitably qualified and experienced in their respective fields:		
		<ul> <li>Senior Botanist, Angela Benkovic (flora licence no. FB62000080-3), has more than 18 years' experience leading and conducting vegetation and flora surveys</li> </ul>		
		<ul> <li>Senior Botanist, Alex Sleep (flora licence no. FB62000557,), has more than 15 years' experience leading and conducting vegetation and flora surveys.</li> </ul>		

# 3. Desktop assessment

Desktop assessment results are illustrated in Appendix A, Figure 3, Figure 4 and Figure 5, and summarised in Appendix B.

# 3.1 Conospermum undulatum

Conospermum undulatum (wavy-leaved smokebush) is described as an erect straggly shrub that is usually multi stemmed and can grow up to 2 m high. The leaves have three distinct parallel veins with a conspicuously wavy margin. The woolly white flowers are produced in inflorescences that grow well above the leaves and are reported to occur between August and November (DEC 2009).

The species occurs within a restricted area between the suburbs of High Wycombe and Martin, in the foothills of the Darling Scarp. It is found growing in sand and sandy clay soils, often over laterite, on flat or gently sloping sites. The populations have been severely fragmented due to land clearing and other key threats include road and firebreak maintenance, inappropriate fire regimes, weeds, recreational activities and rabbit grazing (DEC 2009).

Representative photos of Conospermum undulatum are provide in Plate 1.







Plate 1

Conospermum undulatum (L-R) habit, inflorescence, leaves

## 3.2 Historic records

The DBCA TPFL Database and WA Herbarium Database list 35 populations / 135 subpopulations of *C. undulatum* occurring along the eastern extent of the Swan Coastal Plain bioregion and the western extent of the Jarrah Forest bioregion. In these databases subpopulations counts are between 1997 and 2020. More recently (2019-2023) several populations have been surveyed by private consultants on behalf of Main Roads and Public Transport Authority (PTA).

Table 5 summarises the count data and the total population estimate for each known *C. undulatum* subpopulation based on desktop data sources including DBCA data, and surveys by AECOM (2019) for PTA, and Woodman Environmental Consulting (2021) and Western Environmental (2022; 2023) for Main Roads. The data indicates a total of 13,060 individuals (juvenile and mature plants) from 124 subpopulations, with 11 subpopulations presumed extinct. This data is presented in Figure 3.

Table 5 Conospermum undulatum desktop population estimate

Pop. No	Sub-Pop.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	DBCA count (Year)	Total population estimate (desktop)
1	а					1,592 (2005)	1,592
1	b					362 (2002)	362
1	С					508 (1998)	508
1	d					11 (2002)	11
1	е					57 (2002)	57
1	f					33 (2005)	33
1	g					1 (2006)	1
1	h					80 (2002)	80
1	i					131 (2011)	131
1	j					1 (1998)	1
1	k					4 (2020)	4
2	а					405 (2016)	405
3	а					1 (2008)	1
4	а					62 (1997)	62
4	b					89 (2008)	89
4	С					0 (1997)	0
4	d					41 (2008)	41
4	е					0 (2006)	0
4	f					0 (2006)	0
4	g					16 (2008)	16
4	h	152				76 (2006)	152
4	i	76				1 (1997)	76
4	j	187				1 (1997)	187
4	k					1 (1997)	1
4	I					20 (2006)	20
4	m					7 (2006)	7
4	n					103 (2005)	103
4	0					161 (2005)	161
4	р					152 (2005)	152
1	q					120 (2005)	120
4	r					14 (2008)	14
4	S					72 (2008)	72
4	t					1 (2005)	1
4	u					4 (2008)	4
4	V					7 (2008)	7
5	а					2 (2008)	2
6	а					11 (1997)	11

Pop. No	Sub-Pop.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	DBCA count (Year)	Total population estimate (desktop)
7	а					0 (1997)	0
8	а					4 (2001)	4
8	b					4 (2005)	4
9	а					0 (2006)	0
9	b					14 (2014)	14
10	a, b, d, f, g & h		639	75		457 (2000)-(2013)	714
10	С		15			10 (2006)	15
10	е		106	5		10 (2006)	111
11	а					0 (2005)	0
11	b					7 (2006)	7
11	С					100 (2005)	100
11	d					175 (2005)	175
11	е					12 (2006)	12
11	f					1 (2005)	1
12	а					72 (2005)	72
13	а		431		3	655 (2006)	434
13	Part of a		9				9
13	b					10 (1997)	10
13	С					0 (1997)	0
14	а					0 (2005)	0
14	b					1 (2005)	1
15	а					0 (2005)	0
16	а					337 (2020)	337
16	b					80 (2006)	80
16	С					209 (2006)	209
16	d					120 (2006)	120
16	е					8 (2006)	8
16	f and g					911 (2006)	911
16	h					236 (2006)	236
16	i					1 (1997)	1
16	j					17 (2005)	17
16	k					2 (2006)	2
16	I					10 (2006)	10
16	m					31 (2006)	31
16	n					2 (2020)	2
16	О					15 (2009)	15
16	р					30 (2009)	30
16	q					56 (2016)	56

Pop. No	Sub-Pop.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	DBCA count (Year)	Total population estimate (desktop)
16	r					30 (2009)	30
16	s					119 (2018)	119
17						94 (2006)	94
18	а					1,659 (2013)	1,659
18	b					0 (1997)	0
18	С					97 (2006)	97
18	d					15 (2006)	15
18	е					42 (2006)	42
18	f					134 (2006)	134
18	g					413 (2006)	413
18	h					497 (2020)	497
18	i					65 (1997)	65
18	j					61 (2002)	61
18	k					90 (1997)	90
18	m					31 (2008)	31
18	n					232 (2006)	232
18	О					416 (2006)	416
18	р					151 (2006)	151
18	q					1 (2006)	1
18	r					1 (2006)	1
18	s					0 (2009)	0
18	t					20 (2012)	20
18	u					8 (2013)	8
18	v					99 (2014)	99
18	w					2 (2016)	2
18	х					20 (2018)	20
18	у					21 (2020)	21
19	а					1 (2001)	1
19	b					63 (2005)	63
19	С					25 (2005)	25
19	d					12 (2005)	12
19	е					7 (2005)	7
20	а					28 (2000)	28
20	b					5 (2005)	5
21	а					1 (2003)	1
22	а					1 (2003)	1
22	b					3 (2003)	3
23	а					25 (2009)	25

Pop. No	Sub-Pop.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	DBCA count (Year)	Total population estimate (desktop)
23	b					3 (2009)	3
23	С					2 (2009)	2
24	а					1 (2004)	1
24	b					200 (2005)	200
24	С					49 (2019)	49
25	а					16 (2009)	16
26	а					1 (2005)	1
27	а					12 (2006)	12
28	а					4 (2006)	4
29	а					1 (2010)	1
29	b					6 (2019)	6
30	а		13			2 (2011)	13
31	а					1 (2007)	1
32	а					2 (2016)	2
32	b					1 (2016)	1
33	а					1 (2010)	1
34	а					25 (2014)	25
35	а					1 (2018)	1
TOTAL						12,561	13,060

## 3.3 Climate

The BoM Perth Airport station (site number 009021) is the nearest weather station with continuous long-term data for the *C. undulatum* populations. Climatic data from this site indicates the mean maximum temperature of the area ranges from 18 °C in July to 32 °C in February and the mean minimum temperature ranges from 8.1 °C in July to 17.6 °C in February. The mean annual rainfall is 756.3 mm with an average of 110 rain days per year (BoM 2024) (Plate 2). In the three months prior to the field survey (July-Sept) 230.8 mm of rainfall was recorded. This total is approximately 33% lower than the long-term average for the same period (July - Sept; 344.9 mm).

The field survey was conducted between October 2023 and February 2024. During this period 16.4 mm of rain was recorded, this is 34% lower than the long-term average for the same period (Oct-Feb; 25mm) (Plate 2) (BoM 2024).

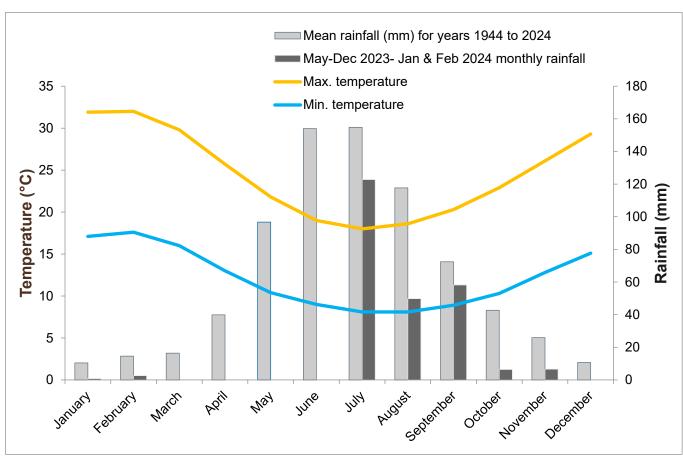


Plate 2 Average climatic statistics for Perth Airport station site number 009021 (BOM 2024)

#### 3.4 Landforms and soils

Soil-landscape mapping (DPIRD\_064) indicates the population records are located within the Bassendean, Pinjarra, Forrestfield and Darling Plateau Systems. Descriptions of these systems are provided below:

- Bassendean- Swan Coastal Plain from Busselton to Jurien. Sand dunes and sandplains with pale deep sand, semi-wet and wet soil. Banksia-paperbark woodlands and mixed heaths
- Pinjarra Swan Coastal Plain from Perth to Capel. Poorly drained coastal plain with variable alluvial and aeolian soils. Variable vegetation includes Jarrah, marri, wandoo, paperbark sheoaks and rudis
- Forrestfield Undulating foot slopes of the Darling and Whicher Scarps. Duplex sandy gravels, pale deep sands and grey deep sandy duplexes. Woodland of *Eucalyptus marginata*, *Corymbia calophylla* and *E. wandoo* and some *B. grandis*
- Darling Plateau Lateritic plateau. Duplex sandy gravels, loamy gravels and wet soils. Jarrah-marri-wandoo forest and woodland.

The (DPIRD\_027) soil mapping indicates the population records are located within 17 different soil types (Table 6 and Appendix A, Figure 4).

## 3.5 Hydrology

The Gnangara Jandakot depth to groundwater contours- 2019 min (DWER-095) are only available for populations located with the SCP bioregion. Minimum depth to groundwater varied across all populations and ranged from 2 < 28 meters (m) with an average depth of 12 m (Appendix A, Figure 4 and Appendix B).

Table 6 Soil types with known populations of Conospermum undulatum

Soil codes	Descriptions
212BsS8	SAND - very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted of eolian origin
213Fo	Undulating foot slopes of the Darling and Whicher Scarps. Duplex sandy gravels, pale deep sands and grey deep sandy duplexes. Woodland of Eucalyptus marginata, Corymbia calophylla and E. wandoo and some Banksia grandis
213FoFf1	Foot and low slopes < 10% with deep rapidly drained siliceous yellow brown sands, and pale or bleached sands with yellow-brown subsoil. Shrubland of unidentified species
213FoFf2	Foot and low slopes < 10%. Well drained gravelly yellow or brown duplex soils with sandy topsoil. Woodland of <i>E. marginata</i> , <i>C. calophylla</i> and some <i>B. grandis</i>
213FoFf3	Foot and low slopes <10%. Well drained gravelly yellow or red duplex soils with sandy loam to loam topsoil. Woodland of E. wandoo and E. marginata
213FoFf8	Slopes 3-15%. Moderately well drained gravelly duplex soils with sandy loam to loam topsoil
213Pj	Swan Coastal Plain from Perth to Capel. Poorly drained coastal plain with variable alluvial and aeolian soils. Variable vegetation includes Jarrah, marri, wandoo, paperbark sheoaks and rudis
213PjGf1	Very gently undulating plain. Moderately well drained yellow duplex or gradational soils with sand to sandy loam topsoil. Woodland of <i>E. wandoo and C. calophylla</i>
213PjGf3	Level to very gently sloping plain. Poorly drained mottled yellow earths with loamy topsoil. Low woodland of <i>Melaleuc</i> a spp., and <i>E. rudis</i> . <i>Casuarina obesa</i> on salt affected areas
213PjGf4	Level to very gently inclined alluvial fans. Variable imperfectly drained soils with layers of sand, sandy loam, clay, grit and weathered granitic detritus. <i>C. calophylla. E. rudis</i> & <i>Melaleuca</i> spp. along streams. Casuarina on salt land
213PjGf5	Incised drainage channels with poorly drained gradational mottled yellow earths. Shrubland of Melaleucas and other low shrubs
213PjGf6	Seasonally inundated swamps with very poorly drained uniform non-cracking clays
213PjGf7	Minor rises with deep rapidly drained brownish, siliceous or bleached sands underlain by mottled yellow clay. Low woodland of <i>B. prionotes</i> and some tall <i>C. calophylla</i> with <i>E. rudis</i> along streamlines
213PjGf9	Minor sandy rises (aeolian deposits) with moderately deep well drained sands overlying gravelly mottled clay
213PjMgs1	PEBBLY SILT - strong brown silt with common, fine to occasionally coarse-grained, sub-rounded laterite quartz, heavily weathered granite pebble, some fine to medium-grained quartz sand, of alluvial ore
213PjS10	SAND - as S8 as relatively thin veneer over sandy clay to clayey sand. Of eolian origin
255DpDW2	Very gently to gently undulating terrain (<10%) with well drained, shallow to moderately deep gravelly brownish sands, pale brown sands and earthy sands overlying lateritic duricrust

## 3.6 Land use

The land parcels within which the subpopulations occur are associated with a mix of land vesting, including road reserves, private land, government (State/Local) and Commonwealth (Perth Airport).

The following DBCA managed lands have population records, Korung National Park (R 47881), Dundas Road Nature Reserve (R 53131), Bougainvillea Avenue Bushland (R 29815), Dundas Road Bushland (R 37997) and Hawkesvale Reserve (R 49079). There are 13 Bush Forever sites with *C. undulatum* records. DBCA managed lands and Bush Forever sites with known *C. undulatum* populations are presented in Table 7.

Table 7 DBCA managed lands and Bush Forever sites with known Conospermum undulatum populations

Pop. No	Sub- Pop.	Total Pop. Estimate	Reserve Name / Location	Purpose
1	а	1592	Maida Vale Reserve	Bush Forever 316 Recreation / Conservation
1	b	362	Gooseberry Hill Road Bushland	Bush Forever 466 Nature Reserve
1	С	508	Gooseberry Hill Road Bushland	Bush Forever 466 Nature Reserve
1	е	57	Maida Vale Reserve	Bush Forever 316 Recreation / Conservation
1	i	131	Maida Vale Reserve	Bush Forever 316 Recreation / Conservation
2	а	405	Hawkesvale Nature Reserve	Bush Forever 122 Conservation Flora and Fauna
4	h	152	Sultana Road West Bushland	Bush Forever 123 Environmental Conservation or Local Natural Areas
4	i	76	Sultana Road West Bushland	Bush Forever 123 Environmental Conservation or Local Natural Areas
4	j	187	Sultana Road West Bushland	Bush Forever 123 Environmental Conservation or Local Natural Areas
4	r	14	Poison Gully Bushland	Bush Forever Site 45
6	а	11	231 Maida Vale Road	Private Property Bush Forever Site 45
10	a, b, d, f, g & h	714	Hartfield Park (East of Tonkin Highway)	Bush Forever Site 320 Nature Reserve
10	е	111	Hartfield Park (West of Tonkin Highway)	Bush Forever Site 320 Nature Reserve
13	а	434	Clifford Street Reserve	Bush Forever Site 53
16	а	337	Korung National Park	Conservation, National Park, Class A Nature Reserve
16	f and g	911	White Road Bushland	Bush Forever Site 51 Nature Reserve
16	h	236	White Road Bushland	Bush Forever Site 51 Nature Reserve
16	i	0	White Road Bushland	Bush Forever Site 51 Nature Reserve
16	n	2	Korung National Park	Conservation, National Park, Class A Nature Reserve
18	а	1659	Dundas Road Bushland	Bush Forever Site 319 Nature Reserve
18	d	15	Dundas Road Bushland	Bush Forever Site 319 Nature Reserve
18	е	42	Dundas Road Bushland	Bush Forever Site 319 Nature Reserve
18	f	134	Dundas Road Bushland	Bush Forever Site 319 Nature Reserve
18	g	413	Dundas Rd	Bush Forever Site 319 Nature Reserve
18	h	497	Bougainvillea Avenue Bushland	Bush Forever Site 401 Nature Reserve
18	i	65	Pioneer Park Bushland	Bush Forever Site 440, Rubbish Disposal Site, Recreation, Parklands

Pop. No	Sub- Pop.	Total Pop. Estimate	Reserve Name / Location	Purpose
18	k	90	Pioneer Park Bushland	Bush Forever Site 440, Rubbish Disposal Site, Recreation, Parklands
18	o	416	Dundas Road Nature Reserve	Bush Forever Site 319 Nature Reserve
18	q	0	Dundas Road Nature Reserve	Bush Forever Site 319 Nature Reserve
18	t	20	Bougainvillea Avenue Bushland	Bush Forever Site 401 Nature Reserve
18	У	21	Bougainvillea Avenue Bushland	Bush Forever Site 401 Nature Reserve
19	b	63	Welshpool Road Bushland	Bush Forever Site 50 Nature Reserve
19	С	25	Welshpool Road Bushland	Bush Forever Site 50 Nature Reserve
19	d	12	Welshpool Road Bushland	Bush Forever Site 50 Nature Reserve
24	b	200	Perth International Airport	Perth International Airport Bush Forever Site 386
24	С	49	Perth International Airport	Perth International Airport Bush Forever Site 386
29	b	6	Perth International Airport	Perth International Airport Bush Forever Site 386
Total		9967		

# 3.7 Broad vegetation mapping

Vegetation complexes of south-west WA have been mapped by Heddle et al. (1980) with updates from Webb et al. (2016) and Mattiske & Havel (1998) based on major geomorphic units. *Conospermum undulatum* populations occur within four of these vegetation complexes (Appendix A, Figure 5):

- Forrestfield Complex: Vegetation ranges from open forest of Corymbia calophylla (Marri) Eucalyptus wandoo (Wandoo) E. marginata (Jarrah) to open forest of E. marginata C. calophylla Allocasuarina fraseriana (Sheoak) Banksia species. Fringing woodland of E. rudis (Flooded Gum) in the gullies that dissect this landform
- Southern River Complex: Open woodland of C. calophylla E. marginata Banksia species with fringing woodland of E. rudis Melaleuca rhaphiophylla (Swamp Paperbark) along creek beds
- Guildford Complex: A mixture of open forest to tall open forest of C. calophylla E. wandoo E. marginata and woodland of E. wandoo (with rare occurrences of E. lane-poolei (Salmon White Gum)). Minor components include E. rudis - M. rhaphiophylla
- Dwellingup Complex D2:Open forest of *E. marginata* subsp. *marginata- C. calophylla* on lateritic uplands in subhumid and semiarid zones.

# 4. Survey results

## 4.1 Conospermum undulatum

## 4.1.1 Count and subpopulation status

GHD were granted access to 70 (52%) of the 135 subpopulations of *C. undulatum* listed in the DBCA TPFL Database and WA Herbarium Database (DBCA 2023). Results for the remaining 65 subpopulations not accessed during the survey were derived from desktop data sources.

A total of 11,919 *C. undulatum* individuals were recorded by GHD from 43 subpopulations. This total comprised 10,503 adults, 640 juveniles and 776 seedlings. The highest count of plants at one combined subpopulation was 2,754, recorded within Maida Vale Reserve (subpopulations 1a and 1e). The next highest count was subpopulation 18g from the DFES training school with 2,729 individuals recorded.

No *C. undulatum* were recorded in the remaining 27 subpopulations surveyed. This confirmed that seven of the 11 subpopulations identified in the desktop assessment as extinct do not contain any *C. undulatum* individuals (noting 4 of the 11 were not accessible) and identified an additional 20 populations as extinct. This brings the total number of extinct subpopulations to 31 (Table 8). Habitat loss due to land clearing for infrastructure (homes, roads and business) were the main reason for plants no longer growing in or near these subpopulations.

It is estimated there are a total of *C. undulatum* 16,413 individuals based on the GHD 2024 survey data (i.e. count data for subpopulations where access was granted) and the desktop results for non-accessible subpopulations.

A summary of *C. undulatum* subpopulation status, subpopulation count and individual counts are provided in Table 8, with a breakdown of GHD 2024 survey count by age (adult, juvenile and seedling) is shown in Appendix C.

Table 8	Conospermum undulatum subpopulation status and subpopulation and individual counts summary	/

Details	Subpopulation status	Subpopulation count	Conospermum undulatum count
GHD 2024 surveyed	Extant	43	11,919
	Confirmed extinct	27	0
Subtotal		70	11,919
No access (results based on desktop	Extant	61	4,494
sources)	Extinct	4	0
Subtotal		65	4,494
Total		135	16,413

#### Comparison between GHD count and desktop results

There was some difficulty matching historic population/ sub population counts with recent counts. It is presumed that whilst some populations have become extinct, others have spread and the boundaries that once separated subpopulations now overlap. To account for these overlaps, some subpopulations have been grouped together.

Conospermum undulatum count comparisons between the desktop results and GHD 2024 survey results are presented in Table 9. This table only shows comparisons for subpopulations that were accessible during the survey. The data indicates that GHD recorded an additional 3,333 plants where access was granted to survey the subpopulation.

Table 9 Conospermum undulatum count comparisons between the desktop assessment and GHD 2024 survey

Pop. No	Sub-Pop.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	DBCA Count (Year)	Total population estimate (desktop)	Survey results (GHD 2024)
1	a + e					1592 (2005) + 57 (2002)	1,649	2,754
1	b					362 (2002)	362	336
1	С					508 (1998)	508	816
1	i					131 (2011)	131	102
1	k					4 (2020)	4	8
2	а					405 (2016)	405	582
4	f					0 (2006)	0	0
4	g					16 (2008)	16	0
4	h	152				76 (2006)	152	212
4	i	76				1 (1997)	76	99
4	j	187				1 (1997)	187	268
4	1					20 (2006)	20	6
4	m					7 (2006)	7	2
4	t					1 (2005)	1	17
4	u					4 (2008)	4	0
4	V					7 (2008)	7	0
5	а					2 (2008)	2	0
7	а					0 (1997)	0	0
9	а					0 (2006)	0	0
10	С		15			10 (2006)	15	9
13	а		431		3	655 (2006)	434	371
13	Part of a		9				9	8
13	b					10 (1997)	10	0
13	С					0 (1997)	0	0
14	а					0 (2005)	0	0
14	b					1 (2005)	1	5
15	а					0 (2005)	0	0
16	а					337 (2020)	337	192
16	j					17 (2005)	17	8
16	I					10 (2006)	10	22
16	m					31 (2006)	31	64
16	n					2 (2020)	2	0
17	а					94 (2006)	94	166
18	a + o					1659 (2013) + 416 (2006)	2,075	1,388
18	b					0 (1997)	0	0
18	С					97 (2006)	97	0
18	g					413 (2006)	413	2,729

Pop. No	Sub-Pop.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	DBCA Count (Year)	Total population estimate (desktop)	Survey results (GHD 2024)
18	h + t + y					497 (2020) + 20 (2012) + 21 (2020)	538	597
18	i + k					65 (1997) + 90 (1997)	155	819
18	j					61 (2002)	61	4
18	m					31 (2008)	31	0
18	n					232 (2006)	232	18
18	р					151 (2006)	151	51
18	q					1 (2006)	1	8
18	r					1 (2006)	1	20
18	u					8 (2013)	8	0
18	V					99 (2014)	99	125
18	w					2 (2016)	2	0
18	х					20 (2018)	20	5
19	b +c					63 (2005) + 25 (2005)	88	84
19	d					12 (2005)	12	11
19	е					7 (2005)	7	0
20	а					28 (2000)	28	0
21	а					1 (2003)	1	0
22	а					1 (2003)	1	1
23	а					25 (2009)	25	0
23	b					3 (2009)	3	1
23	С					2 (2009)	2	1
26	а					1 (2005)	1	0
29	а					1 (2010)	1	0
30	а		13			2 (2011)	13	10
32	а					2 (2016)	2	0
32	b					1 (2016)	1	0
33	а					1 (2010)	1	0
34	а					25 (2014)	25	0
TOTAL	•						8,586	11,919

## 4.1.2 Health and age

Of the 11,919 individuals recorded during the GHD 2024 survey 9,821 were considered healthy, 1,814 moderate and 284 were in poor health. Table 10 and Figure 6 shows the health and life stage of the 11,919 plants recorded during the GHD 2024 survey.

Table 10 Varying life stages and health of Conospermum undulatum individuals recorded

Life stage	Healthy (%)	Moderate (%)	Poor (%)	Total
Adult	8,465 (80.6 %)	1,767 (16.8 %)	271 (2.6 %)	10,503
Juvenile	581 (90.8 %)	46 (7.2 %)	13 (2.0 %)	640
Seedling	775 (99.9 %)	1 (0.1 %)	0 (0 %)	776

The following three populations were selected to examine further, for the following reasons:

- 1a + e (Maida Vale) had the highest overall count
- 18g (DFES) had the highest count for juveniles and seedlings and was also considered the healthiest
- 18l + k (Pioneer Park) had the highest count of individuals considered to be in Moderate or Poor health.

Table 11 shows the health (count and percentage) of individuals from the three representative populations.

Table 11 Health comparisons of Conospermum undulatum at Maida Vale Reserve, DFES and Pioneer Park Bushland

Sub population	Healthy (%)	Moderate (%)	Poor (%)	Total
1a + e (Maida Vale)	2251 (81.7 %)	464 (16.8 %)	39 (1.4 %)	2,754
18g (DFES)	2600 (95.3 %)	123 (4.5 %)	6 (0.2 %)	2,729
18i + k (Pioneer Park)	242 (29.8 %)	419 (51.6 %)	151 (18.6 %)	812

Plate 3 shows most of the individuals recorded at Maida Vale Reserve were healthy adults, although recruitment was relatively low. The DFES- Fire Training School subpopulation (18g) recorded the second highest population count and was the healthiest. DFES also recorded the highest count for juveniles and seedlings. (Plate 4). The Pioneer Park Bushland was considered to have the population in the poorest health of those GHD surveyed (Plate 5).

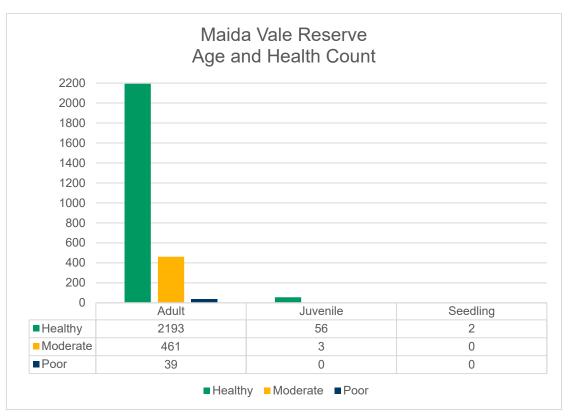


Plate 3 Maida Vale Reserve Conospermum undulatum population 1a and 1e - age and health

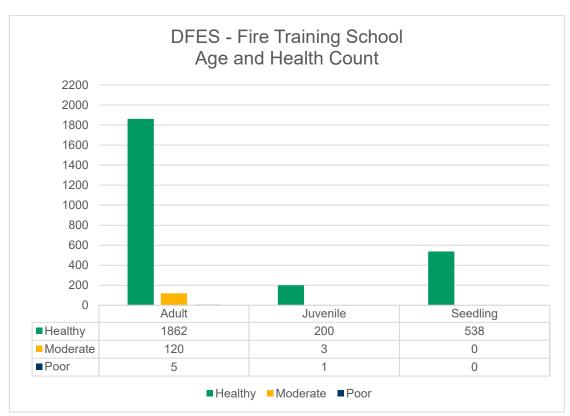


Plate 4 DFES Fire Training School Conospermum undulatum population 18g -age and health

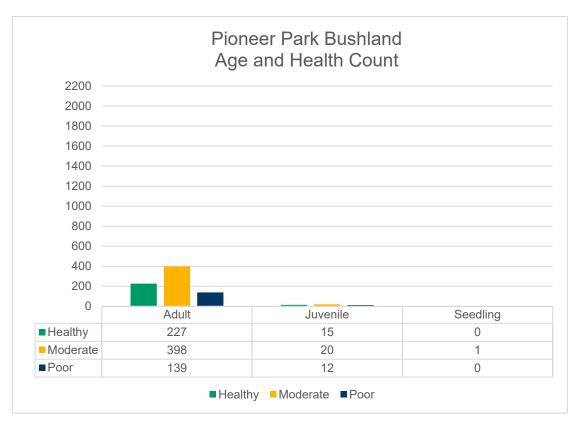


Plate 5 Pioneer Park Bushland Conospermum undulatum population 18i and 18 k- age and health

The Pioneer Park Bushland population consisted of naturally growing individuals and transplanted individuals (Main Roads, pers. Comm). Transplanted individuals had been historically tagged and labelled. Table 12 lists those that are still alive and their health rating, all were considered mature adults.

Table 12 Pioneer Park Bushland historically transplanted Conospermum undulatum

Label	Health	Flowering	Label	Health	Flowering
B9 5	Poor	No	KP19ST 15	Poor	No
KP19RP 10	Moderate	No	KP19ST 16	Moderate	No
KP19RP 11	Moderate	Yes	KP19ST 17	Moderate	No
KP19RP 12	Moderate	No	KP19ST 19	Healthy	No
KP19RP 13	Moderate	No	KP19ST 20	Healthy	No
KP19RP 6	Poor	No	KP19ST 21	Moderate	No
KP19RP 7	Poor	No	KP19ST 22	Poor	No
KP19RP 8	Healthy	No	RE108 4	Moderate	No
KP19RP 9	Moderate	No	RE64 1	Moderate	No
KP19ST 14	Healthy	No	RE64 2	Healthy	No

# 4.1.3 Other recorded aspects

#### **Flowering**

Flowering individuals were recorded mostly in late spring (October and November) and decreased as the summer months progressed. Some individuals recorded in February from Pioneer Park and Korung National Park still had old flower stalks present when surveyed. This accounts for the increase of flowering plants recorded in February (Plate 6).

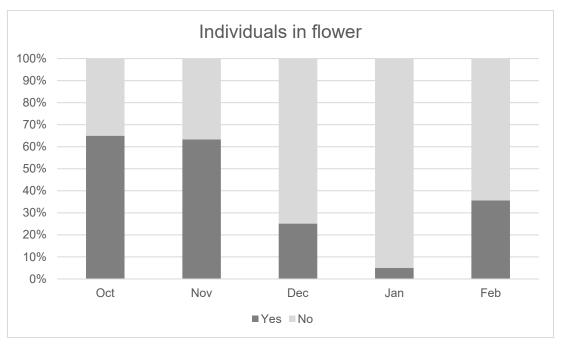


Plate 6 Proportion of individuals in flower at the time of the survey (October 2023 – February 2024)

#### Canopy cover

Conospermum undulatum were observed to be growing mostly in either full sun (57%) or dappled sunlight (41%), with only 2% recorded in shaded areas with limited sun penetration (Plate 7).

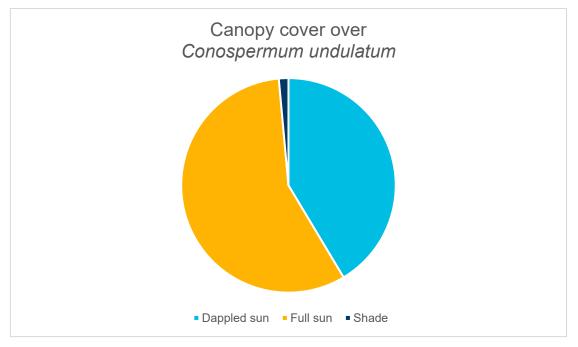


Plate 7 Recorded canopy cover over Conospermum undulatum individuals

#### Insects or disease

No invertebrates were observed pollinating individuals during the survey. Insect damage, in the form of small, brown circular lesions on the leaves were recorded on twenty plants located at several different populations (Plate 8). Mould was recorded growing on four plants located at Clifford Street Reserve (Plate 9).





Plate 8

Observed insect damage on Conospermum undulatum (Pioneer Park Bushland)

Plate 9

Observed mould growth on Conospermum undulatum (Clifford Street Reserve)

# 4.2 Conospermum undulatum habitat

# 4.2.1 Associated vegetation

Forty relevés were completed across the survey area to describe the dominant vegetation associated with *C. undulatum*. The vegetation description and condition, disturbances (e.g. fire) and representative photo for these relevés is summarised in Table 13.

Table 13 Vegetation associated with Conospermum undulatum populations

Pop no.	Relevé no.	Vegetation description	Condition/ Disturbances/ Fire	Representative photograph
1a, b, c, e, I & k	ConR05, ConR23, ConR36, ConR38 & ConR40	Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana tall open woodland over Xanthorrhoea preissii and Hibbertia hypericoides mid to low open shrubland Mesomelaena pseudostygia, Anigozanthos manglesii subsp. manglesii and *Gladiolus caryophyllaceus sedgeland/herbland	Very Good- Good Disturbances include dieback presence, weeds, walking tracks Fire 10+ years overall, patches with 3-5years	
2a	ConR28	Eucalyptus marginata subsp. marginata, Banksia attenuata and Banksia grandis open woodland over Adenanthos cygnorum subsp. cygnorum and Xanthorrhoea preissii tall shrubland over Lambertia multiflora var. darlingensis and Hibbertia hypericoides mid to low shrubland over Anigozanthos manglesii subsp. manglesii and Dampiera linearis herbland	Good (this is due to a fire in 2021, vegetation is recovering)	

Pop no.	Relevé no.	Vegetation description	Condition/ Disturbances/ Fire	Representative photograph
4h, i & j	ConR17, ConR21 & ConR19	Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana, Banksia menziesii and Banksia attenuata woodland over Adenanthos cygnorum subsp. cygnorum and Allocasuarina humilis tall to mid open shrubland over Stirlingia latifolia and Hibbertia hypericoides low open shrubland over Patersonia occidentalis var. occidentalis and Mesomelaena pseudostygia herb/sedgeland	Excellent (Good where Dieback is present) Disturbances include dieback presence, weeds, walking tracks Fire 10+ years overall, patches with 3-5years	
4 I, m & t	ConR06, ConR31 & ConR33	Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata isolated trees over Xanthorrhoea preissii, Lambertia multiflora var. darlingensis and Allocasuarina humilis sparse shrubland over Mesomelaena pseudostygia and Amphipogon turbinatus open sedge/grassland	Very Good Disturbances include, weeds, walking tracks Fire 10+ years overall, patches with 5-10years	
10c	ConR20	Allocasuarina fraseriana and Banksia menziesii open woodland over Adenanthos cygnorum subsp. cygnorum and Allocasuarina humilis tall to mid shrubland over Dasypogon bromeliifolius, Desmocladus flexuosus and * Ehrharta calycina herb/sedgeland	Good Disturbances include, Tonkin Hwy, weeds Fire 10+ years	

Pop no.	Relevé no.	Vegetation description	Condition/ Disturbances/ Fire	Representative photograph
13a	ConR11, ConR18 & ConR16	Eucalyptus marginata subsp. marginata, Banksia menziesii and Allocasuarina fraseriana low woodland over Xanthorrhoea preissii and Adenanthos cygnorum subsp. cygnorum tall isolated shrubs Allocasuarina humilis and Hibbertia hypericoides subsp. hypericoides mid to low open shrubland over Mesomelaena pseudostygia Alexgeorgea nitens and Dasypogon bromeliifolius sparse sedge/herbland	Very Good Disturbances include, weeds, rubbish, squatter camp, walking tracks Fire 10+ years	
16a	ConR01 & ConR39	Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana tall open woodland over Xanthorrhoea preissii, *Acacia iteaphylla and Hakea lissocarpha tall to mid sparse shrubland over Banksia dallanneyi, *Ursinia anthemoides, *Briza maxima and *Ehrharta calycina herb/grassland	Good-Degraded Disturbances include, clearing, weeds, vehicle and walking tracks Fire 10+ years	
16j	ConR29	Allocasuarina fraseriana, Banksia menziesii isolated trees over Xanthorrhoea preissii and Jacksonia floribunda open shrubland over Mesomelaena pseudostygia open sedgeland	Good Disturbances include, ?dieback, weeds Fire 5-10 years	Not available

Pop no.	Relevé no.	Vegetation description	Condition/ Disturbances/ Fire	Representative photograph
161	ConR27	Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana and Banksia menziesii low open woodland over Melaleuca seriata, Allocasuarina humilis and Xanthorrhoea preissii open shrubland over Alexgeorgea nitens open sedgeland	Very Good Disturbances include, minimal weeds Fire 10+ years	
17	ConR25	Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana and Banksia menziesii tall isolated trees over Lambertia multiflora var. darlingensis, Jacksonia floribunda and Xanthorrhoea ?brunonis mid open shrubland over Anigozanthos manglesii subsp. manglesii, Scaevola repens and Cyathochaeta equitans herb/ sedgeland	Good Disturbances include, possible dieback, fire weeds Fire <2 years	
18a, o & x	ConR26	Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata, Banksia menziesii and Banksia attenuata woodland over, Adenanthos cygnorum subsp. cygnorum tall sparse shrubland over Xanthorrhoea preissii, Lambertia multiflora var. darlingensis and Hibbertia hypericoides mid to low shrubland over Dasypogon bromeliifolius, Patersonia occidentalis var. occidentalis and Mesomelaena pseudostygia herb/sedgeland	Excellent Disturbances include, tracks, weeds Fire 10+ years	

Pop no.	Relevé no.	Vegetation description	Condition/ Disturbances/ Fire	Representative photograph
18g	ConR07, ConR09	Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata, Banksia menziesii open woodland over Adenanthos cygnorum subsp. cygnorum tall open shrubland over Xanthorrhoea preissii and Lambertia multiflora var. darlingensis mid open shrubland over Hibbertia hypericoides, Banksia dallanneyi and Stirlingia latifolia low shrubland	Excellent Disturbances include, tracks, weeds Fire <2 years	
18h, t & y	ConR13, ConR30 & ConR32	Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata, Banksia attenuata and Banksia menziesii open woodland over Xanthorrhoea preissii and Hibbertia hypericoides mid to low open shrubland over Mesomelaena pseudostygia and Cyathochaeta equitans sedgeland	Good Disturbances include, possible dieback, tracks, weeds Fire 10+ years	
18i, j & k	ConR03, ConR24, ConR35 & ConR37	Allocasuarina fraseriana and Eucalyptus marginata subsp. marginata tall open woodland over Xanthorrhoea preissii and Lambertia multiflora var. darlingensis mid open shrubland over Hibbertia hypericoides low shrubland over Mesomelaena pseudostygia, Desmocladus fasciculatus and Dasypogon obliquifolius sedgeland/ herbland	Very Good Disturbances include tracks, rubbish, drought Fire 5-10 years	

Pop no.	Relevé no.	Vegetation description	Condition/ Disturbances/ Fire	Representative photograph
18n	ConR10	Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata, Banksia menziesii and Banksia attenuata woodland over Adenanthos cygnorum subsp. cygnorum and Xanthorrhoea preissii tall to mid open shrubland over Hibbertia hypericoides low shrubland over Burchardia congesta, Patersonia occidentalis var. occidentalis and Dasypogon bromeliifolius open herbland	Very Good Disturbances include Roe Hwy, rubbish Fire 10+ years	
18p, r & q	ConR08	Banksia menziesii, Banksia attenuata and Allocasuarina fraseriana woodland over Adenanthos cygnorum subsp. cygnorum, Jacksonia floribunda and Xanthorrhoea preissii tall to mid shrubland over Patersonia occidentalis var. occidentalis, Dasypogon obliquifolius and Mesomelaena pseudostygia open sedge/herbland	Excellent Disturbances include, rubbish Fire 10+ years	
18v	ConR22	Eucalyptus marginata subsp. marginata, Corymbia calophylla and Allocasuarina fraseriana tall open woodland over Callitris acuminata and Chamelaucium uncinatum tall open shrubland over Hibbertia hypericoides and Stirlingia latifolia low shrubland over Austrostipa compressa, * Ehrharta calycina, * Sonchus oleraceus grass/ herbland	Good- Degraded Disturbances include, fire, rubbish, weeds Fire <2 years	

Pop no.	Relevé no.	Vegetation description	Condition/ Disturbances/ Fire	Representative photograph
19b, c & d	ConR15	Banksia attenuata open woodland over Lambertia multiflora var. darlingensis, Eremaea pauciflora var. pauciflora and Hibbertia hypericoides mid to low shrubland over Dasypogon bromeliifolius and Mesomelaena pseudostygia herb/sedgeland	Very Good Disturances include, possible dieback, tracks, weeds Fire 3-5 years	Not available
23b	ConR04	Allocasuarina fraseriana, Banksia menziesii open woodland over Jacksonia floribunda mid open shrubland over *Ehrharta calycina and * Briza maxima closed grassland	Good- Degraded Disturbances include, possible dieback, Roe Hwy rubbish, weeds Fire 10+ years	
23c	ConR02	Allocasuarina fraseriana, Banksia menziesii and Banksia attenuata open woodland over Allocasuarina humilis and Xanthorrhoea preissii open shrubland over Desmocladus flexuosus, Dasypogon bromeliifolius and *Ehrharta calycina herb/grassland	Very Good Disturbances include, Roe Hwy tracks, weeds Fire 10+ years	

Pop no.	Relevé no.	Vegetation description	Condition/ Disturbances/ Fire	Representative photograph
30a	ConR12 & ConR14	Eucalyptus marginata subsp. marginata, Corymbia calophylla, Allocasuarina fraseriana tall isolated trees over * Gaudium laevigatum, Calothamnus quadrifidus and Xanthorrhoea preissii tall to mid shrubland over * Ehrharta calycina, * Lysimachia arvensis and Mesomelaena pseudostygia grass/sedgeland	Good- Degraded Disturbances include, Tonkin Hwy, weeds Fire 10+ years	
14b, 16m, 22a	No Relevés			
5 (extinct)	ConR34	Eucalyptus marginata subsp. marginata and Casuarina sp. tall isolated trees over * Gaudium laevigatum, Calothamnus quadrifidus and Xanthorrhoea gracilis mid to low shrubland over Mesomelaena pseudostygia, *Ehrharta calycina and *Eragrostis curvula grass/sedgeland	Good Disturbances include, weeds Fire 10+ years	

From the 40 relevés undertaken across the surveyed subpopulations a presence and absence matrix was generated. From this analysis, species from each stratum most commonly associated with *C. undulatum* were able to be identified. Table 14 shows the most commonly associated upper, mid- and lower stratum native species; weeds were omitted.

Table 14 Conospermum undulatum associated species

Associated species	# (%) in relevés
Upper stratum	
Allocasuarina fraseriana	34 (85%)
Eucalyptus marginata subsp. marginata	30 (75%)
Banksia menziesii	16 (40%)
Banksia attenuata	11 (28%)
Mid stratum	
Xanthorrhoea preissii	32 (80%)
Lambertia multiflora var. darlingensis	17 (43%)
Allocasuarina humilis	15 (38%)
Adenanthos cygnorum subsp. cygnorum	13 (33%)
Lower stratum	
Hibbertia hypericoides	24 (60%)
Mesomelaena pseudostygia	23 (58%)
Dasypogon bromeliifolius	13 (33%)
Stirlingia latifolia	11 (28%)

#### 4.2.2 Soil analysis

Soil samples were taken in bushland remnants where the following C. undulatum subpopulations occur:

- Korung National Park (16a)
- Welshpool Road Bushland (19c)
- Clifford Street Reserve (13a)
- Bougainvillea Avenue Bushland (18h + 18t)
- Pioneer Park Bushland (18k)
- Sultana Road West Bushland (4h, i & j)
- Dundas Road Bushland (18a)
- Hawkesvale Nature Reserve (2)
- Maida Vale Reserve (1a + 1e)

Table 15, Table 16 and Table 17 show the results of the soil type, particle size and nutrient load, respectively from the above subpopulations. Shaded areas denote samples taken where *C. undulatum* was not recorded growing. Soil sampling was prohibited at the DFES Fire training school subpopulation due to the risk of PFAS (Per- and polyfluoroalkyl substances) contamination. Soil samples from private property and roadside reserves were avoided.

There was no significant difference (p>0.05) in soil type or soil particle size when comparing soil taken from areas where *C. undulatum* occurred versus soil taken from where *C. undulatum* was not recorded growing. The results showed *C. undulatum* occurs in soil made up of 91<96% sand, with 4<7% clay. For particle size, over 50% of ranged from 75µm <425µm.

The Nitrate nutrient load for soil taken from areas where C. undulatum occurred was significantly higher (P = 0.009) versus soil taken from where C. undulatum was not recorded growing. No significant difference was detected from the remaining nutrient load parameters (p>0.05). T-Test results are provided in Appendix C.

Table 15 Percentage of soil type

Particle size (%)	Korung Nation	] al Park	Welsh Rd Bus		Clifford Bushla		Bougai Avenue Bushla		Pionee Bushla		Sultan	a Road	Dunda: Nature Reserv		Hawke Reserv		Maida \ Reserv	
	AB01	AB03	AB05	AB07	AB09	AB11	AB15	AB13	AB17	AB19	AB21	AB23	AB27	AB25	AS02	AS04	AS06	AS08
Clay (<2 µm)	5	5	7	6	5	6	5	6	6	6	3	4	4	4	4	4	5	5
Silt (2-60 µm)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sand (0.06- 2.00 mm)	93	93	91	93	93	92	93	90	92	92	96	94	94	95	96	95	95	95
Gravel (>2mm)	2	<1	2	<1	2	<1	2	4	2	<1	<1	2	2	<1	<1	<1	<1	<1
Cobbles (>6cm)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Table 16 Percentage of soil particle size

Soil Particle size (%)	Korung Nationa		Welsh Rd eas bushla	t	Clifford s bushland		Depart of Ag s Forres	site	Pionee	r Park	Sultan	a Road	Dunda Road N Reserv	lature	Hawke Reserv		Maida Reserv	
	AB01	AB03	AB05	AB07	AB09	AB11	AB15	AB13	AB17	AB19	AB21	AB23	AB27	AB25	AS02	AS04	AS06	AS08
+75µm	95	93	92	94	95	91	94	94	94	91	96	96	96	96	95	95	95	95
+150µm	92	88	82	85	91	78	86	90	85	78	90	88	92	91	90	91	88	87
+300µm	69	65	58	61	79	53	60	69	57	46	71	68	75	75	70	71	66	60
+425µm	35	34	34	35	53	30	32	31	26	19	36	38	44	46	36	39	34	24
+600µm	14	14	14	16	24	14	13	9	8	6	10	14	16	17	7	13	10	5
+1180µm	4	2	4	2	3	3	7	3	3	2	3	3	3	4	<1	<1	<1	<1
+2.36mm	2	<1	2	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+4.75mm	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+9.5mm	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+19.0mm	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+37.5mm	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
+75.0mm	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Table 17 Nutrient load results

Nutrients (mg/kg)	Korun Nation	g al Park	Welsh Rd eas bushla	t	Clifford bushla	d street ind	Depart of Ag s Forres	site	Pionee	r Park	Sultan	a Road	Dunda Nature Reserv		Hawke Reserv		Maida ' Reserv	
	AB01	AB03	AB05	AB07	AB09	AB11	AB15	AB13	AB17	AB19	AB21	AB23	AB27	AB25	AS02	AS04	AS06	AS08
Nitrite as N (Sol.) (LOR 0.1)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate as N (Sol.) (LOR 0.1)	1.1	0.3	0.9	0.8	0.4	<0.1	<0.1	0.2	<0.1	<0.1	0.5	<0.1	<0.1	0.4	0.8	0.2	1.9	0.8
Ammonia as N (LOR 20)	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Reactive Phosphorus as P (LOR 0.1)	0.4	0.5	<0.1	<0.1	0.2	1.3	9.4	0.2	<0.1	<0.1	<0.1	1.3	<0.1	0.4	<0.1	<0.1	<0.1	0.4
Total Nitrogen as N	540	870	850	570	610	600	1010	380	700	600	530	740	450	1220	460	460	380	470
Total Phosphorus as P	36	56	18	23	16	28	60	12	22	21	22	22	16	32	14	15	15	20

LOR- Limit of reporting

#### 4.2.3 Dieback

Several subpopulations surveyed had confirmed dieback presence from historical testing. These were from Maida Vale Reserve (1a & e), Gooseberry Hill Road Bushland (1b & c) and Sultana Road West Bushland (4h, i & j). Dieback mapping at Maida Vale Reserve and Gooseberry Hill Road Bushland was not made available for this survey, therefore the health of the individuals within infested areas as opposed to uninfested is unknown.

Dieback mapping for the Sultana Road West Bushland was provided by PTA (Glevan 2022) prior to the site visit of this remnant bushland. Five hundred and seventy-nine (579) *C. undulatum* individuals were recorded within Sultana Road West Bushland. There were 27 plants occurring in the areas mapped as infested, of these 22 (85%) were considered Healthy, four were in Moderate health and one was in Poor condition. When examining the spatial distribution of *C. undulatum* individuals within Sultana Road West Bushland, they were seemingly sparser in the infested mapped areas when compared to the uninfested areas. This survey did not find any dead remnants of *C. undulatum* within the dieback mapped areas.

Dieback is suspected to occur at Kelvin Rd within private property (16j), Smokebush Place (17), Bougainvillea Avenue Bushland (18h, t & y) and Welshpool Road Bushland (19b, c & d). The GHD 2024 survey noted the deaths of dieback indicator species such as *Banksia* spp. and other Proteaceous shrubs. However, dieback presence cannot be confirmed without testing by a qualified dieback interpreter.

#### 4.2.4 Fire

All subpopulations had been affected by fire at some time. The subpopulations with evidence of a recent (<3 years) fire event included Hawkesvale Nature Reserve (2), DFES - Fire Training School (18g), Smokebush Place (17) and Roe Highway Road reserve (18v).

The Hawkesvale Nature Reserve had been impacted by wildfires in 2011 and 2021. The canopy of tall trees had been burnt and, in some cases destroyed, so the fire was likely high intensity. The DFES subpopulation and Roe Highway Road reserve (18v) was partially burnt in November 2022 to remove habitat for the invasive African Sugar Ant (*Lepisiota incisa*) and to reduce fuel loads. The burn was low intensity. Googe Earth imagery was used to determine the approximate date of the fire at Smokebush Place (17), which appears to have occurred between December 2021/ January 2022 (Google Earth Pro 2022). Due to canopy destruction this fire was also likely high intensity.

Juvenile and seedling numbers appeared higher at sites affected by a recent fire event, than where a fire event was older (5 years +).

#### 5. Discussion

DBCA (2023) records of *C. undulatum* reported 35 populations / 135 subpopulations occurring along the eastern extent of the Swan Coastal Plain bioregion and the western extent of the Jarrah Forest bioregion. The desktop assessment (based on DBCA records and supplied reports) estimated 13,060 individuals including juvenile and mature plants.

The GHD 2024 survey accessed 70 subpopulations and recorded a total of 11,919 individuals from 43 (of the 70) subpopulations. This total comprised 10,503 adults, 640 juveniles and 776 seedlings. No individuals were recorded from the remaining 27 subpopulations, confirming seven as extinct (previously identified as extinct in the DBCA records) and identifying an additional 20 subpopulations as extinct. When combining the GHD 2024 survey results for accessible subpopulations and desktop results for non-accessible populations there are a total of 104 extant subpopulations and 31 extinct subpopulations.

A total count for *C. undulatum* was estimated based on the GHD 2024 survey and the desktop results (for non-accessible subpopulations). The estimated count from the 104 extant subpopulations of *C. undulatum* is 16,413 individuals. This total is 3,353 more *C. undulatum* individuals than estimated from the desktop results.

The GHD 2024 survey was conducted between October 2023 and February 2024. Three months prior to the survey being conducted the rainfall record was 33% lower than the long term average. During the months October to February, when the survey was being undertaken, the rainfall recorded was 34% lower than the long term average. The weather conditions recorded prior to and during the survey may have contributed to the poor health of some *C. undulatum* subpopulations such as Pioneer Park Bushland. Several species including *C. undulatum* were observed dying back or had senesced. However, the effect of low rainfall was not obvious at all subpopulations.

Eucalyptus marginata subsp. marginata was recorded as dominant in 75% of the 40 relevés conducted for the GHD 2024 survey. Banksia woodland was another preferred habitat for *C. undulatum* with relevés dominated by Banksia menziesii (40%), *B. attenuata* (28%) or both. Xanthorrhoea preissii, Allocasuarina humilis and Proteaceous shrubs Lambertia multiflora var. darlingensis and Adenanthos cygnorum subsp. cygnorum were common mid stratum species with between 33% to <80% recorded as dominant in relevés.

The preferred soil medium for *C. undulatum* is sand and sandy clay soils, often over laterite, on flat or gently sloping sites (DEC 2009). To expand on this general description soil samples were collected at nine subpopulation sites to determine *C. undulatum* preferred soil type, particle size and nutrient load. The results showed *C. undulatum* occurs in soil made up of 91% to <96% sand, with 4% to <7% clay. Over 50% of the soil particle size ranged from 75µm to <425µm. Results between samples taken from areas where *C. undulatum* was growing and areas where *C. undulatum* were not growing showed no significant difference between particle size or soil type. The Nitrate nutrient load for soil taken from areas where *C. undulatum* occurred was significantly higher than areas where *C. undulatum* was not recorded growing. Nitrate is a naturally occurring chemical form of nitrogen found in most soils. However, soil nitrate is highly mobile and so levels vary considerably over short distances as well as over time, so unlikely to be a useful indicator of soil suitability or *C. undulatum* preference.

Dieback has been previously mapped within the Maida Vale Reserve, Gooseberry Hill Road Bushland and Sultana Road West Bushland, but dieback mapping was only available for Sultana Road West Bushland. Dieback is also suspected at Kelvin Road, Smokebush Place, Bougainvillea Avenue Bushland and Welshpool Road Bushland. No noticeable differences in plant health were recorded during the field survey between individuals within infested mapped areas compared within uninfested mapped areas at Sultana Road West Bushland. In the absence of available dieback mapping across the extant subpopulation distribution dieback impacts on *C. undulatum* individuals is uncertain.

Subpopulations where a fire had recently occurred (< 3 years) included Hawkesvale Nature Reserve (2), DFES - Fire Training School (18g), Smokebush Place (17) and Roe Highway Road reserve (18v). The fires at Hawkesvale Nature Reserve and Smokebush Place appeared to have been high intensity fires due to observed tree canopy damage. The prescribed burn at the DFES - Fire Training School and the Roe Highway Road reserve (adjacent to the DFES subpopulation) was a low intensity burn. These three subpopulations had the highest and third highest

count of juveniles. The second highest juvenile count was Dundas Road Bushland, which lies adjacent south to the DFES subpopulation, however has not been burnt for 10+ years. Close et al. (2006), cited in Delnevo (2020) suggested *C. undulatum*, like many Australian species, may benefit from smoke stimulation to enhance seed germination. This may explain why Dundas Road Bushland had the second highest recruitment count, even though the subpopulation had not been burnt for an extended period.

The majority of Maida Vale Reserve, where the highest *C. undulatum* count was recorded, had not been burnt for 10+ years, this is assumed to be one of the reasons why recruitment numbers at Maida Vale Reserve were low. Apart from *C. undulatum* reportedly relying on fire for germination, it also has a low seed set, a low capacity to attract pollinators and a physiological imposed dormancy of seed (Close & Dixon 2005 cited in DEC 2009). *Conospermum undulatum* is considered a long-lived shrub however once existing plants senesce, without an appropriate fire regime, there will be a decline in recruitment output (DEC 2009). This was reinforced by the results of this survey.

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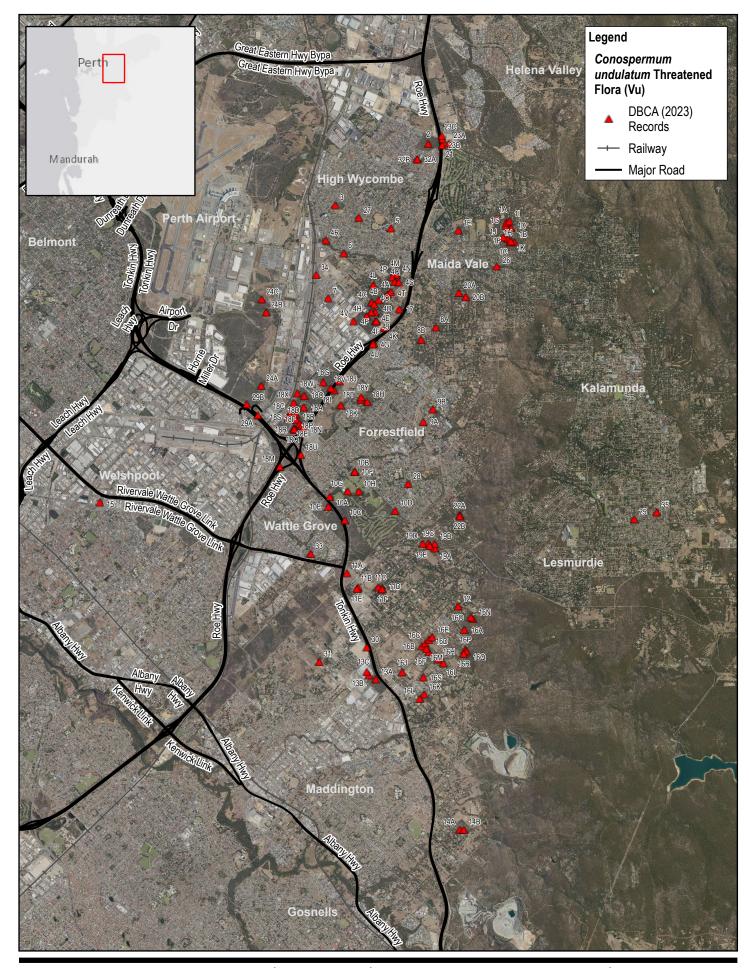
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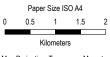
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### Appendices

# Appendix A Figures





Map Projection: Transverse Mercator Horizontal Datum: GDA2020 Grid: GDA2020 MGA Zone 50

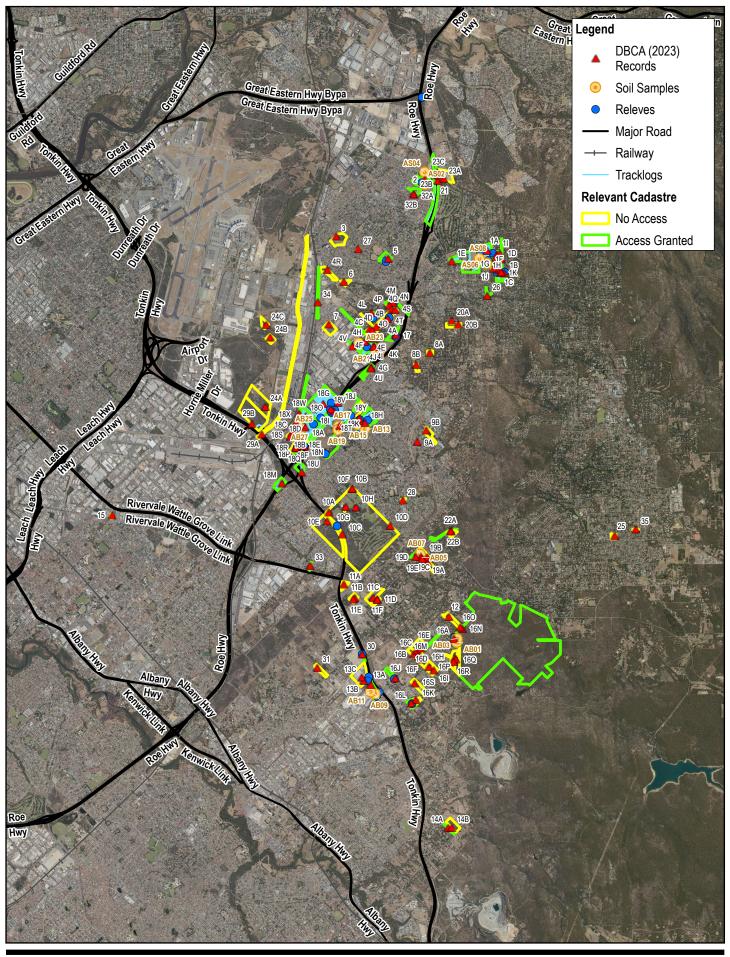


Main Roads WA PC107-16 SR861 Conospermum undulatum population survey

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**Site Location** 





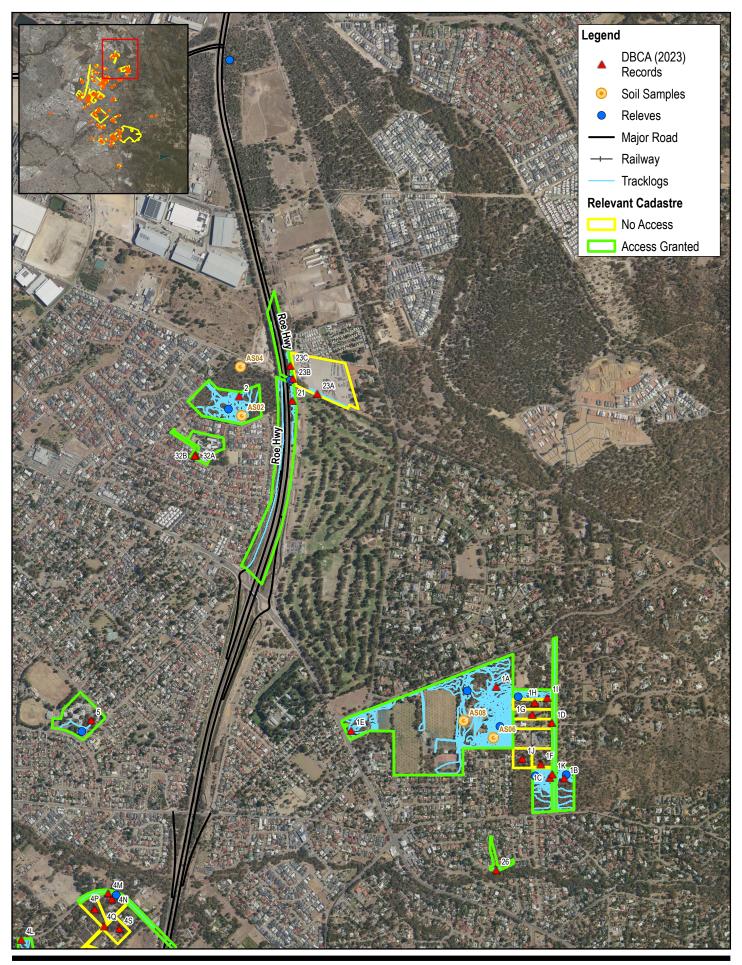


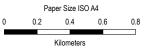


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Survey Effort



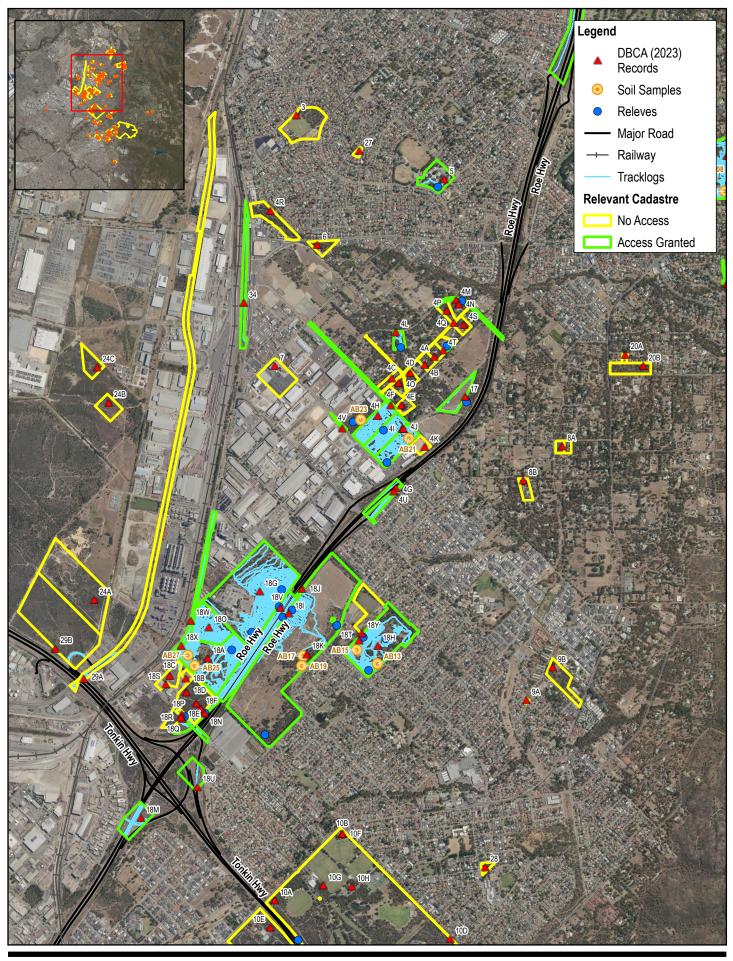


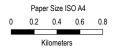


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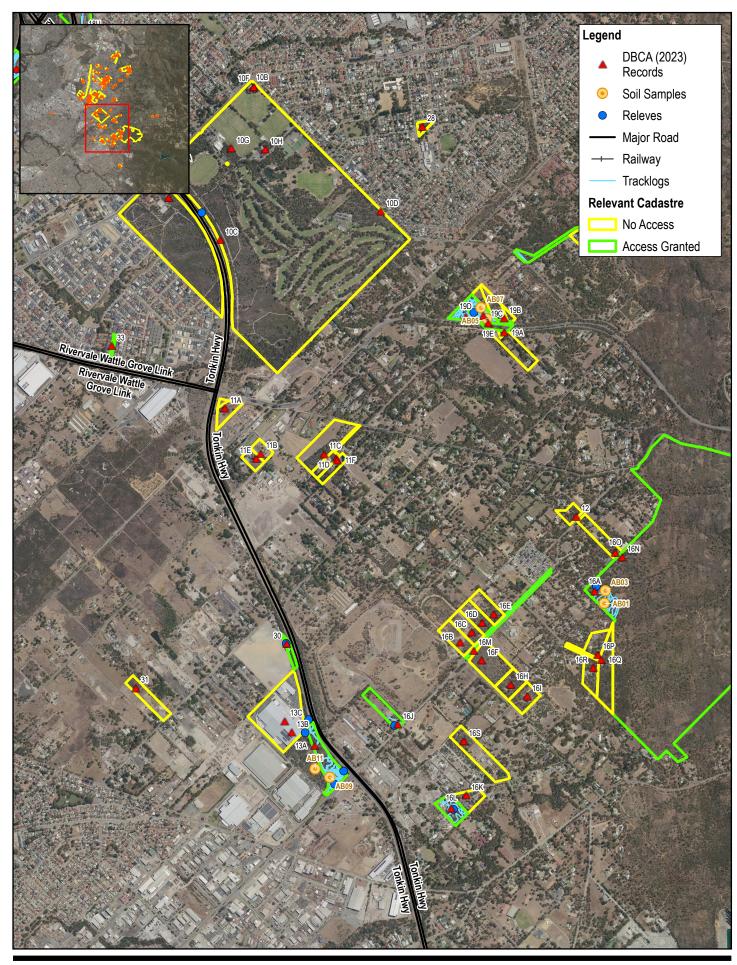
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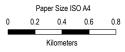
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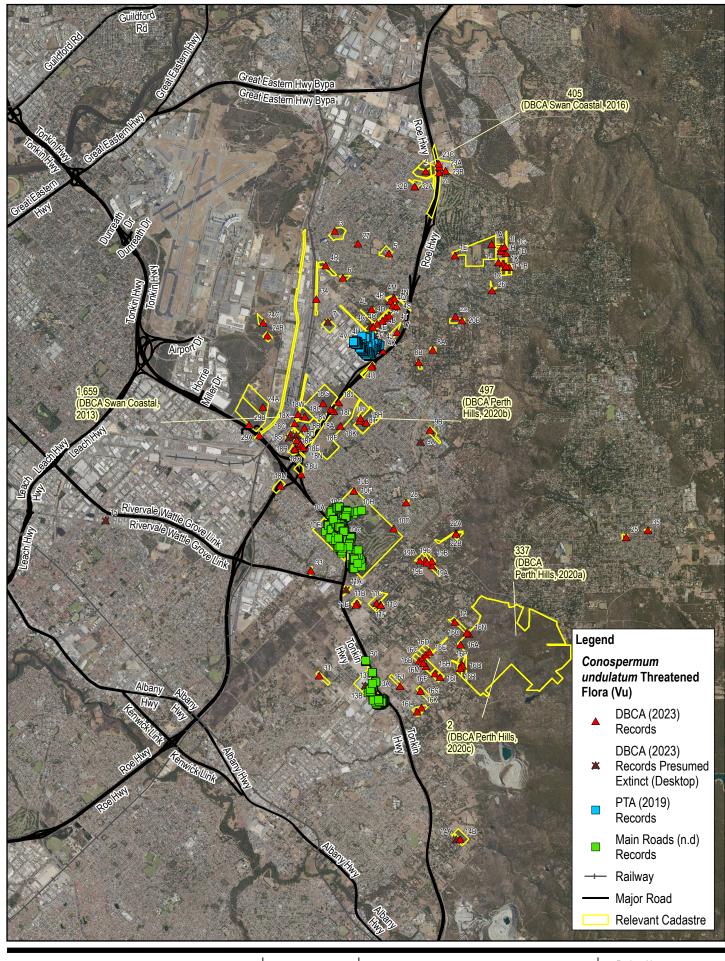


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**Survey Effort** 





0 510 1,020 1,530 2,040 Meters

Map Projection: Transverse Mercator Horizontal Datum: GDA2020 Grid: GDA2020 MGA Zone 50

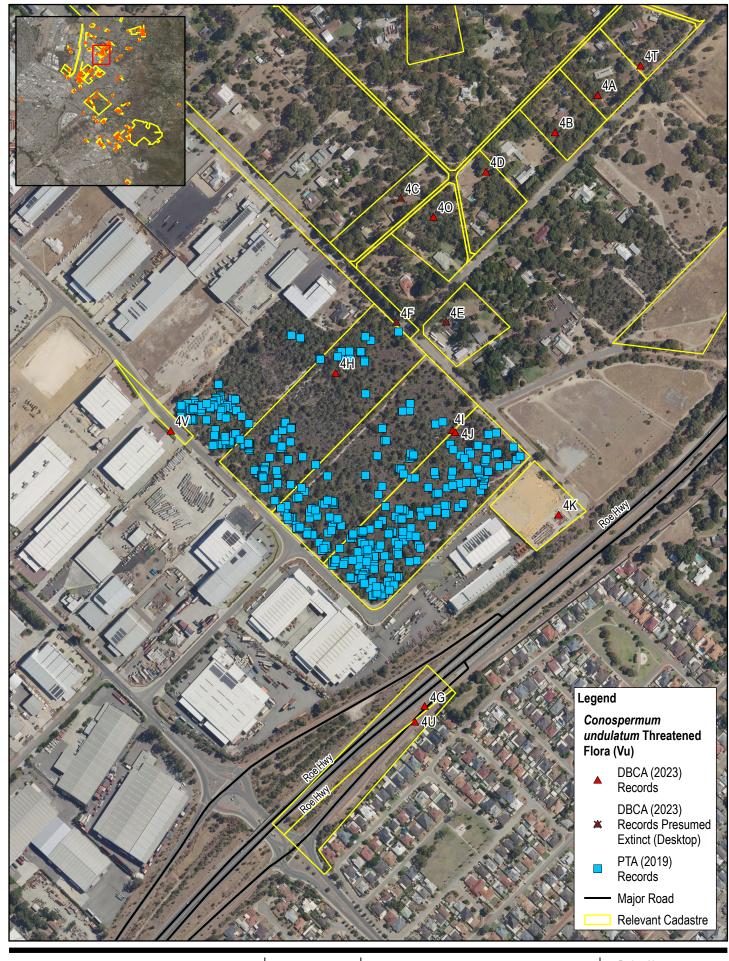


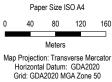


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Historic Records







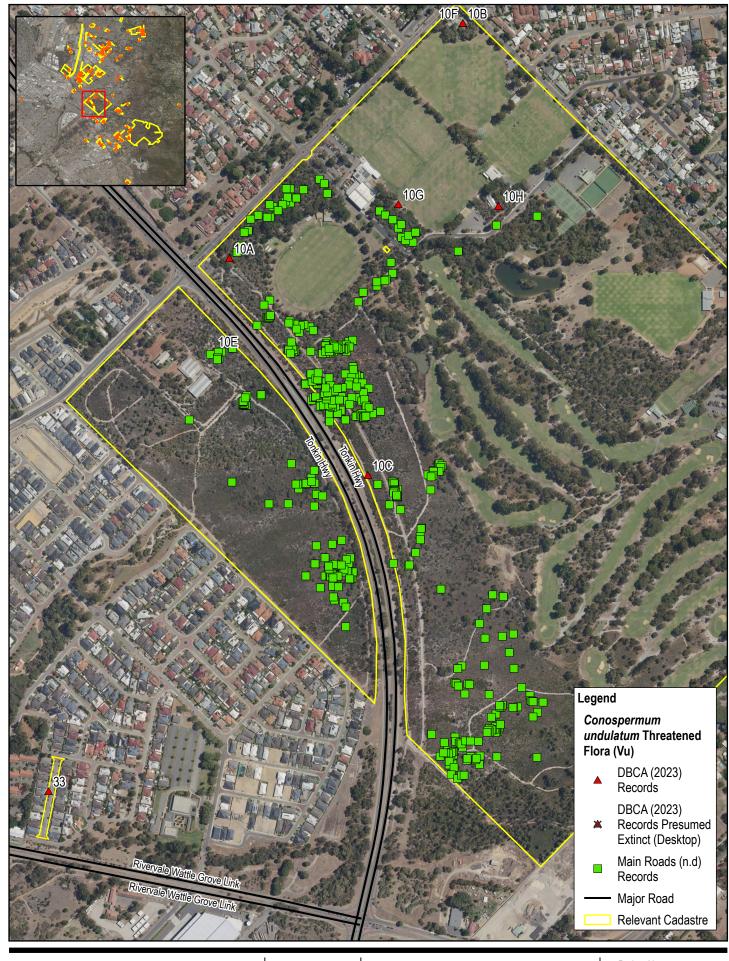


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**Historic Records** 





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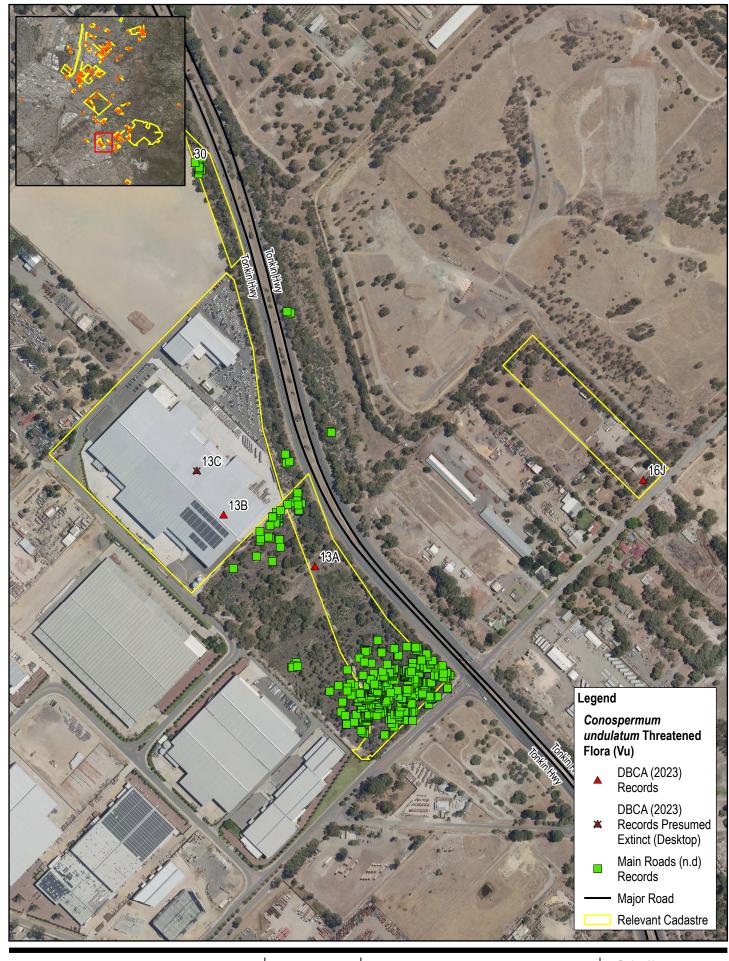




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**Historic Records** 





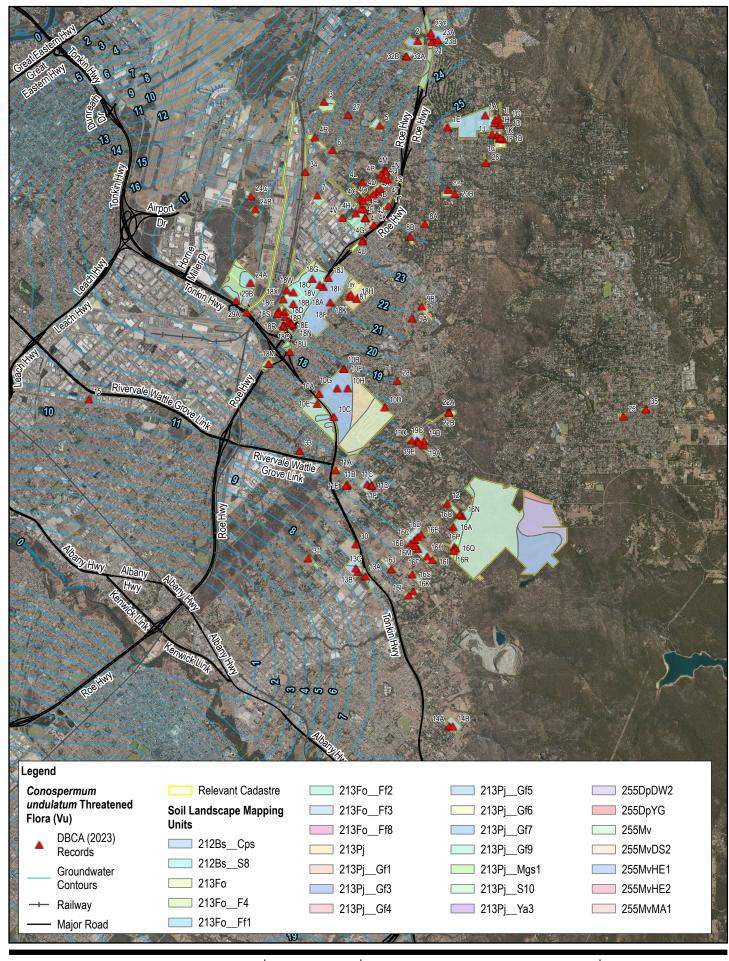


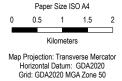


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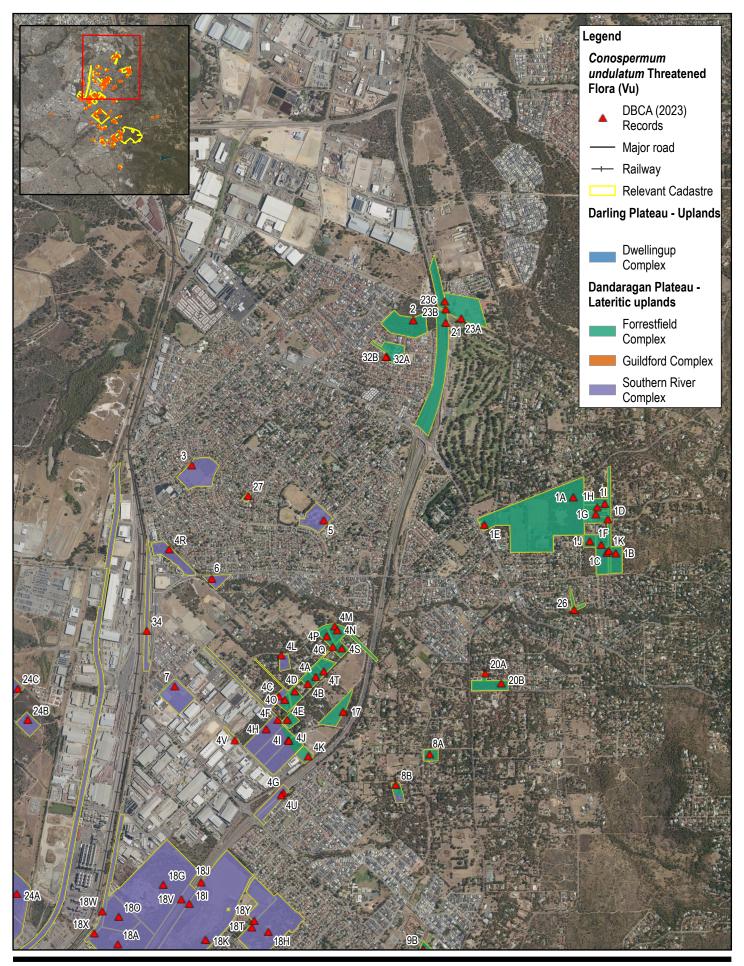




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Soil Mapping and Groundwater Contours





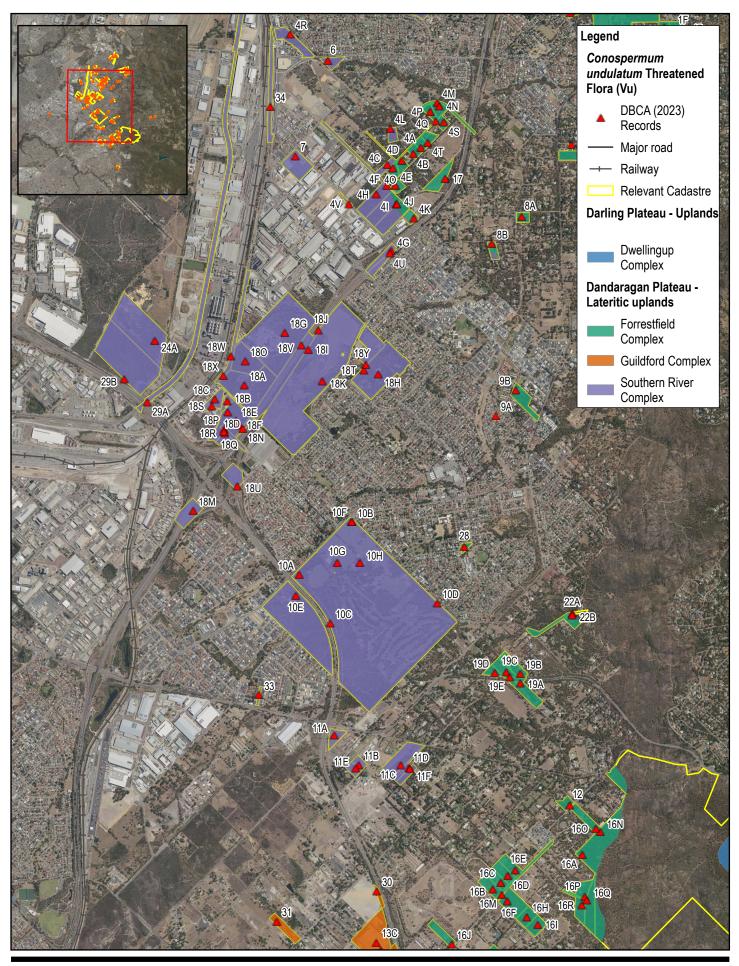


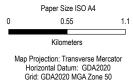


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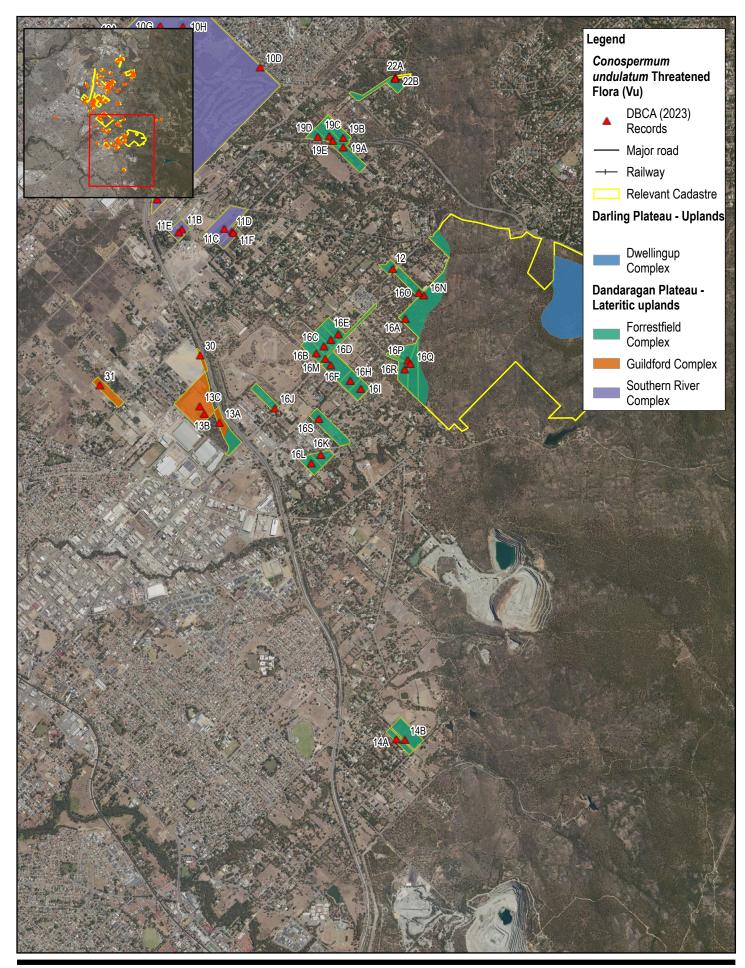


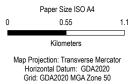


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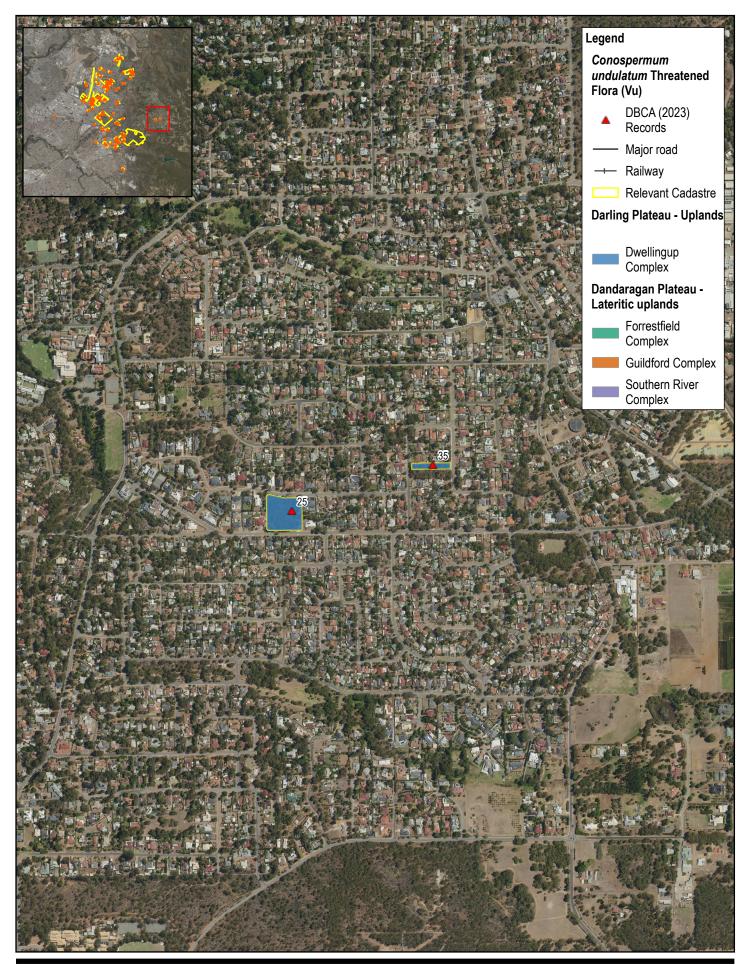


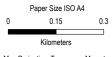


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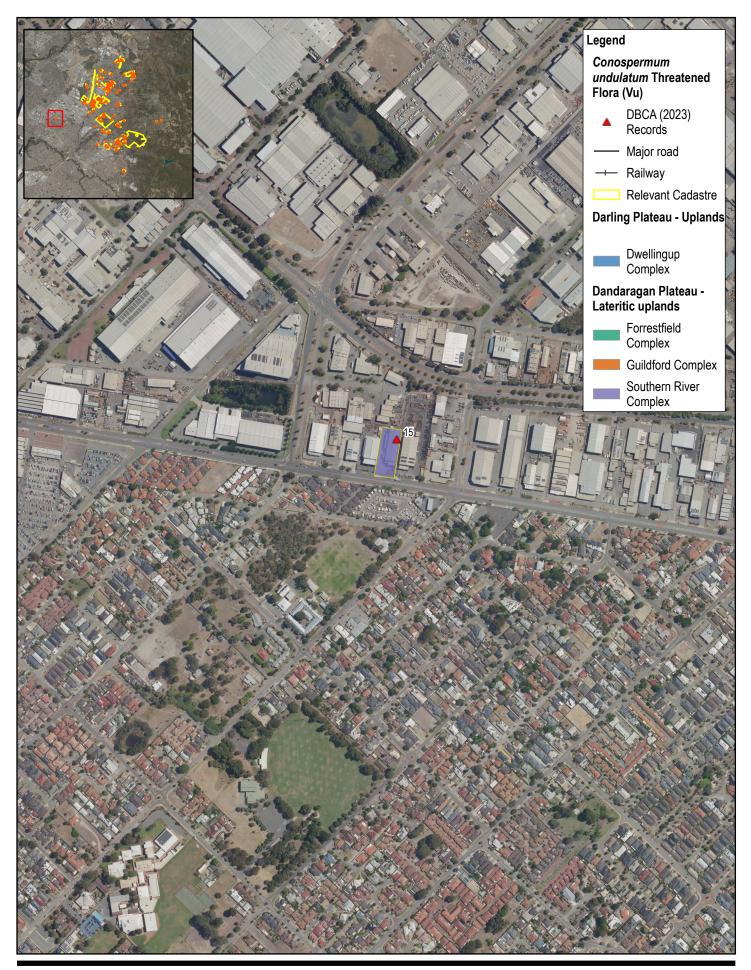
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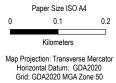




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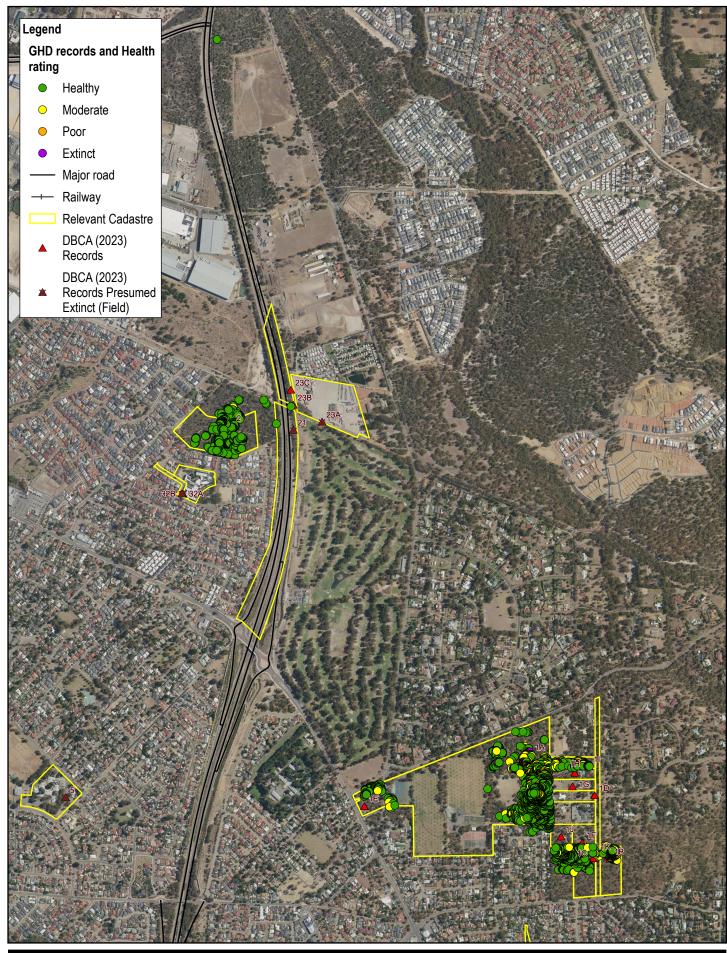


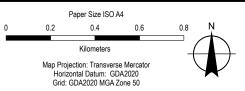


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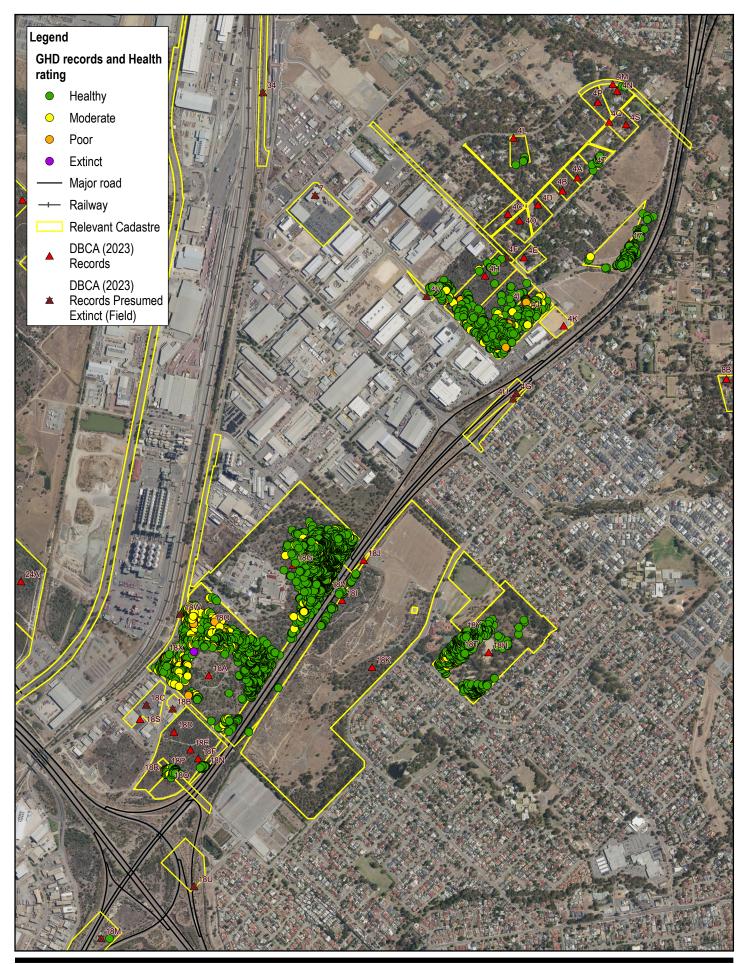


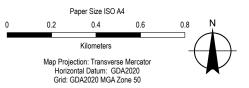


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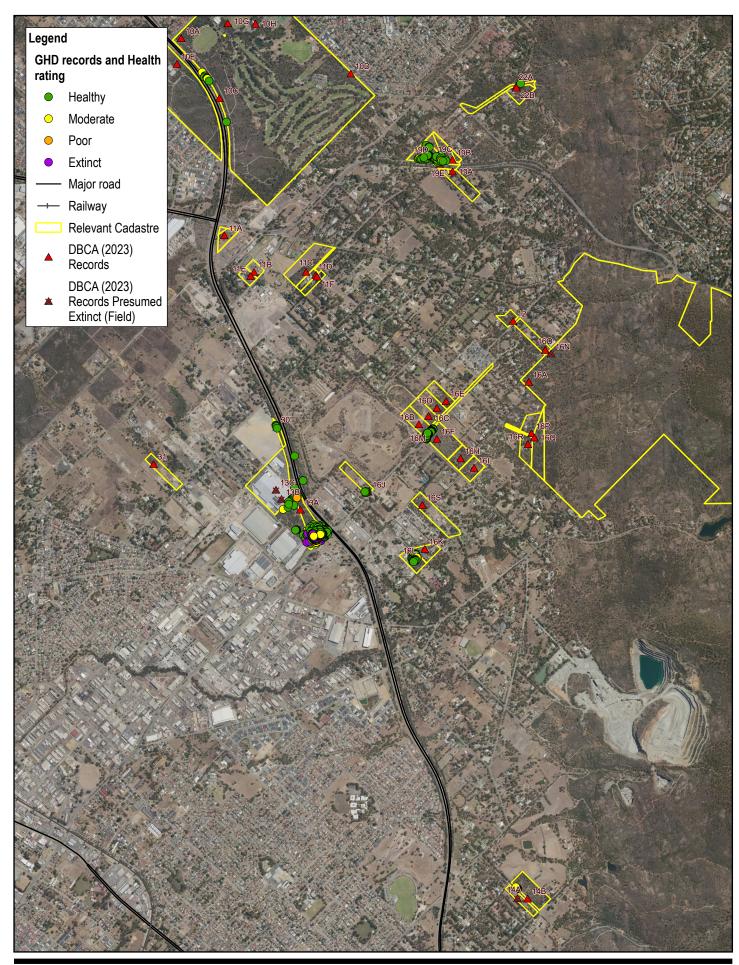


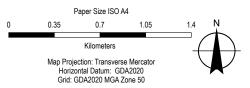


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## Appendix B

**Desktop Assessment Summary** 

Table B.1 Desktop assessment summary of results for Conospermum undulatum populations

Pop. No.	Sub- Pop.	Data Source <sup>1</sup>	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex <sup>2</sup>	Landforms (DPIRD 064)	Soil type code (DPIRD 027)	Hydrology (DWER-095)	Land_ID
1	а		1592 (2005)	1592		Maida Vale Reserve	Bush Forever 316 Recreation / Conservation	DPLH	R 14088	Forrestfield Complex	Forrestfield System	213Fo_Ff1		2015050
1	b		362 (2002)	362		Gooseberry Hill Road Bushland	Bush Forever 466 Nature Reserve	DPLH	R 30200	Forrestfield Complex	Forrestfield System	213Fo		1418457
1	С		508 (1998)	508		Gooseberry Hill Road Bushland	Bush Forever 466 Nature Reserve	DPLH	R 30200	Forrestfield Complex	Forrestfield System	213Fo		1418458
1	d		11 (2002)	11		113 Watsonia Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		4202026
1	е		57 (2002)	57		Maida Vale Reserve	Bush Forever 316 Recreation / Conservation	DPLH	R 14088	Forrestfield Complex	Forrestfield System	213Fo_Ff1	28<29m	2015050
1	f		33 (2005)	33		95 Watsonia Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo		2015050
1	g		0 (2006)	1		115 Watsonia Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		4202025
1	h		80 (2002)	80		125 Watsonia Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1306792
1	i		131 (2011)	131		Maida Vale Reserve	Bush Forever 316 Recreation / Conservation	DPLH	R 49122	Forrestfield Complex	Forrestfield System	213Fo_Ff1		3689700
1	J		1 (1998)	1		91 Watsonia Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1281701
1	К		4 (2020)	4	Healthy (2020)	Watsonia Rd	Road	City of Kalamunda (CoK)	NA	Forrestfield Complex	Forrestfield System	213Fo		3584114
2	а		405 (2016)	405	Healthy (2016)	Hawkesvale Nature Reserve	Bush Forever 122 Conservation Flora and Fauna	DBCA	R 49079	Forrestfield Complex	Pinjarra System	213Pj_Gf7	12<16	3274441
3	а		1 (2008)	1		Fleming Reserve	Public Recreation and Conservation	DPLH	R 39218	Southern River Complex	Bassendean System	212Bs_S8	9	2014660
4	а		62 (1997)	62		High Wycombe South Residential Precinct	Environmental Conservation or Local Natural Areas	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	15<16	1627241
4	b		89 (2008)	89		High Wycombe South Residential Precinct	Environmental Conservation or Local Natural Areas	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	13< 14	1627246
4	С		0 (1997)	0		129 Sultana Road West	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf9	12<13	1627235
4	d		41 (2008)	41		High Wycombe South Residential Precinct	Environmental Conservation or Local Natural Areas	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	13	1627234
4	е		0 (2006)	0		3 Brand Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	10<11	1277789
4	f		0 (2006)	0		Sultana Road West	Road	СоК	NA	Southern River Complex	Pinjarra System	213Pj_Gf9	9<10	3581382

<sup>&</sup>lt;sup>1</sup> 1=AECOM (2019), 2=Woodman Environmental Consulting (2021), 3=Western Environment (2022); 4=Western Environmental (2023) <sup>2</sup> Heddle et al (1980) / Mattiske and Havel (1998) / Webb et al. (2006)

Pop. No.	Sub- Pop.	Data Source <sup>1</sup>	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex <sup>2</sup>	Landforms (DPIRD 064)	Soil type code (DPIRD 027)	Hydrology (DWER-095)	Land_ID
4	g		16 (2008)	16		Roe Hwy	Road	CoK	NA	Southern River Complex	Pinjarra System	213Pj_S10	13<14	4435522
4	h	152 <sup>1</sup>	76 (2006)	152		Sultana Road West Bushland	Bush Forever 123 Environmental Conservation or Local Natural Areas	DPLH	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf9	7<8	1424999
4	i	76 <sup>1</sup>	1 (1997)	76		Sultana Road West Bushland	Bush Forever 123 Environmental Conservation or Local Natural Areas	DPLH	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf1	12	1425000
4	j	187 <sup>1</sup>	1 (1997)	187		Sultana Road West Bushland	Bush Forever 123 Environmental Conservation or Local Natural Areas	DPLH	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf1	12<13	4352195
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4	1		20 (2006)	20		43 Brae Rd	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf9	13<14	1627261
4	m		7 (2006)	7		Brae Rd	Private Property	NA	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf9	18	3581376
4	n		103 (2005)	103		79 Brae Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	18<19	1627251
4	0		161 (2005)	161		12 Brand Road	Environmental Conservation or Local Natural Areas	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	12<13	1627227
4	р		152 (2005)	152		Brae Road	Conservation	DPLH	R 50763	Forrestfield Complex	Forrestfield System	213Fo_Ff1	17	3947896
4	q		120 (2005)	120		Brae Road	Conservation	DPLH	R 37320	Forrestfield Complex	Forrestfield System	213Fo_Ff1	18	3076168
4	r		14 (2008)	14		Poison Gully Bushland	Bush Forever Site 45	DPLH	R 40228	Forrestfield Complex	Pinjarra System	213Pj_S10	10	2014603
4	s		72 (2008)	72		78 Brand Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	19<20	1627232
4	t		1 (2005)	1		62 Brand Rd	Property Leased	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	17<18	1627226
4	u		4 (2008)	4		Roe Hwy	Road	CoK	NA	Southern River Complex	Pinjarra System	213Pj_S10	14	4170064
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6	а		11 (1997)	11		231 Maida Vale rd	Private Property Bush Forever Site 45	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf5	11	2008173
7	а		0 (1997)	0		141 Milner Rd	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf9	9	4314319
8	а		4 (2001)	4		28 Kent Rd	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff2	28	1273796

Pop. No.	Sub- Pop.	Data Source <sup>1</sup>	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex <sup>2</sup>	Landforms (DPIRD 064)	Soil type code (DPIRD 027)	Hydrology (DWER-095)	Land_ID
8	b		4 (2005)	4		42 Bruce Rd	Private Property	NA	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf1	28	1322897
9	а		0 (2006)	0		12 Oak Crt	Private Property	NA	NA	Forrestfield Complex	Pinjarra System	213Pj		1760958
9	b		14 (2014)	14	Moderate (2014)	350 Hawtin Rd	Private Property	NA	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf1		1425006
10	a, b, d, f, g & h	(639 <sup>2</sup> + 75 <sup>3</sup> ) = 714	457 (2000)- (2013)	714	10h Healthy (2013)	Hartfield Park (East of Tonkin Highway)	Bush Forever Site 320 Nature Reserve	DPLH	R 17098	Southern River Complex	Pinjarra System	213Fo/ 213Pj_Gf1 /	8<15	3447602
10	е	$(106^2 + 5^3)$ = 111	10 (2006)	111		Hartfield Park (West of Tonkin Highway)	Bush Forever Site 320 Nature Reserve	DPLH	R 17098	Southern River Complex	Pinjarra System	213Pj_S10	6<7	3447603
10	С	15 <sup>2</sup>	10 (2006)	15		Tonkin Hwy	Road Reserve	CoK	NA	Southern River Complex	Pinjarra System	213Pj_S10	8	4545200
11	а		0 (2005)	0		711 Welshpool Rd East	Environmental Conservation or Local Natural Areas	DPLH	NA	Southern River Complex	Pinjarra System	213Pj_Gf6	9	1264659
11	b		7 (2006)	7		30 Brentwood Rd	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf7	12<13	1292166
11	С		100 (2005)	100		30 Crystal Brook Road	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf7	15<16	1406229
11	d		175 (2005)	175		38 Crystal Brook Road	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf7	17	3801578
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11	f		1 (2005)	1		40 Crystal Brook Road	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf7	17	3801577
12	а		72 (2005)	72		46 Kelvin Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		30052155
13	а	(431 <sup>2</sup> +3 <sup>4</sup> ) = 434	655 (2006)	434		Clifford Street Reserve	Bush Forever Site 53	Main Roads	NA	Guildford Complex	Pinjarra System	213Pj_Gf4	13	3430688
13	Part of a	9 <sup>2</sup>		9		Kelvin Rd	Road	City of Gosnells (CoG)	NA	Guildford Complex	Pinjarra System		13	3626780
13	b		10 (1997)	10		Clifford Street	Private Property	NA	NA	Guildford Complex	Pinjarra System	213Pj_Gf7	14<15	4433342
13	С		0 (1997)	0		Clifford Street	Private Property	NA	NA	Guildford Complex	Pinjarra System	213Pj_Gf7	13<15	4433342
14	а		0 (2005)	0		50 Pitt Road	Road	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff2		1862320
14	b		1 (2005)	1		Pitt Road Reserve	Education	CoG	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		3914580
15	а		0 (2005)	0		Welshpool Rd	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_S10	2	4426102
16	а		337 (2020)	337		Korung National Park	Conservation, National Park, Class A Nature Reserve	DBCA	R 47881	Forrestfield Complex	Forrestfield System	213Fo_Ff2		3553995

Pop. No.	Sub- Pop.	Data Source <sup>1</sup>	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex <sup>2</sup>	Landforms (DPIRD 064)	Soil type code (DPIRD 027)	Hydrology (DWER-095)	Land_ID
16	b		80 (2006)	80		Kelvin Rd	General Rural	CoG	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1418584
16	С		209 (2006)	209		Kelvin Rd	General Rural	CoG	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1418580
16	d		120 (2006)	120		Kelvin Rd	General Rural	CoG	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1418578
16	е		8 (2006)	8		Kelvin Rd	General Rural	CoG	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1418579
16	f and g		911 (2006)	911		White Road Bushland	Bush Forever Site 51 Nature Reserve	DPLH	R 54021	Forrestfield Complex	Forrestfield System	213Fo_Ff1		4527593
16	h		236 (2006)	236		White Road Bushland	Bush Forever Site 51 Nature Reserve	DPLH	R 54022	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1258641
16	i		1 (1997)	1		White Road Bushland	Bush Forever Site 51 Nature Reserve	DPLH	R 54023	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1258638
16	j		17 (2005)	17		254 Kelvin Rd	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	20<21	1279539
16	k		2 (2006)	2		61 Dale Pl	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1324611
16	I		10 (2006)	10		79 Dale Pl	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1324612
16	m		31 (2006)	31		Kelvin Rd	Road	CoG	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		3626780
16	n		2 (2020)	2		Korung National Park	Conservation, National Park, Class A Nature Reserve	DBCA	R 47881	Forrestfield Complex	Forrestfield System	213Fo_Ff2		3553995
16	0		15 (2009)	15		39 Kelvin Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff2		1170424
16	р		30 (2009)	30		37 Canter Crt	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff2		1619060
16	q		56 (2016)	56	Healthy (2016)	38 Canter Crt	Public Recreation	DPLH	R 42547	Forrestfield Complex	Forrestfield System	213Fo_Ff2		1864425
16	r		30 (2009)	30		36 Canter Crt	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff2		1619056
16	s		119 (2018)	119		42 Dale Pl	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		3793373
17			94 (2006)	94		Smokebush Pl	Road Reserve	СоК	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	16	1198292
18	а		1659 (2013)	1659		Dundas Road Bushland	Bush Forever Site 319 Nature Reserve	DBCA	R 37997	Southern River Complex	Bassendean System	212Bs_S8	10	3076696
18	b		0 (1997)	0		20 Bedford Crescent	Private Property	NA	NA	Southern River Complex	Bassendean System	212Bs_S8	6	4047945
18	С		97 (2006)	97		92 Bedford Crescent	Private Property	NA	NA	Southern River Complex	Bassendean System	212Bs_S8	6	1292367
18	d		15 (2006)	15		Dundas Road Bushland	Bush Forever Site 319 Nature Reserve	DPLH	NA	Southern River Complex	Bassendean System	212Bs_S8	5<6	4220004
18	е		42 (2006)	42		Dundas Road Bushland	Bush Forever Site 319 Nature Reserve	DPLH	NA	Southern River Complex	Bassendean System	212Bs_S8	5<6	4220004

Pop. No.	Sub- Pop.	Data Source <sup>1</sup>	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex <sup>2</sup>	Landforms (DPIRD 064)	Soil type code (DPIRD 027)	Hydrology (DWER-095)	Land_ID
18	f		134 (2006)	134		Dundas Road Bushland	Bush Forever Site 319 Nature Reserve	DPLH	NA	Southern River Complex	Bassendean System	212Bs_S8	5<6	4220004
18	g		413 (2006)	413		Dundas Rd	Bush Forever Site 319 Nature Reserve	DFES- Training school	R 37260	Southern River Complex	Bassendean System	212Bs_S8	8<9	2014031
18	h		497 (2020)	497		Bougainvillea Avenue Bushland	Bush Forever Site 401 Nature Reserve	Agriculture Protection Board Of WA / DBCA	R 29815	Southern River Complex	Pinjarra System	213Pj	19	2015228
18	i		65 (1997)	65		Pioneer Park Bushland	Bush Forever Site 440 Rubbish Disposal Site, Recreation, Parklands	DPLH	R 41156	Southern River Complex	Pinjarra System	213Pj_Gf7	10<11	3590391
18	j		61 (2002)	61		Roe Hwy	Road	CoK	NA	Southern River Complex	Bassendean System	212Bs_S8	11<12	2013922
18	k		90 (1997)	90		Pioneer Park Bushland	Bush Forever Site 440 Rubbish Disposal Site, Recreation, Parklands	DPLH	R 41156	Southern River Complex	Pinjarra System	213Pj_Gf7	12<13	3590391
18	m		31 (2008)	31		Roe Hwy	Road	CoK	NA	Southern River Complex	Pinjarra System	213Pj_Mgs1	2	1400665
18	n		232 (2006)	232		Roe Hwy	Road	CoK	NA	Southern River Complex	Bassendean System	212Bs_S8	5	3601755
18	0		416 (2006)	416		Dundas Road Nature Reserve	Bush Forever Site 319 Nature Reserve	DBCA	R 37997	Southern River Complex	Bassendean System	212Bs_S8	7	3076696
18	р		151 (2006)	151		Roe Hwy	Road	CoK	NA	Southern River Complex	Bassendean System	212Bs_S8	3<4	3084128
18	q		1 (2006)	1		Dundas Road Nature Reserve	Bush Forever Site 319 Nature Reserve	DBCA	R 53131	Southern River Complex	Bassendean System	212Bs_S8	4	4347614
18	r		1 (2006)	1		Webster Rd	Environmental Conservation or Local Natural Areas	DPLH	NA	Southern River Complex	Bassendean System	212Bs_S8	3<4	4220004
18	s		0 (2009)	0		92 Bedford Crescent	Private Land	NA	NA	Southern River Complex	Bassendean System	212Bs_S8	4	1292367
18	t		20 (2012)	20	Healthy (2012)	Bougainvillea Avenue Bushland	Bush Forever Site 401 Nature Reserve	Agriculture Protection Board Of WA / DBCA	R 29815	Southern River Complex	Pinjarra System	213Pj	18<19	2015228
18	u		8 (2013)	8	Healthy (2013)	Roe Hwy	Road	Main Roads	NA	Southern River Complex	Pinjarra System	213Pj_Mgs1	3	1375174
18	V		99 (2014)	99	Healthy (2014)	Roe Hwy	Road	Main Roads	NA	Southern River Complex	Bassendean System	212Bs_S8	10<11	2013798
18	w		2 (2016)	2	Healthy (2016)	Dundas Rd	Road	CoK	NA	Southern River Complex	Bassendean System	212Bs_S8	5	3822649
18	х		20 (2018)	20	Healthy (2018)	Dundas Rd	Road	CoK	NA	Southern River Complex	Bassendean System	212Bs_S8	5<6	3822649

Pop. No.	Sub- Pop.	Data Source <sup>1</sup>	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex <sup>2</sup>	Landforms (DPIRD 064)	Soil type code (DPIRD 027)	Hydrology (DWER-095)	Land_ID
18	у		21 (2020)	21	Healthy (2020)	Bougainvillea Avenue Bushland	Bush Forever Site 401 Nature Reserve	Agriculture Protection Board Of WA / DBCA	R 29815	Southern River Complex	Pinjarra System	213Pj	17<18	2013601
19	а		1 (2001)	1		Welshpool Rd East	Easement	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		4041939
19	b		63 (2005)	63		Welshpool Road Bushland	Bush Forever Site 50 Nature Reserve	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		1863518
19	С		25 (2005)	25		Welshpool Road Bushland	Bush Forever Site 50 Nature Reserve	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		3802668
19	d		12 (2005)	12		Welshpool Road Bushland	Bush Forever Site 50 Nature Reserve	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		3736242
19	е		7 (2005)	7		Welshpool Rd East	Road	CoK	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		3626712
20	а		28 (2000)	28		6 Irwin PI	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo		1605516
20	b		5 (2005)	5		Norwood Reserve	Environmental Conservation or Local Natural Areas	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo		2010189
21	а		1 (2003)	1		Roe Hwy	Road	City of Swan (CoS)	NA	Forrestfield Complex	Bassendean System	212Bs_S8	14	30163133
22	а		1 (2003)	1		Honey Rd	Road	CoK	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff8		3653985
22	b		3 (2003)	3		28 Waterfall Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff8		1411827
23	а		25 (2009)	25		Adelaide St	Private Property	NA	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf7	18	3403626
23	b		3 (2009)	3		Roe Hwy	Road	CoS	NA	Forrestfield Complex	Bassendean System	212Bs_S8	16<17	4524293
23	С		2 (2009)	2		Roe Hwy	Road	CoS	NA	Forrestfield Complex	Bassendean System	212Bs_S8	17	4524293
24	а		1 (2004)	1		Perth International Airport	Perth International Airport	Cwealth	NA	Southern River Complex	Bassendean System	212Bs_S8	3<4	3561700
24	b		200 (2005)	200		Perth International Airport	Perth International Airport Bush Forever Site 386	Cwealth	NA	Southern River Complex	Bassendean System	212Bs_S8		1414250
24	С		49 (2019)	49	Healthy (2019)	Perth International Airport	Perth International Airport Bush Forever Site 386	Cwealth	NA	Southern River Complex	Bassendean System	212Bs_S8		1414270
25	а		16 (2009)	16		John McLarty Park	Environmental Conservation or Local Natural Areas	DPLH	R 50011	Dwellingup Complex	Darling Plateau System	255DpDW2		3803437
26	а		1 (2005)	1		Berry Dr	Road	CoK	NA	Forrestfield Complex	Forrestfield System	213Fo		3865124
27	а		12 (2006)	12		60 Kiandra Way	Environmental Conservation or Local Natural Areas	DPLH	R 27566	Southern River Complex	Pinjarra System	213Pj_S10	14	2015065
28	а		4 (2006)	4		Edinburgh Rd	Environmental Conservation or Local Natural Areas	DPLH	R 27566	Forrestfield Complex	Forrestfield System	213Fo	18	3069113
29	а		1 (2010)	1		Abernethy Road, Tonkin Hwy underpass.	Road	CoK	NA	Southern River Complex	Pinjarra System	213Pj_Mgs1	4	3033606

Pop. No.	Sub- Pop.	Data Source <sup>1</sup>	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex <sup>2</sup>	Landforms (DPIRD 064)	Soil type code (DPIRD 027)	Hydrology (DWER-095)	Land_ID
29	b		6 (2019)	6	Healthy (2019)	Perth International Airport	Perth International Airport Bush Forever Site 386	Cwealth	NA	Southern River Complex	Bassendean System	212Bs_S8	4	1374970
30	а	13 <sup>2</sup>	2 (2011)	13	Healthy (2011)	Tonkin Hwy	Road	CoG	NA	Guildford Complex	Forrestfield System	213Fo_Ff1	17	3638352
31	а		1 (2007)	1		60 Victoria Road	Private Land	NA	NA	Guildford Complex	Pinjarra System	213Pj_Gf4	6	1183451
32	а		2 (2016)	2	Moderate (2016)	53 Hawkesvale Road	Private Land	NA	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf7	14<15	4333986
32	b		1 (2016)	1		Hybanthus Ave	Road	CoK	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf7	14	3192226
33	а		1 (2010)	1		Monarch Wy	Road	CoK	NA	Southern River Complex	Pinjarra System	213Pj_Gf3	4	4002920
34	а		25 (2014)	25	Healthy (2014)	Dundas Rd	Road	CoK	NA	Southern River Complex	Pinjarra System	213Pj_S10	8	30163133
35	а		1 (2018)	1	Healthy (2018)	14 Trott Road	Environmental Conservation or Local Natural Areas	DPLH	NA	Dwellingup Complex	Darling Plateau System	255DpDW2		1863665
Total		1,711	12,560	13,060										

# Appendix C GHD data

Table C.2 GHD Population count and location details

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel	
1	a+e	2715	A - 2654	Maida Vale Reserve	Bush Forever 316	DPLH	R 14088	2012790	P217852	
			J - 59		Recreation / Conservation			2015050	P211747	8558
			S - 2							
1	part of	23	A - 23	Maida Vale Reserve	Bush Forever 316	DPLH	R 38489	2014203		10485
	a+e		J - 0		Recreation / Conservation			3077090	R 38489	
			S - 0							
1	part of	4	A - 4	Maida Vale Reserve	Bush Forever 316	DPLH	R 33262	3073037	P217852	8361
	a+e		J - 0		Recreation / Conservation			2012661	R 33262	
			S - 0							
1	part of	12	A - 12	Ridge Hill Road	Road	CoK	NA	3588472	P ROAD	
	a+e		J - 0	-						
			S - 0	-						
1	b	336	A - 331	Gooseberry Hill Road	Bush Forever 466	DPLH	R 30200	1418457	D050909	50
			J - 0	Bushland	Nature Reserve			1246792	P004326	9
			S - 5	-						
1	С	816	A - 618	Gooseberry Hill Road	Bush Forever 466	DPLH	R 30200	1418458	P004326	8
			J - 5	Bushland	Nature Reserve			1418460	P004326	7
			S - 193	-						
1	d	No Access		113 Watsonia Road	Private Property	NA	NA	4202026	P405293	205
1	f	No Access		95 Watsonia Road	Private Property	NA	NA	2015050	P217852	11583
1	g	No Access		115 Watsonia Road	Private Property	NA	NA	4202025	P405293	204
1	h	No Access		125 Watsonia Road	Private Property	NA	NA	1306792	D087143	203
1	i	102	A - 102	Maida Vale Reserve	Bush Forever 316	DPLH	R 49122	3689700	R 49122	
			J - 0	-	Recreation / Conservation			1306793	D087143	202
			S - 0	1						
1	j	No Access		91 Watsonia Road	Private Property	NA	NA	1281701	D071916	500

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel
1	k	8	A - 6	Watsonia Road	Road	CoK	NA	3584114	P ROAD
			J - 2						
			S - 0						
2	а	582	A - 562	Hawkesvale Nature	Bush Forever 122	DBCA	R 49079	3035012	P030106 604
			J - 20	Reserve	Conservation Flora and Fauna			3270335 3274441	P035010 605 P035537 606
			S - 0					3665857	R 49079
3	а	No Access		Fleming Reserve	Public Recreation and Conservation	DPLH	R 39218	2014660	P188672 11072
4	а	No Access		High Wycomb South Residential Precinct	Environmental Conservation or Local Natural Areas	DPLH	NA	1627241	P013417 29
4	b	No Access		High Wycomb South Residential Precinct	Environmental Conservation or Local Natural Areas	DPLH	NA	1627246	P013417 30
4	С	No Access		129 Sultana Road West	Private Property	NA	NA	1627235	P013417 35
4	d	No Access		High Wycomb South Residential Precinct	Environmental Conservation or Local Natural Areas	DPLH	NA	1627234	P013417 32
4	е	No Access		3 Brand Road	Private Property	NA	NA	1277789	D069590 3
4	f	Extinct		Sultana Road West	Road	CoK	NA	3581382	P ROAD
4	g	Extinct		Roe Hwy	Road	CoK	NA	4435522	P ROAD
4	h	212	A - 211	Sultana Road West	Bush Forever 123	DPLH	NA	1424999	P004684 497
			J - 1	Bushland	Environmental Conservation or Local Natural Areas			3935978	P068948 223
			S - 0						
4	i	99	A - 99	Sultana Road West	Bush Forever 123	DPLH	NA	1425000	P004684 498
			J - 0	Bushland	Environmental Conservation or Local Natural Areas				
			S - 0						
4	j	268	A - 263	Sultana Road West	Bush Forever 123	DPLH	NA	4352195	P412330 309
			J - 5	Bushland	Environmental Conservation or Local Natural Areas				
			S - 0						

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel	
4	k	No Access		170 Sultana Road West	Private Property	NA	NA	3460009	P041342	50
4	I	6	A - 6	43 Brae Road	Private Property	NA	NA	1627261	P013419	71
			J - 0							
			S - 0							
4	m	2	A - 2	Brae Road	Road	CoK	NA	3581376	P ROAD	
			J - 0							
			S - 0							
4	n	No Access		79 Brae Road	Private Property	NA	NA	1627251	P013418	79
4	0	No Access		12 Brand Road	Environmental Conservation or Local Natural Areas	DPLH	NA	1627227	P013417	33
4	р	No Access		Brae Road	Environmental Conservation or Local Natural Areas	DPLH	R 50763	3947896	R 50763	
4	q	No Access		Brae Road	Environmental Conservation or Local Natural Areas	DPLH	R 37320	3076168	R 37320	
4	r	No Access		Poison Gully Bushland	Bush Forever Site 45	DPLH	R 40228	2014603	P015648	10999
4	s	No Access		78 Brand Road	Private Property	NA	NA	1627232	P013417	26
4	t	17	A - 17	62 Brand Road	Property leased	DPLH	NA	1627226	P013417	28
			J - 0	-						
			S - 0	-						
4	u	Extinct		Roe Hwy	Road	CoK	NA	4170064	P ROAD	
4	V	Extinct		Nadine Cl	Road	CoK	NA	4282985	P ROAD	
5	а	Extinct		Newburn Road	School	Dept. Education	NA	1670678	P015568	570
6	а	No Access		231 Maida Vale Road	Private Property Bush Forever Site 45	NA	NA	2008173	P249016	1353
7	а	Extinct		141 Milner Road	Private Property	NA	NA	4314319	P410460	810
8	а	No Access		28 Kent Road	Private Property	NA	NA	1273796	D067248	42
8	b	No Access		42 Bruce Road	Private Property	NA	NA	1322897	D095360	200

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel	
9	а	Extinct		12 Oak Court	Private Property	NA	NA	1760958	P020251	333
9	b	No Access		350 Hawtin Road	Private Property	NA	NA	1425006	P004684	523
10	a, b, d, f, g & h	No Access		Hartfield Park (East of Tonkin Highway)	Bush Forever Site 320 Nature Reserve	DPLH	R 17098	30022411	P070568	3003
10	С	9	A - 8	Tonkin Hwy	Road	CoK	NA	4309291	P007066	300
			J - 1							
			S - 0							
10	е	No Access		Hartfield Park (West of Tonkin Highway)	Bush Forever Site 320 Nature Reserve	DPLH	R 17098	3447603	P044636	3001
11	а	No Access		711 Welshpool Road East	Environmental Conservation or Local Natural Areas	DPLH	NA	1264659	D061608	501
11	b	No Access		30 Brentwood Road,	Private Property	NA	NA	1292166	D078133	8
11	С	No Access		30 Crystal Brook Road	Private Property	NA	NA	1406229	P003380	210
11	d	No Access		38 Crystal Brook Road	Private Property	NA	NA	3801578	P059946	804
11	е	No Access		38 Brentwood Road	Private Property	NA	NA	1292165	D078133	9
11	f	No Access		40 Crystal Brook Road	Private Property	NA	NA	3801577	P059946	803
12	а	No Access		46 Kelvin Road	Private Property	NA	NA	30052155	P417511	89
13	а	371	A - 365	Clifford Street	Bush Forever Site 53	Main Roads	NA	3430688	P043927	9008
			J - 6	Reserve	Nature Reserve			1270146 1270147	D064926 D064926	110 109
			S - 0					1273363	D066992	2
13	Part of	8	A - 8	Kelvin Rd	Road	CoG	NA	3430690	P ROAD	
	а		J - 0							
			S - 0							
13	b	Extinct		Clifford Street	Private Property	NA	NA	4433342	P413054	810
13	С	Extinct		Clifford Street	Private Property	NA	NA	4433342	P413054	810
14	а	Extinct		50 Pitt Road	Private Property	NA	NA	1862320	P187513	989
14	b	5	A - 5	Pitt Road Reserve	Road	CoG	NA	3914580	D003210	110

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel	
			J - 0							
			S - 0							
15	а	Extinct		Welshpool Rd	Private Property	NA	NA	4426102	P415208	701
16	а	192	A - 192	Korung National Park	Conservation, National	DBCA	R 47881	3553995	R 47881	
			J - 0		Park, Class A Nature Reserve					
			S - 0							
16	b	No Access		Kelvin Rd	General Rural	CoG	NA	1418584	P004336	11
16	С	No Access		Kelvin Rd	General Rural	CoG	NA	1418580	P004336	12
16	d	No Access		Kelvin Rd	General Rural	CoG	NA	1418578	P004336	13
16	е	No Access		Kelvin Rd	General Rural	CoG	NA	1418579	P004336	14
16	f and g	No Access		White Road Bushland	Bush Forever Site 51 Nature Reserve	DPLH	R 54021	4527593	R 54021	
16	h	No Access		White Road Bushland	Bush Forever Site 51 Nature Reserve	DPLH	R 54021	1258641	D057957	29
16	i	No Access		White Road Bushland	Bush Forever Site 51 Nature Reserve	DPLH	R 54021	1258638	D057957	30
16	j	8	A - 6	254 Kelvin Rd	Private Property	NA	NA	1279539	D070665	11
			J - 2							
			S - 0							
16	k	No Access		61 Dale Pl	Private Property	NA	NA	1324611	D096235	703
16	I	22	A - 21	79 Dale Pl	Private Property	NA	NA	1324612	D096235	712
			J - 0							
			S - 1	_						
16	m	64	A - 62	Kelvin Rd	Road	CoG	NA	3306415	P ROAD	
			J - 2	1				3626780		
			S - 0	1						
16	n	Extinct		Korung National Park	Conservation, National Park, Class A Nature Reserve	DBCA	R 47881	3553995	R 47881	

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel
16	О	No Access		39 Kelvin Road	Private Property	NA	NA	1170424	D006077 5
16	р	No Access		37 Canter Court	Private Property	NA	NA	1619060	P013089 16
16	q	No Access		38 Canter Court	Public Recreation	DPLH	R 42547	1864425	P013089 3806
16	r	No Access		36 Canter Court,	Private Property	NA	NA	1619056	P013089 25
16	s	No Access		42 Dale Place	Private Property	NA	NA	3793373	P058722 711
17	а	163	A - 163	Smokebush Pl	Vacant Land/ Road Reserve	CoK	NA	1198292	D024292 18
			J - 0					3562708	D033847 50
			S - 0						
17	part of	3	A - 3	Smokebush Pl	Road	CoK	NA	3151706	P ROAD
	17		J - 0						
			S - 0						
18	a+o	1388	A - 1180	Dundas Road	Bush Forever Site 319	DBCA	R 37997	3076696	R 37997
			J - 189	Bushland	Nature Reserve			2014624 2014045	P216933 11026 P215367 10276
			S - 19						
18	b	Extinct		20 Bedford Crescent	Private Property	NA	NA	4047945	P073351 888
18	С	Extinct		92 Bedford Crescent	Private Property	NA	NA	1292367	D078268 21
18	d	No Access		Dundas Road Bushland	Bush Forever Site 319 Nature Reserve	DPLH	NA	4220004	P404575 800
18	е	No Access		Dundas Road Bushland	Bush Forever Site 319 Nature Reserve	DPLH	NA	4220004	P404575 800
18	f	No Access		Dundas Road Bushland	Bush Forever Site 319 Nature Reserve	DPLH	NA	4220004	P404575 800
18	g	2729	A - 1987	Dundas Rd	Bush Forever Site 319	DFES - Fire	R 37260	2014031	P215367 10261
			J - 204		Nature Reserve	Training School			
			S - 538						
18	h + t +y	597	A - 590	Bougainvillea Avenue	Bush Forever Site 401	Agriculture	R 29815	2015228	P218305 11858
			J - 7	Bushland	Nature Reserve	Protection Board Of WA /			
		S - 0			DBCA				

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel	
18	i + k	812	A - 764	Pioneer Park	Bush Forever Site 440	DPLH	R 41156	3590391	P045958	300
			J -47	Bushland	Rubbish Disposal Site, Recreation, Parklands			3620202	R 41156	
			S - 1		,					
18	part of	7	A - 7	Roe Hwy	Road	CoK	NA	3917114	P ROAD	
	18k		J - 0							
			S - 0							
18	j	4	A - 3	Roe Hwy	Road	CoK	NA	2013922	P215187	10125
			J - 1							
			S - 0							
18	m	Extinct		Roe Hwy	Road	CoK	NA	1400665	P003217	21
18	n	18	A - 14	Roe Hwy	Road	CoK	NA	3601755	P ROAD	
			J - 4							
			S - 0							
18	р	51	A - 35	Roe Hwy	Road	CoK	NA	3084128	P ROAD	
			J - 16							
			S - 0							
18	q	8	A - 8	Dundas Road Nature	Bush Forever Site 319	DBCA	R 53131	4160257	P403839	301
			J - 0	Reserve	Nature Reserve					
			S - 0							
18	r	20	A - 17	Dundas Road	Bush Forever Site 319	DPLH	NA	4220004	P404575	800
			J - 3	Bushland	Nature Reserve					
			S - 0							
18	S	No Access		92 Bedford Crescent	Private Land	NA	NA	1292367	D078268	21
18	u	Extinct		Roe Hwy	Road	Main Roads	NA	1375174	P002302	24
18	V	125	A - 48	Roe Hwy	Road	CoK	NA	2013798	P183309	9947
			J - 59							
			S - 18							

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel	
18	w	Extinct		Dundas Rd	Road	CoK	NA	3822649	P ROAD	
18	х	5	A - 5	Dundas Rd	Road	CoK	NA	3822649	P ROAD	
			J - 0							
			S - 0							
19	а	No Access		Welshpool Rd East	Easement	DPLH	NA	4041939	P074447	200
19	b + c	84	A - 79	Welshpool Road	Bush Forever Site 50	DPLH	NA	3802668	P061853	2
			J - 5	Bushland	Nature Reserve					
			S - 0							
19	d	11	A - 11	Welshpool Road	Bush Forever Site 50	DPLH	NA	3736242	P057971	501
			J - 0	Bushland	Nature Reserve					
			S - 0							
19	е	Extinct		Welshpool Road East	Road	CoK	NA	3626712	P ROAD	
20	а	Extinct		6 Irwin PI	Private Property	NA	NA	1605516	P012551	111
20	b	No Access		Norwood Reserve	Environmental Conservation or Local Natural Areas	DPLH	NA	2010189	D009265	5131
21	а	Extinct		Roe Hwy	Road	CoK	NA	30163133	P420319	5
22	а	1	A - 1	Honey Rd	Road	CoK	NA	3653985	P ROAD	
			J - 0							
			S - 0							
22	b	No Access		28 Waterfall Road	Private Property	NA	NA	1411827	P003609	33
23	а	Extinct		Adelaide St	Private Property	NA	NA	3403626	P043176	97
23	b	1	A - 1	Roe Hwy	Road	CoS	NA	4524293	P ROAD	
			J - 0							
			S - 0							
23	С	1	A - 1	Roe Hwy	Road	CoS	NA	3549010	P ROAD	
			J - 0							
			S - 0							

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel
24	а	No Access		Perth International Airport	Perth International Airport	Cwealth	NA	3561700	P045854 100
24	b	No Access		Perth International Airport	Perth International Airport Bush Forever Site 386	Cwealth	NA	1414250	P003709 857
24	С	No Access		Perth International Airport	Perth International Airport Bush Forever Site 386	Cwealth	NA	1414270	P003709 829
25	а	No Access		John McLarty Park	Environmental Conservation or Local Natural Areas	DPLH	R 50011	3803437	P061515 4000
26	а	Extinct		Berry Drv	Road	CoK	NA	3865124	P ROAD
27	а	No Access		60 Kiandra Way	Environmental Conservation or Local Natural Areas	DPLH	R 27566	2015065	P015286 11600
28	а	No Access		Edinburgh Rd	Environmental Conservation or Local Natural Areas	DPLH	R 27566	3069113	R 27566
29	а	Extinct		Abernethy Road, Tonkin Hwy underpass.	Road	CoK	NA	3033606	P221057 14175
29	b	No Access		Perth International Airport	Perth International Airport Bush Forever Site 386	Cwealth	NA	1374970	P002284 389
30	а	4	A - 4	Tonkin Hwy	Road	CoG	NA	3638352	P ROAD
			J - 0						
			S - 0						
30	Part of	2	A - 2	Tonkin Hwy	Road	CoG	NA	4031000	P ROAD
	а		J - 0						
			S - 0						
30	Part of	3	A - 2	Tonkin Hwy	Road	CoG	NA	3638276	P ROAD
	а		J - 1						
			S - 0						
30	Part of	1	A - 1	Tonkin Hwy	Road	CoG	NA	4318603	P ROAD
	a		J - 0						
			S - 0						
31	а	No Access		60 Victoria Road	Private Property	NA	NA	1183451	D016137 278

Pop No	Sub pop	GHD count	Age <sup>1</sup>	Reserve Name / Location	Land Purpose	Vested With <sup>2</sup>	Reserve No.	Land_id	Pi_parcel
32	а	Extinct		53 Hawkesvale Road	Private Land	NA	NA	4333986	P411556 500
32	b	Extinct		Hybanthus Ave	Road	CoK	NA	3192226	P ROAD
33	а	Extinct		Monarch Wy	Road	CoK	NA	4002920	P ROAD
34	а	Extinct		Dundas Rd	Road	CoK	NA	30163133	P420319 5
35	а	No Access		14 Trott Road	Environmental Conservation or Local Natural Areas	DPLH	NA	1863665	P011476 2807
			A - 10,502						
Total		11,919	J - 640						
			S - 776						

<sup>1</sup> Age: A-Adult, J-Juvenile & S-Seedling; 2 Vested with: DPLH – Department of Planning Lands and Heritage, CoK – City of Kalamunda, DBCA – Department of Biodiversity, Conservation and Attractions, CoG- City of Gosnells, DFES – Department of Fire and Emergency Services, CoS – City of Swan, Cwealth -Commonwealth Government.

Table C.3 GHD Population count and location details

Pop. No	SubPop.					DBCA:	DBCA:	Desktop	Total	GHD 2024	GHD 2024	Age:	Age:	Age:	Refence for	Subpopulation	Total
r op. no	Subi op.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	Count	Year	subpopulation status	subpopulation estimate (desktop)	survey status	survey count (2024)	Age: Adult	Age: Juvenile	Seedling	subpopulation estimate	status (2024)	subpopulation estimate (2024)
1	а					1,592	2005		1,592	Surveyed						Extant	
1	е					57	2002		57	Surveyed						Extant	
1	a + e										2754	2693	59	2	GHD		2754
1	b					362	2002		362	Surveyed	336	331	0	5	GHD	Extant	336
l	С					508	1998		508	Surveyed	816	618	5	193	GHD	Extant	816
	d					11	2002		11	No Access					DBCA	Extant	11
	f					33	2005		33	No Access					DBCA	Extant	33
	g					1	2006		1	No Access					DBCA	Extant	1
	h					80	2002		80	No Access					DBCA	Extant	80
	i					131	2011		131	Surveyed	102	102	0	0	DBCA	Extant	102
	j					1	1998		1	No Access					DBCA	Extant	1
	k					4	2020		4	Surveyed	8	6	2	0	GHD	Extant	8
	а					405	2016		405	Surveyed	582	562	20	0	GHD	Extant	582
	а					1	2008		1	No Access					DBCA	Extant	1
	а					62	1997		62	No Access					DBCA	Extant	62
	b					89	2008		89	No Access					DBCA	Extant	89
	С					0	1997	Extinct	0	No Access					DBCA	Extinct	0
	d					41	2008		41	No Access					DBCA	Extant	41
	е					0	2006	Extinct	0	No Access					DBCA	Extinct	0
	f					0	2006	Extinct	0	Surveyed	0				GHD	Extinct	0
	g					16	2008		16	Surveyed	0				GHD	Extinct	0
	h	152				76	2006		152	Surveyed	212	211	1	0	GHD	Extant	212
	i	76				1	1997		76	Surveyed	99	99	0	0	GHD	Extant	99
	j	187				1	1997		187	Surveyed	268	263	5	0	GHD	Extant	268
	k					1	1997		1	No Access					DBCA	Extant	1
	ı					20	2006		20	Surveyed	6	6	0	0	GHD	Extant	6
	m					7	2006		7	Surveyed	2	2	0	0	GHD	Extant	2
	n					103	2005		103	No Access					DBCA	Extant	103
	0					161	2005		161	No Access					DBCA	Extant	161
	р					152	2005		152	No Access					DBCA	Extant	152
	q					120	2005		120	No Access					DBCA	Extant	120
	r					14	2008		14	No Access					DBCA	Extant	14
	S					72	2008		72	No Access					DBCA	Extant	72
	t					1	2005		1	Surveyed	17	17	0	0	GHD	Extant	17
	u					4	2008		4	Surveyed	0				GHD	Extinct	0
	V					7	2008		7	Surveyed	0				GHD	Extinct	0
	a					2	2008		2	Surveyed	0				GHD	Extinct	0
	а					11	1997		11	No Access					DBCA	Extant	11

Pop. No	SubPop.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	DBCA: Count	DBCA: Year	Desktop subpopulation status	Total subpopulation estimate (desktop)	GHD 2024 survey status	GHD 2024 survey count (2024)	Age: Adult	Age: Juvenile	Age: Seedling	Refence for subpopulation estimate	Subpopulation status (2024)	Total subpopulation estimate (2024)
7	а					0	1997	Extinct	0	Surveyed					GHD	Extinct	0
8	а					4	2001		4	No Access					DBCA	Extant	4
8	b					4	2005		4	No Access					DBCA	Extant	4
9	а					0	2006	Extinct	0	Surveyed					DBCA	Extinct	0
9	b					14	2014		14	No Access					DBCA	Extant	14
10	a, b, d, f, g & h		639	75		457	2000-2013		714	No Access					Woodman	Extant	714
10	С		15			10	2006		15	Surveyed	9	8	1	0	GHD	Extant	9
10	е		106	5		10	2006		111	No Access					Woodman	Extant	111
11	а					0	2005	Extinct	0	No Access					DBCA	Extinct	0
11	b					7	2006		7	No Access					DBCA	Extant	7
11	С					100	2005		100	No Access					DBCA	Extant	100
11	d					175	2005		175	No Access					DBCA	Extant	175
11	е					12	2006		12	No Access					DBCA	Extant	12
11	f					1	2005		1	No Access					DBCA	Extant	1
12	а					72	2005		72	No Access					DBCA	Extant	72
13	а		431		3	655	2006		434	Surveyed	371	365	6	0	GHD	Extant	371
13	Part of a		9						9		8	8	0	0	GHD		8
13	b					10	1997		10	Surveyed	0				DBCA	Extinct	0
13	С					0	1997	Extinct	0	Surveyed					DBCA	Extinct	0
14	а					0	2005	Extinct	0	Surveyed	0				GHD	Extinct	0
14	b					1	2005		1	Surveyed	5	5	0	0	GHD	Extant	5
15	а					0	2005	Extinct	0	Surveyed					DBCA	Extinct	0
16	а					337	2020		337	Surveyed	192	192	0	0	GHD	Extant	192
16	b					80	2006		80	No Access					DBCA	Extant	80
16	С					209	2006		209	No Access					DBCA	Extant	209
16	d					120	2006		120	No Access					DBCA	Extant	120
16	е					8	2006		8	No Access					DBCA	Extant	8
16	f and g					911	2006		911	No Access					DBCA	Extant	911
16	h					236	2006		236	No Access					DBCA	Extant	236
16	i					1	1997		1	No Access					DBCA	Extant	1
16	j					17	2005		17	Surveyed	8	6	2	0	GHD	Extant	8
16	k					2	2006		2	No Access					DBCA	Extant	2
16	I					10	2006		10	Surveyed	22	21	1	0	GHD	Extant	22
16	m					31	2006		31	Surveyed	64	62	2	0	GHD	Extant	64
16	n					2	2020		2	Surveyed	0				GHD	Extinct	0
16	0					15	2009		15	No Access					DBCA	Extant	15
16	р					30	2009		30	No Access					DBCA	Extant	30
16	q					56	2016		56	No Access					DBCA	Extant	56
16	r					30	2009		30	No Access					DBCA	Extant	30

Pop. No	SubPop.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	DBCA: Count	DBCA: Year	Desktop subpopulation status	Total subpopulation estimate (desktop)	GHD 2024 survey status	GHD 2024 survey count (2024)	Age: Adult	Age: Juvenile	Age: Seedling	Refence for subpopulation estimate	Subpopulation status (2024)	Total subpopulation estimate (2024)
16	S					119	2018		119	No Access					DBCA	Extant	119
17	а					94	2006		94	Surveyed	166	166	0	0	GHD	Extant	166
18	а					1,659	2013		1,659	Surveyed						Extant	
18	a + o										1388	1180	189	19	GHD		1,388
18	b					0	1997	Extinct	0	Surveyed					DBCA	Extinct	0
18	С					97	2006		97	Surveyed	0				GHD	Extinct	0
18	d					15	2006		15	No Access					DBCA	Extant	15
18	е					42	2006		42	No Access					DBCA	Extant	42
18	f					134	2006		134	No Access					DBCA	Extant	134
18	g					413	2006		413	Surveyed	2,729	1,987	204	538	GHD	Extant	2,729
18	h					497	2020		497	Surveyed						Extant	
18	h + t + y										597	590	7	0	GHD		597
18	i					65	1997		65	Surveyed						Extant	
18	i + k										819	771	47	1	GHD		819
18	j					61	2002		61	Surveyed	4	3	1	0	GHD	Extant	4
18	k					90	1997		90	Surveyed						Extant	
18	m					31	2008		31	Surveyed	0				GHD	Extinct	0
18	n					232	2006		232	Surveyed	18	14	4	0	GHD	Extant	18
18	0					416	2006		416	Surveyed						Extant	
18	р					151	2006		151	Surveyed	51	35	16	0	GHD	Extant	51
18	q					1	2006		1	Surveyed	8	8	0	0	GHD	Extant	8
18	r					1	2006		1	Surveyed	20	17	3	0	GHD	Extant	20
18	S					0	2009	Extinct	0	No Access					DBCA	Extinct	0
18	t					20	2012		20	Surveyed						Extant	20
18	u					8	2013		8	Surveyed	0				GHD	Extinct	0
18	V					99	2014		99	Surveyed	125	48	59	18	GHD	Extant	125
18	w					2	2016		2	Surveyed	0				GHD	Extinct	0
18	x					20	2018		20	Surveyed	5	5	0	0	GHD	Extant	5
18	У					21	2020		21	Surveyed						Extant	
19	а					1	2001		1	No Access					DBCA	Extant	1
19	b					63	2005		63	Surveyed						Extant	
19	С					25	2005		25	Surveyed						Extant	
19	b + c										84	79	5	0	GHD		84
19	d					12	2005		12	Surveyed	11	11	0	0	GHD	Extant	11
19	е					7	2005		7	Surveyed	0				GHD	Extinct	0
20	а					28	2000		28	Surveyed	0				GHD	Extinct	0
20	b					5	2005		5	No Access					DBCA	Extant	5
21	а					1	2003		1	Surveyed	0				GHD	Extinct	0
22	а					1	2003		1	Surveyed	1	1	0	0	GHD	Extant	1
22	b					3	2003		3	No Access					DBCA	Extant	3

Pop. No	SubPop.	AECOM (2019)	Woodman Env. (2021)	Western Env. (2022)	Western Env. (2023)	DBCA: Count	DBCA: Year	Desktop subpopulation status	Total subpopulation estimate (desktop)	GHD 2024 survey status	GHD 2024 survey count (2024)	Age: Adult	Age: Juvenile	Age: Seedling	Refence for subpopulation estimate	Subpopulation status (2024)	Total subpopulation estimate (2024)
23	а					25	2009		25	Surveyed	0				GHD	Extinct	0
23	b					3	2009		3	Surveyed	1	1	0	0	GHD	Extant	1
23	С					2	2009		2	Surveyed	1	1	0	0	GHD	Extant	1
24	а					1	2004		1	No Access					DBCA	Extant	1
24	b					200	2005		200	No Access					DBCA	Extant	200
24	С					49	2019		49	No Access					DBCA	Extant	49
25	а					16	2009		16	No Access					DBCA	Extant	16
26	а					1	2005		1	Surveyed	0				GHD	Extinct	0
27	а					12	2006		12	No Access					DBCA	Extant	12
28	а					4	2006		4	No Access					DBCA	Extant	4
29	а					1	2010		1	Surveyed	0				GHD	Extinct	0
29	b					6	2019		6	No Access					DBCA	Extant	6
30	а		13			2	2011		13	Surveyed	10	9	1	0	GHD	Extant	10
31	а					1	2007		1	No Access					DBCA	Extant	1
32	а					2	2016		2	Surveyed	0				GHD	Extinct	0
32	b					1	2016		1	Surveyed	0				GHD	Extinct	0
33	а					1	2010		1	Surveyed	0				GHD	Extinct	0
34	а					25	2014		25	Surveyed	0				GHD	Extinct	0
35	а					1	2018		1	No Access					DBCA	Extant	1
Total		415	1,213	80	3	12,561		11 Extinct	13,060	Surveyed: 70 No Access: 65	11,919	10,503	640	776		Extant: 104 Extinct: 31	16,413

Table C.4 Species x site matrix

Family		Species																																	
	Status		ConR01	ConR02	ConR03	ConR04	ConR05	ConR06	ConR07 ConR08	ConR09	ConR10	ConR11	ConR12 ConR13	ConR14	ConR15	ConR16	ConR17	ConR18	Conk19	ConR21	ConR22	ConR23	ConR24	ConR26	ConR27	ConR28	ConR29	Collinsor Con R34	ConR32	ConR33	ConR34	ConR35	ConR36	ConR38	ConR39
Anarthriaceae		Lyginia barbata												Х		Х		)	X	Х										Х					
Asparagaceae		Lomandra caespitosa				Х																													
Asteraceae	*	Sonchus oleraceus																			Х														
Asteraceae	*	Ursinia anthemoides	Х			Х					Х					Х			Х				Х			Х									Х
Asteraceae		Hyalosperma cotula																				Х													
Casuarinaceae	*	Casuarina sp.																													Х				
Casuarinaceae		Allocasuarina fraseriana	Х	Х	Х	Х	Х	Х	х х	X	Х	Х	Х	X		Х	X	x 2	х	X	Х	Х	х	X	X		X	Х	X			Х	х х	Х	Х
Casuarinaceae		Allocasuarina humilis		Х	Х					X				X		Х		x 2	х	X			X		X		Х	Х	X	Х					
Colchicaceae		Burchardia congesta					Х				Х							)	X																
Cupressaceae		Callitris acuminata																			Х														
Cyperaceae		Ammothryon grandiflorum					$\neg$									$\top$	Х																		
Cyperaceae		Cyathochaeta avenacea														Х			Х			$\neg$		Х					Х						
Cyperaceae		Cyathochaeta equitans					Х																X					X	Х						
Cyperaceae		Lepidosperma sp.											Х					7	x									X							
Cyperaceae		Mesomelaena pseudostygia		Х	Х	Х	Х	Х	Х				X	X	Х		X Z	x :	x				х	Х			X	x x	X	Х	Х	Х		X	>
Cyperaceae		Mesomelaena tetragona										Х																		Х			X		
Cyperaceae		Schoenus sp.										Х						7	x			х													
Dasypogonaceae		Dasypogon bromeliifolius		X			х				X	Х			Х	Х	X Z	x	Х			х	X	X				X							
Dasypogonaceae		Dasypogon obliquifolius							Х											X												Х	X		
Dasypogonaceae		Kingia australis													Х																	Х			
Dilleniaceae		Hibbertia hypericoides			Х		х	Х	Х	X	Х		Х		Х	Х	X Z	x :	хх		X		Х	X		X	Х		X		Х	Х	X	X	X
- abaceae	*	Acacia iteaphylla	Х																																
- -abaceae		Acacia pulchella																																	<b>&gt;</b>
		Acacia saligna				Х																													
		Bossiaea eriocarpa																	x			х					Х							X	
Fabaceae		Bossiaea ornata																																X	
Fabaceae		Daviesia nudiflora subsp. nudiflora					х																X				X			X			Х	X	
Fabaceae		Gastrolobium capitatum				_	х																												
Fabaceae		Gompholobium confertum				$\top$	$\dashv$	$\dashv$	X													$\dashv$			+					X					
Fabaceae		Gompholobium tomentosum				$\top$	$\dashv$	$\dashv$														$\dashv$	X		+	X									
Fabaceae		Jacksonia floribunda				Х	+		X						+							$\dashv$	X	_			X	X				Х			
Fabaceae		Jacksonia sternbergiana	X				+					X				_						x			+										
Fabaceae		Labichea punctata					+		$\dashv$							_		+;	x			X			+		X								
Goodeniaceae		Dampiera linearis																				-	X			X									
Goodeniaceae		Scaevola repens var. repens				$\dashv$	$\dashv$	$\dashv$						+		+		_		+	X	$\dashv$	X		+	'		×					X		+++
		Anigozanthos humilis subsp. humilis				$\dashv$	$\dashv$	_														$\dashv$			+-					X					++
Haemodoraceae		Anigozanthos manglesii subsp. manglesii				+	х			+	+				+		Х					х	X		+	X				+ •		Х	X	X	+++
Haemodoraceae		Conostylis aurea				+	+			+	+				+			,	x	X		+			+	· ·								+	+++
Haemodoraceae		Haemodorum laxum	+			+	$\dashv$	х	_	+	+			+		$\dashv$		+	-	+^	X	$\dashv$		+	+	-		+	+						+
Haemodoraceae		Haemodorum spicatum				+	+	^		+	+				+						X	$\dashv$			-	-								X	+++
Hemerocallidaceae		Caesia micrantha	-				-				1		X								^	-												<b>-</b>	+++
Hemerocallidaceae Hemerocallidaceae		Johnsonia pubescens subsp. pubescens	-	-			_			-	-	+	^	-	X			_							-	-			-	-					+

Family		Species																																				
	Sn		R01	R02	R03	R04	R05	R06	R07	80 80	R09	R10	R11	R12 R13	R14	R15	R16	R17	R18	R19	R20	R21	R23	R24	R25	R26	R27	R28	R29	R30	23	207	R34	R35	R36	R37	339	R40
	Status		ConR01	ConR02	ConR03	ConR04	ConR05	ConR06	ConR07	Conkus	ConR09	ConR10	ConR11	ConR13	ConR14	ConR15	ConR16	ConR17	ConR18	ConR19	ConR20	ConR21	ConR23	ConR24	ConR25	ConR26	ConR27	ConR28	ConR29	ConR30		ConB33	ConR34	ConR35	ConR36	ConR37	Con	ConR40
Iridaceae	*	Freesia alba × leichtlinii						Х																														
Iridaceae	*	Gladiolus caryophyllaceus		X	Х		Х					Х		X								>	X			Х				Х	>	(	X		X	X	(	X
Iridaceae	*	Watsonia marginata											Х																									
Iridaceae	*	Watsonia meriana var. bulbillifera						Х									X																					
Iridaceae		Patersonia occidentalis var. occidentalis				Х				X		Х			X					Х		Х				Х			Х							X		
Loranthaceae		Nuytsia floribunda									X					X	X				Х	X >	X	X	X									X				
Myrtaceae	*	Gaudium laevigatum											X   2	X	X		X		Х														X					
Myrtaceae		Banksia menziesii																				Х																
Myrtaceae		Calothamnus quadrifidus												X				Х															X					
Myrtaceae		Chamelaucium uncinatum												X	Х				Х			>	X															
Myrtaceae		Corymbia calophylla													X							>	x x														X	
Myrtaceae		Eremaea pauciflora var. pauciflora														Х			Х		Х																	
Myrtaceae		Eucalyptus marginata subsp. marginata	Х		Х		Х	Х	Х		Х	Х		X	X		Х	Х	Х	Х		>	x x	X	X	Х	Х	Х		Х	>	( )	( X	X	Х	ХХ	κ x	X
Myrtaceae		Eucalyptus todtiana				Х							Х																									
Myrtaceae		Eucalyptus wandoo			х																																	
Myrtaceae		Hypocalymma angustifolium																																			X	
Myrtaceae		Hypocalymma robustum														Х																						
Myrtaceae		Kunzea glabrescens												x																								
Myrtaceae		Melaleuca seriata								$\top$						X						Х			X		Х		Х	,	<b>(</b>						+	
Myrtaceae		Scholtzia involucrata									х																										+	+
Myrtaceae		Verticordia densiflora var. densiflora														X																					+	+
Poaceae	*	Aira caryophyllea					Х																														+	+
Poaceae	*	Avena barbata																			Х																+	+
Poaceae	*	Briza maxima	X	X	Х	Х													Х					X								>					+	+
Poaceae	*	Ehrharta calycina	X			Х		Х		+	$\dashv$	х		x	X		X	X	_		Х	<b></b>	x x	_	+				Х	x	>	_	X	+			+	X
Poaceae	*	Ehrharta longiflora	^	X						+							'								+							<u> </u>		+			+	+
Poaceae	*	Eragrostis curvula			Х									_											+					Х			X				+	+-
Poaceae	*	Holcus lanatus						Х		+	+		_	+	-	+									+				$\rightarrow$	X	_	+	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	+			+	+
Poaceae	*	Poaceae sp.								+						+									+				_		_			+			X	-
Poaceae	*	Vulpia sp.								-	-			x																							+	+
Poaceae		Amphipogon turbinatus	-							+	+	-	-   '	_	-	+							-	-						<del>-</del>	<b>(</b>	<b></b>	,	+		-	+	+-
Poaceae		Ampriipogon turbinatus  Austrostipa compressa	-							+	+	-	_	-	-	+							x	-							_	+	_	+		-	+	+-
		· · ·								-			_										_		-				-		-			+		-	+	+
Poaceae		Austrostipa flavescens	-							+	_	_	_	_		+		Х							-				-		_	+		+		<del>    ,</del>	+	-
Poaceae	*	Rytidosperma sp.								_			_	_	+,	-							_	_	_				_		_			-		X	•	+-
Primulaceae		Lysimachia arvensis		-							_				X	_									<u> </u>									_	<b>.</b>	<del></del>	_	+
Proteaceae	T	Conospermum undulatum							X			-	Х	X	_	X		Х					X		X						_	_		-	X	X	×	X
Proteaceae		Adenanthos cygnorum subsp. cygnorum								-	-	X	_	_	X	_	X	X			Х	X	_	-	-	X		X	-	X	_	_	_	X		X	+	+
Proteaceae		Banksia attenuata		X						X	-	X	_	_	_	X		Х	X				_	-	-	X		Х		X	( )	(		_			_	4
Proteaceae		Banksia dallanneyi	X		Х			Х	Х		Х	_		_	_									-	-				_				X	_	_	×	-	X
Proteaceae		Banksia grandis	-								_	_		_	_									-	-			Х	_					_	_	X	$\perp$	
Proteaceae		Banksia menziesii		X		Х				X 2	Х	X		_					Х	Х	Х				X	X	X	Х	Х	X	(						$\perp$	
Proteaceae		Banksia nivea								_	_	_	_	_		_		Х		Х			X		_				_			>	(				_	
Proteaceae		Banksia sessilis														X																						

Family		Species																																							
	Status		ConR01	ConR02	ConR03	ConR04	ConR05	ConR06	ConR07	ConR08	ConR09	ConR10	ConR11	ConR12	ConR13	ConR14	ConR15		ConR17	COURTS	ConR19	ConR20	ConR21	ConR23	ConR24	ConR25	ConR26	ConR27	ConR28	ConR29	ConR30	ConR31	ConR32	ConR33	ConR34	ConR35	ConR36	ConR37	ConR38	ConR39	ConR40
Proteaceae		Banksia sphaerocarpa																														Х									
Proteaceae		Grevillea bipinnatifida																																						Х	
Proteaceae		Hakea conchifolia																					X			X															
Proteaceae		Hakea lissocarpha	X																																						
Proteaceae		Hakea ruscifolia													Х																						Х				
Proteaceae		Lambertia multiflora var. darlingensis			Х			Х	Х						Х		Х		)	x	Х				Х	Х	Х		Х		Х	Х	Х	Х	Х	Х					
Proteaceae		Persoonia elliptica																																			Х				
Proteaceae		Petrophile linearis																																Х				Х			
Proteaceae		Stirlingia latifolia		Х							Х					Х					Х	)	x x	X						Х		Х					Х			Х	
Proteaceae		Synaphea spinulosa subsp. spinulosa																												Х											
Proteaceae		Xylomelum occidentale																									Х							Х				Х			
Restionaceae		Alexgeorgea nitens											Х						)	X								Х													
Restionaceae		Desmocladus fasciculatus			Х		Х																X		X							Х	Х			Х	Х				
Restionaceae		Desmocladus flexuosus		Х				Х									>	(			7	x 2	X																		X
Xanthorrhoeaceae		Xanthorrhoea ?brunonis																								Х															
Xanthorrhoeaceae		Xanthorrhoea gracilis																																	Х						
Xanthorrhoeaceae		Xanthorrhoea preissii	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	>	(	)	x		х	X	X	X		Х	Х	Х	Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	Χ
Zamiaceae		Macrozamia riedlei	Х																																						

Table C.5 Soil sample t-test

Sample	Location	C. udulatum presence	% +1180µm	% +150µm	% +19.0mm	% +2.36mm	mul00£+ %	% +37.5mm	% +4.75mm	% +425µm	шпоо9+ %	% +75.0mm	mu27+ %	-9.5mm	mg/k	% Clay (<2 µm)	% Cobbles (>6cm)	% Gravel (>2mm)	% Moisture Content	By Nitrate as N (Sol.)	Mitrite + Nitrate	M/k	Reactive Phosphorus as P	% Sand (0.06-2.00 mm)	% Silt (2-60 µm)	Soil Particle  Boll Particle Clay/Silt/Sand)	Total Kjeldahl % Nitrogen as N	Egy Total Nitrogen as /k	as P
Sa			/0	70	/0	/0	70	70	/0	/0	70	/*	/*	70	g	/*	70	70	/0	g	g	g g	g	70	/0	3	g	g	g
AS02	Hawkesvale Reserve	Yes	1	90	1	1	70	1	1	36	7	1	95	1	20	4	1	1	1.6	0.8	0.8	0.1	0.1	96	1	2.3	460	460	14
AS04	Hawkesvale Reserve	No	1	91	1	1	71	1	1	39	13	1	95	1	20	4	1	1	1	0.2	0.2	0.1	0.1	95	1	2.25	460	460	15
AS06	Maida Vale Reserve	Yes	1	88	1	1	66	1	1	34	10	1	95	1	20	5	1	1	1	1.9	1.9	0.1	0.1	95	1	2.56	380	380	15
AS08	Maida Vale Reserve	No	1	87	1	1	60	1	1	24	5	1	95	1	20	5	1	1	1	0.8	0.8	0.1	0.4	95	1	2.45	470	470	20
AB01	Korung National Park	Yes	4	92	1	2	69	1	1	35	14	1	95	1	20	5	1	2	1	1.1	1.1	0.1	0.4	93	1	2.28	540	540	36
AB03	Korung National Park	No	2	88	1	1	65	1	1	34	14	1	93	1	20	5	1	1	1	0.3	0.3	0.1	0.5	93	1	2.42	870	870	56
AB05	Welshpool Rd east bushland	Yes	4	82	1	2	58	1	1	34	14	1	92	1	20	7	1	2	4.6	0.9	0.9	0.1	0.1	91	1	2.13	850	850	18
AB07	Welshpool Rd east bushland	No	2	85	1	1	61	1	1	35	16	1	94	1	20	6	1	1	1	0.8	0.8	0.1	0.1	93	1	2.32	570	570	23
AB09	Clifford Street bushland	Yes	3	91	1	1	79	1	1	53	24	1	95	1	20	5	1	2	1	0.4	0.4	0.1	0.2	93	1	2.24	610	610	16
AB11	Clifford Street bushland	No	3	78	1	1	53	1	1	30	14	1	91	1	20	6	1	1	1	0.1	0.1	0.1	1.3	92	1	2.48	600	600	28
AB15	Department of Ag site Forrestfield	Yes	3	90	1	1	69	1	1	31	9	1	94	1	20	5	1	2	1	0.2	0.2	0.1	0.2	93	1	2.3	380	380	12
AB13	Department of Ag site Forrestfield	No	7	86	1	3	60	1	1	32	13	1	94	1	20	6	1	4	1.4	0.1	0.1	0.1	9.4	90	1	2.1	1010	1010	60
AB17	Pioneer Park	Yes	3	85	1	1	57	1	1	26	8	1	94	1	20	6	1	2	1.3	0.1	0.1	0.1	0.1	92	1	2.42	700	700	22
AB19	Pioneer Park	No	2	78	1	1	46	1	1	19	6	1	91	1	20	6	1	1	1	0.1	0.1	0.1	0.1	92	1	2.02	600	600	21
AB21	Sultana Road	Yes	3	90	1	1	71	1	1	36	10	1	96	1	20	3	1	1	1.2	0.5	0.5	0.1	0.1	96	1	2.34	530	530	22
AB23	Sultana Road	No	3	88	1	1	68	1	1	38	14	1	96	1	20	4	1	2	1.3	0.1	0.1	0.1	1.3	94	1	2.03	740	740	22
AB27	Dundas Road Nature Reserve	Yes	4	91	1	1	75	1	1	46	17	1	96	1	20	4	1	2	4.3	0.4	0.4	0.1	0.4	94	1	1.62	1220	1220	32
AB25	Dundas Road Nature Reserve	No	3	92	1	1	75	1	1	44	16	1	96	1	20	4	1	1	1.5	0.1	0.1	0.1	0.1	95	1	2.08	450	450	16
T-test																													
Mean		Yes	2.89	88.78	1.00	1.22	68.22	1.00	1.00	36.78	12.56	1.00	94.67	1.00	20.00	4.89	1.00	1.67	1.89	0.70	0.70	0.10	0.19	93.67	1.00	2.24	630.0	630.0	20.78
Mean		No	2.67	85.89	1.00	1.22	62.11	1.00	1.00	32.78	12.33	1.00	93.89	1.00	20.00	5.11	1.00	1.44	1.13	0.29	0.29	0.10	1.48	93.22	1.00	2.24	641.1	641.1	29.00
Standard	d deviation	Yes	1.17	3.27	0.00	0.44	7.16	0.00	0.00	8.04	5.39	0.00	1.22	0.00	0.00	1.17	0.00	0.50	1.47	0.56	0.56	0.00	0.13	1.73	0.00	0.26	267.8	267.8	8.27
Standard	d deviation	No	1.80	4.99	0.00	0.67	8.95	0.00	0.00	7.69	4.03	0.00	1.90	0.00	0.00	0.93	0.00	1.01	0.21	0.30	0.30	0.00	3.01	1.72	0.00	0.19	195.3	195.3	16.90
Count		Yes	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Count		No	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Standar	rd error	Yes	0.39	1.09	0.00	0.15	2.39	0.00	0.00	2.68	1.80	0.00	0.41	0.00	0.00	0.39	0.00	0.17	0.49	0.19	0.19	0.00	0.04	0.58	0.00	0.09	89.27	89.27	2.76
Standar	d error	No	0.60	1.66	0.00	0.22	2.98	0.00	0.00	2.56	1.34	0.00	0.63	0.00	0.00	0.31	0.00	0.34	0.07	0.10	0.10	0.00	1.00	0.57	0.00	0.06	65.12	65.12	5.63
P value			0.72	0.11	NA	1.00	0.07	NA	NA	0.19	0.90	NA	0.24	NA	NA	0.35	NA	0.56	0.15	0.01	0.01	NA	0.24	0.40	NA	0.96	0.93	0.93	0.20

## Appendix D

Threatened and Priority Flora Report Forms



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TPFI	Pop. No:	1a +1e
OBSERVATION DATE:	05/12/2023	CONSE	RVATION STA	ATUS: VU		New populat	
OBSERVER/S: A.Ben	kovic and A.Sleep					62228361	
ROLE: Snr. Botanists	<u> </u>		IISATION: GI	HD Pty Ltd	-		
EMAIL: angela.benkovic@	ghd.com			· · · · · · · · · · · · · · · · · · ·			
DESCRIPTION OF LOCATIO		st town/named locality, an	d the distance and d	lirection to that nla	ce).		
Maida Vale Recreation Res		st town/hamed locality, an	u the distance and d	illection to that pla			
Ividida Vale recreation res	501 40						
					Reserv	R140 ve No: 38489 33262	9 &
DBCA DISTRICT: Perth Hills		LGA: City of Ka	lamunda	La	ind manager i	oresent:	
	·	coords provided, <b>Zone</b> is		METHOD USE	ED:		
Ded GDA94 / MGA94 ☐	Degrees De	gMinSec 🗌 UT	Ms ⊠	GPS □	Differentia	IGPS ⊠ M	1ap □
AGD84 / AMG84	/ Northing: see s	shapefile attached	r	No. satellites:		Map used:	
<u></u>	g / Easting:		,	Boundary poly	gon	Map scale:	
Unknown 🗌	ZONE:			captured:	Ш		
LAND TENURE:							
Nature reserve ⊠	Timber reserve	Private property	, <sub>□</sub>	Rail reserve	e 🗆	Shire road	reserve $\square$
National park ☐	State forest	Pastoral lease		WA road reserve		Other Crown	
Conservation park	Water reserve	UCL	. SLK/Pole	e to	S <sub>I</sub>	pecify other:	
AREA ASSESSMENT: Edge EFFORT: Time s POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	pent surveying (min	•	No. of mi	inutes spent / Count me fer to field manual	100 m <sup>2</sup> :		
	2693	59	2	2754		, , , , , , , , , , , , , , , , , , ,	
Alive	2093	59	2	2734		Area of pop (m²) lote: Pls record coul	
Dead					1)	not percentages) for	database.
QUADRATS PRESENT:	No	Size	Data attach	hed 🗌 🗆 T	otal area of	quadrats (m²):	
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal □ ire fruit □	Vegetative ⊠ Fruit □	Flowerbud Dehisced fruit	<del></del>	Flowe		
		_			Percentage in		)
CONDITION OF PLANTS: 1- COMMENT:	lealthy ⊠	Moderate	Poor		Senescer	nt 🔟	
COMMENT.							
THREATS - type, agent and a Eg clearing, too frequent fire, weed, dis Rate current and potential threat i Estimate time to potential impact:	sease. Refer to field manu mpact: N=Nil, L=Low, M=I	al for list of threats & ager Medium, H=High, E=Extre	eme	/here relevant.	Current impact (N-E)	Potential Impact (L-E)	Potential Threat Onset (S-L)
• dieback							
					<b>—</b>		
•							
					┥		
•							



#### **Threatened and Priority** Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite 🗌	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🗌	Seasonally
Ridge □	Laterite	0.400/ 🖂	Loam 🗌	Yellow	inundated 📙
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat ⊠	Quartz 🗌	30-50%	Peat □	Black 🗌	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	Consider Landform	. Clamant			
Wetland	Specific <b>Landform</b> (Refer to field manual for a				
CONDITION OF SOIL:	Dry 🛮	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Eucalyptus marginata	a subsp. marginata, Allo	ocasuarina fraseriana t	all open woodland	
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	2. Xanthorrhoea preissi	i and Hibbertia hyperico	oides mid to low open s	shrubland	
2. Open shrubland (Hibbertia sp., Acacia spp.); 3. Isolated clumps of	3. Mesomelaena pseud sedgeland/herbland	lostygia, Anigozanthos ı	manglesii subsp. mang	lesii and *Gladiolus ca	ryophyllaceus
sedges (M.tetragona)	4.				
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the and Land Survey Field Handboo	most representative vegetation $k$ guidelines – refer to field man			ructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT	_	Excellent D Very god	_	Degraded ☐ Com	pletely degraded
COMMENT:					preceiv degraded
FIRE HISTORY: La	st Fire: Season/Month:	Year:	Fire Intensity: Hig	h  Medium Low L	No signs of fire ☐
FENCING:	Not required	•	e / repair 🔲		th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quar	ntity req'd:
	Please include recomme s of additional data avail			ed actions - include	
taken) then no authorisation/lid	ON / LICENCE No: FB6	formation on authorisation and	d licening requirements see the	ne Threatened Flora and Wild	•
*	earried out under authorisations/	A Herb.  Regional	_		
	erb Lodgement No:				
ATTACHED: Map		oto ☐ GIS data ⊠	Tield notes □	Other:	
•	_ , _			Oulel	
COPY SENT TO: Re	gional Office 🗌 D	istrict Office	Other:		
Submitter of Record: And	gela Benkovic Role:	Snr. Botanist Signe	d: Benhoure	Date: 19/06/2024	



Version 1.4 March 2021

TAXON: Conospermum	ı undulatum				TP	FL Pop. No:	1b
OBSERVATION DATE:	05/12/2023	CONSE	RVATION STA	ATUS: \	/U	New popula	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGAN	NISATION: GH	HD Pty Ltd	t		
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least near	est town/named locality, an	d the distance and di	rection to that	place):		
Gooseberry Hill Road Bush	land						
					Res	erve No: R302	200
DBCA DISTRICT: Perth Hills		LGA: City of Ka	alamunda		Land manage	er present:	
	· ·	1 coords provided, <b>Zone</b> is		METHOD L			_
GDA94 / MGA94 🖂	_	egMinSec UT		GPS 🗌		tial GPS 🛛 🛮 N	-
AGD84 / AMG84 🗌 Lat	/ Northing: see	shapefile attached			es:	Map used:	
WGS84 ☐ Long	g / Easting:			Boundary p aptured:	olygon	Map scale:	
Unknown 🗌	ZONE:			aptaroa.	_		
LAND TENURE:							
Nature reserve ⊠	Timber reserve	Private property	/ □	Rail res	erve 🗌	Shire road	d reserve
National park	State forest	Pastoral lease	_	WA road res	<del></del>		reserve $\square$
Conservation park	Water reserve	UCI	SLK/Pole	to		Specify other:	
AREA ASSESSMENT: Edge	e survey 🔲 🛮 Pai	tial survey 🔲 🛮 Full	survey 🛛 💢 A	\rea obser\	/ed (m²): 2	2.05ha	
	pent surveying (mi	· ——		•	t / 100 m <sup>2</sup> : _		
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate	Count er to field mar	method:	<u>ndividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	_	iuai ioi iist)		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals	s:		
Alive	331		5	336		Area of pop (m²	١٠
	001			- 000		Note: Pls record cou	
Dead						(not percentages) for	r database.
QUADRATS PRESENT:	No	Size	Data attach	ned 📙	Total area	of quadrats (m²)	:
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal ☐ re fruit ☐	Vegetative ⊠ Fruit □	Flowerbud Dehisced fruit			wer 🛛 e in flower:%	4
						_	<u> </u>
CONDITION OF PLANTS: F COMMENT:	lealthy 🛚	Moderate	Poor	Ц	Seneso	cent	
OOMMENT:					T		T
THREATS - type, agent and	•				Curre impa		Potential Threat
Eg clearing, too frequent fire, weed, dis Rate current and potential threat in		· ·		here relevant.	(N-E	-	Onset
Estimate time to potential impact:	•						(S-L)
• dieback							
•							
•							
						_	



#### **Threatened and Priority** Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	<b>ROCK TYPE:</b>	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand 🗵	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally
Ridge ☐	Laterite	0.400/ 57	Loam 🗌	Yellow □	inundated
Outcrop	Ironstone	0-10%	Clay loam	White □	Permanently inundated ☐
Slope ⊠	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression		<b>-</b> .			
Wetland □	Specific <b>Landforn</b> (Refer to field manual for a				
CONDITION OF SOIL:	Dry 🛛	Moist	Waterlogged □	Inundated	
VEGETATION	Eucalyptus marginata s	subsp. marginata, Alloca		open woodland	
CLASSIFICATION*: Eg: 1. Banksia woodland (B.	2. Xanthorrhoea preiss	ii and Hibbertia hyperico	oides mid to low open s	hrubland	
attenuata, B. ilicifolia);  2. Open shrubland (Hibbertia sp., Acacia spp.);	Mesomelaena pseud sedgeland/herbland	dostygia, Anigozanthos ı	manglesii subsp. mang	lesii and *Gladiolus car	yophyllaceus
3. Isolated clumps of sedges (M.tetragona)	4.				
ASSOCIATED					
SPECIES: Other (non-dominant) spp					
Please record up to four of the	most representative vegetation			ructural Formations should fo	llow 2009 Australian Soil
•	k guidelines – refer to field man	_	_		
COMMENT:	': Pristine ☐ I	Excellent	od ⊠ Good □	Degraded ☐ Com	pletely degraded 🔲
FIRE HISTORY: La	st Fire: Season/Month:	Year:	Fire Intensity: High	n 🗌 Medium 🔲 Low 🗆	No signs of fire ☐
FENCING:	Not required	Present Replac	e / repair 🔲	Required  Leng	th req'd:
ROADSIDE MARKERS:	Not required	Present Replac	e / reposition	Required  Quar	ntity req'd:
	Please include recomme s of additional data avail			d actions - include	
		,	,		
taken) then no authorisation/lie	ON / LICENCE No: FB( cence is required. For further in carried out under authorisations,	nformation on authorisation and		e Threatened Flora and Wild	•
		A Herb.  Regional			
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ Ph	noto 🗌 🛮 GIS data 🗵	☐ Field notes	Other:	
COPY SENT TO: Re	gional Office 🗌 💢	District Office	Other:		
			Buhowe		
Submitter of Record: An	gela Benkovic Role:	Snr. Botanist Signe	d:	Date: 19/06/2024	



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TAXON: Conospermum	ı undulatum				TPF	L Pop. No:	1c
OBSERVATION DATE:	14/12/2023	CONSE	RVATION STA	TUS: VU	<del></del>	New populat	ion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p		<u> </u>	PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GH	ID Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least near	est town/named locality, ar	nd the distance and dire	ection to that pla	ce):		
Gooseberry Hill Road Bush	land						
					<del></del>	rve No: R302	00
DBCA DISTRICT: Perth Hills		_	alamunda		ŭ	present:	
	·	I coords provided, <b>Zone</b> is egMinSec		IETHOD USE		al GPS ⊠ M	lap □
GDA94 / MGA94 □	_	shapefile attached		lo. satellites:			•
AGD84 / AMG84 📋				oundary poly			
WGS84 ☐ <b>Lon</b> ç Unknown ☐	g / Easting:			aptured:		Map scale:	
Olikilowii 🗀	ZONE:						
LAND TENURE:					_	01:	. –
Nature reserve ⊠ National park □	Timber reserve ☐ State forest ☐	Private propert Pastoral leas		Rail reserve VA road reserve	<del></del>	Other Crown	reserve
Conservation park	Water reserve		- —	to	_	Specify other:	
AREA ASSESSMENT: Edge	a survev □ Par	tial survey ☐ Ful	l survey ⊠ Aı			2 ha	
	pent surveying (mi			nutes spent / ˈ			
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count me	thod:	 dividuals	
	D	o	`	er to field manual	for list)		
WHAT COUNTED: TOTAL POP'N STRUCTURE:	Plants 🛛 Mature:	Clumps  Juveniles:	Clonal stems	Totals:	1		
Alive	618	5	Seedlings:	816		Area of non (m²)	
	010	5	193	010		Area of pop (m <sup>2</sup> ) Note: Pls record cour	
Dead						(not percentages) for	database.
QUADRATS PRESENT:	No	Size	Data attache	ed 🗌 T	otal area c	of quadrats (m²):	
Summary Quad. Totals: Alive						_	
REPRODUCTIVE STATE:	Clonal □ ire fruit □	Vegetative ⊠ Fruit □	Flowerbud Dehisced fruit		Flow Percentage	rer ⊠ in flower: %	
	Healthy ⊠	Moderate □	Poor		Senesce		,
COMMENT:	lealtry 🖂	Moderate	1 001	ш	Sellesce	ant 🗀	
		-4			1 0	. D. tti-l	D-44'-1
THREATS - type, agent and s	•		nte Specify agent who	ere relevant	Curren		Potential Threat
Rate current and potential threat in		· ·	. , ,	ere relevant.	(N-E)	(L-E)	Onset
Estimate time to potential impact:	S=Short (<12mths), M=I	Medium (<5yrs), L=Long (5	ōyrs+)				(S-L)
•						_	
•						_	
•					┥	_	



#### **Threatened and Priority** Flora Report Form

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HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest ☐	Granite	(on soil surface; eg	Sand ☐	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🛚	Brown 🖂	Seasonally
Ridge ☐	Laterite 🗵	0.400/ 57	Loam 🗌	Yellow □	inundated
Outcrop	Ironstone ☐	0-10%	Clay loam	White	Permanently ☐
Slope ⊠	Limestone	10-30%	Light clay ☐	Grey □	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	0 '6 1 16				
Wetland □	Specific Landform (Refer to field manual for a				
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated	
VEGETATION	·	_		_	
CLASSIFICATION*:		a subsp. marginata, Allo		-	
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);	2. Xanthorrhoea preissi		·		
<ul><li>2. Open shrubland (Hibbertia sp., Acacia spp.);</li><li>3. Isolated clumps of</li></ul>	<ol><li>Mesomelaena pseud sedgeland/herbland</li></ol>	lostygia, Anigozanthos r	manglesii subsp. mang	lesii and *Gladiolus car	yophyllaceus
sedges (M.tetragona)	4.				
ASSOCIATED					
SPECIES: Other (non-dominant) spp					
` ' ' ' ' '	most representative vegetation	layers (with up to three domination	ant species in each layer). St	ructural Formations should fol	low 2009 Australian Soil
and Land Survey Field Handboo	k guidelines – refer to field man	ual for further information and	structural formation table.		
CONDITION OF HABITAT COMMENT:	: Pristine ☐ E	Excellent	od ⊠ Good □	Degraded	pletely degraded
FIRE HISTORY: La	st Fire: Season/Month:	Year: <3yrs	Fire Intensity: High	h ☐ Medium ☒ Low ☐	No signs of fire ☐
FENCING:	Not required ☐	Present Replace	e / repair 🔲	Required  Lengt	th req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replace	e / reposition	Required  Quan	tity req'd:
	Please include recomme s of additional data avail			ed actions - include	
date. Also include detail	is oi additional data avail	able, and now to locate	п.)	-	
	ON / LICENCE No: FB6			observing plants (i.e. no speci	
	carried out under authorisations/		bove in the OTHER COMME	NTS section.	lie Licensing pages on
SPECIMEN: Collect	ctors No: W/	A Herb. Regional	Herb. District Her	b. Other:	
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ Ph	oto ☐ GIS data ⊠	☐ Field notes	Other:	
COPY SENT TO: Re	gional Office 🔲 D	District Office	Other:		
			21 -		
Submitter of Record: Ang	gela Benkovic Role:	Snr. Botanist Signe	d: Benhove	Date: 19/06/2024	



Version 1.4 March 2021

Record Entered in Database

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <a href="https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants">www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants</a>

TAXON: Conospermum	n undulatum				TPF	L Pop. No:	1i
OBSERVATION DATE:	08/01/2024	CONSE	RVATION STAT	US: VU		New populat	ion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	р			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	N (Provide at least nea	rest town/named locality, ar	nd the distance and direct	ion to that plac	ce):		
Maida Vale Recreation Res	serve						
					Reser	ve No: R491	22
DBCA DISTRICT: Perth Hills		LGA: City of K	alamunda	La	nd manager	present:	
	·	A coords provided, <b>Zone</b> is		THOD USE			. –
GDA94/MGA94 🗆	_	egMinSec U		SPS 🗌			1ap □
AGD84 / AMG84 🗌	/ Northing: See	shapefile attached				Map used:	
	g / Easting:			indary poly tured:	gon	Map scale:	
Unknown 🗌	ZONE:		<u> </u>		<del>_</del>		
LAND TENURE:							
	Timber reserve	Private propert	<i>'</i>	Rail reserve	_		reserve
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease	e	road reserve	_	Other Crown Specify other:	
Conservation park	Water reserve		SERVI OIE	10		pecify other.	
AREA ASSESSMENT: Edge	-		-		-		
	spent surveying (m	· ·	No. of minut	-			
POP'N COUNT ACCURACY:	Actual 🖂	Extrapolation	Estimate (Refer to	Count me	inc	<u>dividuals</u>	
WHAT COUNTED:	Plants 🛛	Clumps	Clonal stems		,		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	102			102	,	Area of pop (m²)	:
Dead						Note: Pls record cou	
QUADRATS PRESENT:	No	Size	Data attached			(not percentages) for f quadrats (m²):	
Summary Quad. Totals: Alive	NO	Oize	Data attached		otal area o	i quadrats (iii ).	
REPRODUCTIVE STATE:	Clonal		Flowerbud □		Flower	er 🛛	
	re fruit	Fruit	Dehisced fruit		Percentage i	<del></del>	, D
CONDITION OF PLANTS:	Healthy 🛚	Moderate	Poor		Senesce	nt 🗌	
COMMENT:							
THREATS - type, agent and	supporting inform	nation:			Curren	t Potential	Potential
Eg clearing, too frequent fire, weed, dis	•		nts. Specify agent where	relevant.	impact		Threat
Rate current and potential threat i	•	. •			(N-E)	(L-E)	Onset (S-L)
Estimate time to potential impact:	S=Short (<12mths), M=	Medium (<5yrs), L=Long (5	yrs+)				(0 -)
•							
•						_	
<b> </b> •							

Record entered by:\_

Sheet No.:\_



#### **Threatened and Priority** Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	<b>ROCK TYPE:</b>	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally
Ridge	Laterite	0.400/ 🖂	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam	White	Permanently inundated
Slope □	Limestone	10-30%	Light clay	Grey ⊠	Tidal
Flat ⊠	Quartz 🗌	30-50%	Peat □	Black	Пааг
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	Consider Landform	- Clamant			
Wetland	Specific Landform (Refer to field manual for ac				
CONDITION OF SOIL:	Dry ⊠	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	Eucalyptus marginata	a subsp. marginata, Allo	ocasuarina fraseriana ta	all open woodland	
Eg: 1. Banksia woodland (B.	2. Xanthorrhoea preissi	i and Hibbertia hyperico	oides mid to low open s	hrubland	
attenuata, B. ilicifolia); 2. Open shrubland	3. Mesomelaena pseud	lostygia, Anigozanthos r	manglesii subsp. mang	lesii and *Gladiolus ca	ryophyllaceus
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of	sedgeland/herbland				
sedges (M.tetragona)	4.				
ASSOCIATED					
SPECIES: Other (non-dominant) spp					
, , , , , , , , , , , , , , , , , , , ,	most representative vegetation	layers (with up to three domination	ant species in each layer). Sti	ructural Formations should fo	llow 2009 Australian Soil
and Land Survey Field Handboo	k guidelines – refer to field man	ual for further information and	structural formation table.		
COMMENT:	: Pristine ☐ E	Excellent	od ⊠ Good □	Degraded	pletely degraded
FIRE HISTORY: La	st Fire: Season/Month:	Year:	Fire Intensity: High	h 🗌 Medium 🔲 Low 🗆	☐ No signs of fire ☐
FENCING:	Not required	Present Replace	e / repair 🔲	Required  Leng	th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quar	ntity req'd:
	Please include recomme s of additional data avail			ed actions - include	
taken) then no authorisation/li-	ON / LICENCE No: FB6 cence is required. For further in carried out under authorisations/	formation on authorisation and	licening requirements see th		
SPECIMEN: Collect	etors No: WA	A Herb. Regional	Herb. District Her	rb. 🗌 Other:	
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ Ph	oto ☐ GIS data ⊠	Field notes	Other:	
COPY SENT TO: Re	gional Office   D	istrict Office	Other:		
Submitter of Record: An	gela Benkovic Role:	Snr. Botanist Signe	d: Benhowe	Date: 19/06/2024	



Version 1.4 March 2021

TAXON: Conospermum	ı undulatum				TPFL	Pop. No:	1k
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STAT	rus: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Sle	<u></u> ер			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GH	O Pty Ltd	•		
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least ne	arest town/named locality, ar	nd the distance and dire	ction to that pla	ce):		
Watsonia Road Reserve					•		
					Reserv	ve No:	
DBCA DISTRICT: Perth Hills		_	alamunda	La	nd manager p	oresent:	
	•	M coords provided, <b>Zone</b> is		ETHOD USE			. –
GDA94 / MGA94 🖂	_	DegMinSec U	<del></del>			IGPS ⊠ M	-
AGD84 / AMG84 🗌	/ Northing: See	e shapefile attached		o. satellites:		Map used:	
•	g / Easting:			undary poly ptured:	gon	Map scale:	
Unknown 🗌	ZONE:			-	_		
LAND TENURE:							
<u> </u>	Timber reserve	Private propert		Rail reserve	<del></del> '		I reserve
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease		A road reserve		Other Crown	
Conservation park	water reserve	00	L	to		pecify other:	_
AREA ASSESSMENT: Edge			I survey ⊠ Are		, ,		
EFFORT: Time s POP'N COUNT ACCURACY:		• -		ites spent /			
POP'N COUNT ACCURACT:	Actual 🖂	Extrapolation	Estimate (Refer	Count me to field manual	ina	<u>ividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems		,		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	6	2		8	Д	rea of pop (m²)	):
Dead						lote: Pls record coul	
QUADRATS PRESENT:	No	 Size	l Data attache	d □		not percentages) for quadrats (m²):	
Summary Quad. Totals: Alive		<u> </u>			Otal area of	quadrats (iii ).	
	Clonal	 Vegetative ⊠	Flowerbud [	<u> </u>	Flowe	ır 🖂	
	re fruit	Fruit	Dehisced fruit		Percentage in	<del></del>	, D
CONDITION OF PLANTS:	lealthy ⊠	Moderate □	Poor [	]	Senescen	nt 🗌	
COMMENT:	·						
THREATS type agent and	ounnarting infor	motion			Current	Potential	Potential
THREATS - type, agent and s Eg clearing, too frequent fire, weed, dis			nts. <b>Specify agent</b> whe	re relevant.	impact	Impact	Threat
Rate current and potential threat in	mpact: N=Nil, L=Low,	M=Medium, H=High, E=Extr	eme		(N-E)	(L-E)	Onset (S-L)
Estimate time to potential impact:	S=Short (<12mths), M	=Medium (<5yrs), L=Long (5	iyrs+)				(0 =)
Road weeds					┥		
•					┥		<u> </u>
					_		
•							



#### **Threatened and Priority** Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🛚	Seasonally
Ridge □	Laterite 🛚	0.400/ 57	Loam 🗌	Yellow	inundated 📙
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay 🗌	Grey ⊠	Tidal
Flat ⊠	Quartz 🗌	30-50%	Peat	Black	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	Specific Landforn	• Floment:			
Wetland	Specific <b>Landforn</b> (Refer to field manual for a				
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Eucalyptus marginat	a subsp. marginata, Allo	ocasuarina fraseriana t	all open woodland	
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);	2. Xanthorrhoea preiss	ii and Hibbertia hyperico	oides mid to low open s	shrubland	
2. Open shrubland (Hibbertia sp., Acacia spp.); 3. Isolated clumps of	Mesomelaena pseud sedgeland/herbland	lostygia, Anigozanthos r	manglesii subsp. mang	lesii and *Gladiolus ca	ryophyllaceus
sedges (M.tetragona)	4.				
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the and Land Survey Field Handboo	most representative vegetation			ructural Formations should fo	llow 2009 Australian Soil
•	_	_	_	ъ П	
COMMENT:		Excellent  Very goo			pletely degraded
FIRE HISTORY: La	st Fire: Season/Month:	Year:	Fire Intensity: Hig		☐ No signs of fire ☑
FENCING:	Not required		e / repair 🔲		th req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replace	e / reposition	Required  Quai	ntity req'd:
	(Please include recomme ls of additional data avail			ed actions - include	
FLORA AUTHORISATI	ION / LICENCE No: FB6	62000080-3 and TFL 2	2324-0083 Note if only	observing plants (i.e. no spec	imens or plant matieral is
	cence is required. For further in	nformation on authorisation and	l licening requirements see the	ne Threatened Flora and Wild	
		A Herb.  Regional	_		
LODGEMENT: WA H	lerb Lodgement No:				
ATTACHED: Map		oto □ GIS data ⊠	〗 Field notes □	Other:	
•	· <u> </u>	District Office	Other:		
	<u> </u>				
			d Penhove Date		
Submitter of Record: And	gela Benkovic Role:	Snr. Botanist Signe	d Date	e: 19/06/2024	

Please return completed form to Species And Communities Program DBCA,



Version 1.4 March 2021



#### **Threatened and Priority** Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite 🗌	(on soil surface; eg	Sand 🗵	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally
Ridge ☐	Laterite	0.400/ 57	Loam 🗌	Yellow □	inundated
Outcrop	Ironstone □	0-10%	Clay loam	White	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	0 15 1 - 15	. = 1			
Wetland □	Specific <b>Landform</b> (Refer to field manual for ac				
CONDITION OF SOIL:	Dry 🛛	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Eucalyptus margina	ata subsp. marginata,	Banksia attenuata a	and <i>Banksia grandis</i>	open woodland
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	2. Adenanthos cygnoru	m subsp. cygnorum and	l Xanthorrhoea preissii	i tall shrubland	
2. Open shrubland (Hibbertia sp., Acacia spp.); 3. Isolated clumps of	3. Lambertia multiflora	var. darlingensis and Hil	bbertia hypericoides m	id to low shrubland d	
sedges (M.tetragona)	4. Anigozanthos mangle	esii subsp. manglesii an	d Dampiera linearis he	erbland	
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the and Survey Field Handboo	most representative vegetation ok guidelines – refer to field man	layers (with up to three domina ual for further information and	ant species in each layer). St structural formation table.	ructural Formations should fol	low 2009 Australian Soil
CONDITION OF HABITAT	_	Excellent D Very goo	_	Degraded ☐ Com	pletely degraded
COMMENT:		zxoonom 🗀 Vory goo	,	Dog. adda 🗀 Com	sicioly degraded 🗀
FIRE HISTORY: La	st Fire: Season/Month:	Year: <u>2020</u>	Fire Intensity: Hig	h ☐ Medium ☒ Low ☐	No signs of fire □
FENCING:	Not required ☐	Present Replace	e / repair 🔲	Required Length	th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quan	ntity req'd:
	Please include recomme			ed actions - include	
date. Also include detail	ls of additional data availa	able, and how to locate	it.)	-	
FLORA AUTHORISATI	ION / LICENCE No: FB6	32000080-3 and TFL 2	2324-0083 Note if only of	observing plants (i.e. no speci	mens or plant matieral is
	cence is required. For further in carried out under authorisations/				ife Licensing pages on
		A Herb. Regional I		_	
LODGEMENT: WA H	lerb Lodgement No:				
ATTACHED: Map		oto ☐ GIS data ⊠	Field notes □	Other:	_
•	•	istrict Office 🛚	Other:		
			Ø n		
Submitter of Record: And	gela Benkovic Role:	Snr. Botanist Signed	d: Benhove	Date: 19/06/2024	



Version 1.4 March 2021

TAXON: Conospermun	n undulatum				TPFL	Pop. No:	4h
OBSERVATION DATE:	21/11/2023	CONSE	RVATION STAT	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	<u></u>			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least near	est town/named locality, ar	nd the distance and direct	tion to that plac	ce):		
Sultana Road West Bushland					·		
					Reserv	e No:	
DBCA DISTRICT: swan coas	ital	LGA: City of Ka	alamunda	La	nd manager p	resent:	
	·	A coords provided, <b>Zone</b> is		THOD USE			. —
GDA94 / MGA94 🖂		egMinSec UT				GPS ⊠ N	•
AGD84 / AMG84	/ Northing: see	shapefile attached		satellites:		Map used:	
WGS84 ☐ Long	g / Easting:		000	ındary poly tured:	gon	Map scale:	
Unknown 🗌	ZONE:		oap	tui ou.			
LAND TENURE:							
Nature reserve 🛚	Timber reserve	Private property	/ <b>□</b>	Rail reserve	e 🗆	Shire road	I reserve
National park 🔲	State forest	Pastoral lease		road reserve	_	Other Crown	
Conservation park	Water reserve	UCI	_ SLK/Pole	to	Sp	ecify other:	
AREA ASSESSMENT: Edge	e survey 📗 🏻 Pa	rtial survey 📗 🛮 Full	survey 🛛 Are	a observed	(m²): <u>18h</u>	<u>a</u>	
	spent surveying (mi		No. of minut	•			
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate	Count me	inai	<u>/iduals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	o field manual	TOT IIST)		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	211	1	0	212	Δ.	rea of pop (m²)	١٠
	211	'		212		ote: Pls record cou	
Dead						ot percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	│ <u> </u>	otal area of	quadrats (m²)	:
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal □ ure fruit □	Vegetative ⊠ Fruit □	Flowerbud Dehisced fruit		Flower Percentage in		<u>'</u>
		_				_	U
CONDITION OF PLANTS: 1 COMMENT:	Healthy ⊠	Moderate	Poor [	I	Senescent		
					1		
THREATS - type, agent and					Current impact	Potential Impact	Potential Threat
Eg clearing, too frequent fire, weed, dis Rate current and potential threat i		<del>-</del>	· · · ·	e relevant.	(N-E)	(L-E)	Onset
Estimate time to potential impact:	•						(S-L)
Dieback has been mappe	d in the area						
•							
•							



Submitter of Record: Angela Benkovic

# Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	<b>ROCK TYPE:</b>	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally
Ridge □	Laterite	0.400/ 57	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam	White	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛚	Quartz 🗌	30-50%	Peat □	Black ☐	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	Specific Landform	• Floment:			
Wetland	Specific <b>Landform</b> (Refer to field manual for a				
CONDITION OF SOIL:	` Dry ⊠	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	Eucalyptus marginat woodland	a subsp. marginata, Allo	ocasuarina fraseriana, l	Banksia menziesii and	Banksia attenuata
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	2. Adenanthos cygno	rum subsp. cygnorun	n and <i>Allocasuarina l</i>	numilis tall to mid ope	en shrubland
<ol> <li>Open shrubland (Hibbertia sp., Acacia spp.);</li> <li>Isolated clumps of</li> </ol>	3. Stirlingia latifolia and	Hibbertia hypericoides	low open shrubland		
sedges (M.tetragona)	4. Patersonia occidenta	ilis var. occidentalis and	Mesomelaena pseudo	ostygia herb/sedgeland	l
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the				ructural Formations should fo	llow 2009 Australian Soil
and Land Survey Field Handboo	_	_			
CONDITION OF HABITAT COMMENT:	: Pristine ☐	Excellent	od ⊠ Good □	Degraded	pletely degraded
	st Fire: Season/Month:	Year:	Fire Intensity: High	n 🔲 Medium 🔲 Low 🗆	☐ No signs of fire ☑
FENCING:	Not required		e / repair 🔲	<u></u>	yth req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quar	ntity req'd:
OTHER COMMENTS: (	Please include recomme	ended management acti	ons and/or implemente	d actions - include	
date. Also include detail					
	ON / LICENCE No: FB6 cence is required. For further in	formation on authorisation and	l licening requirements see th	e Threatened Flora and Wild	•
*		A Herb. Regional	_		
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map		oto □ GIS data ⊠	了 Field notes □	Other:	
•	_ , _	District Office	Other:		
			Buhow	É	

Please return completed form to **Species And Communities Program** DBCA, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: flora.data@dbca.wa.gov.au

Signed:

RECORDS: Please forward to Flora Administrative Officer, Species and Communities Program.

Role: Snr. Botanist

Date: 19/06/2024



Version 1.4 March 2021

	undulatum				TPI	FL Pop. No: 4	4i
OBSERVATION DATE:	21/11/2023	CONS	RVATION STAT	US: VU		New populat	ion 🗌
OBSERVER/S: A.Benk	kovic and A.Slee	ep			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATION	<b>N</b> (Provide at least nea	rest town/named locality, a	nd the distance and direc	tion to that pla	ce):		
Sultana Road West Bushland							
						erve No:	
DBCA DISTRICT: Swan Coas		LGA: City of K			_	r present:	
	·	M coords provided, <b>Zone</b> is DegMinSec		THOD USE		ial GPS ⊠ M	ion 🗆
GDA94 / MGA94 🖂	_	shapefile attached					•
AGD84 / AMG84 L		s shapenie attached		. satellites: undary poly			
	g / Easting:		oor	otured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:	_						_
Nature reserve  ⊠ National park  □	Timber reserve ☐ State forest ☐	Private propert Pastoral leas	•	Rail reserve		Shire road Other Crown	reserve
·	Water reserve		e		_	Specify other:	
·							
AREA ASSESSMENT: Edge	•	•	•			<u>2ha</u>	
EFFORT: Time spent surveying (minutes): 16 hours No. of minutes spent / 100 m <sup>2</sup> :							
				Count me	thod:		
POP'N COUNT ACCURACY:		Extrapolation	Estimate		thod: in	dividuals	
			Estimate (Refer to Clonal stems (	Count me	thod: in		
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate (Refer t	Count me	thod: in		
POP'N COUNT ACCURACY: WHAT COUNTED:	Actual ⊠	Extrapolation   Clumps	Estimate (Refer to Clonal stems (	Count me	ethod: in		r
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	Actual ⊠  Plants ⊠  Mature:	Extrapolation   Clumps	Estimate (Refer to Clonal stems (	Count me o field manual	ethod: in	Area of pop (m²)	nt as numbers
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead	Actual ⊠  Plants ⊠  Mature:	Extrapolation   Clumps	Estimate (Refer to Clonal stems (	Count me o field manual  Totals:  99	othod: in	Area of pop (m²) Note: Pls record cour (not percentages) for	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead	Actual  Plants  Mature:  99	Extrapolation   Clumps   Juveniles:	Estimate (Refer to Clonal stems (Seedlings:	Count me o field manual  Totals:  99	othod: in	Area of pop (m²)	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive	Actual 🖂  Plants 🖾  Mature:  99	Extrapolation   Clumps   Juveniles:	Estimate (Refer to Clonal stems (Seedlings:	Count me o field manual  Totals:  99	othod: in	Area of pop (m²) Note: Pls record cour (not percentages) for	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:	Actual  Plants  Mature:  99  No	Extrapolation   Clumps   Juveniles:  Size	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	othod: in	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu	Actual  Plants  Mature:  99  No	Extrapolation   Clumps   Juveniles:  Size   Vegetative   Vegetative	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	othod: in	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver   in flower:%	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu	Actual  Plants  Mature:  99  No Clonal  re fruit	Extrapolation   Clumps   Juveniles:  Size   Vegetative  Fruit	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	otal area	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver   in flower:%	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H COMMENT:	Actual  Plants  Mature:  99  No  Clonal  re fruit  dealthy  Mature:	Extrapolation   Clumps  Juveniles:  Size   Vegetative  Fruit  Moderate   Moderate	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	otal area	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver 🖾 ein flower:%	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H	Actual  Plants  Mature:  99  No Clonal  re fruit  lealthy  supporting inform	Extrapolation   Clumps   Juveniles:  Size   Vegetative  Fruit   Moderate   Moderate   mation:	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	otal area of Senesco	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver   ent   nt  Potential  Impact	Potential Threat
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H  COMMENT:  THREATS - type, agent and s  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat in	Actual  Plants  Mature:  99  No  Clonal	Clumps	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	for list)  Total area of Flow Percentage Senesco	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver   ent   nt  Potential  Impact	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H  COMMENT:  THREATS - type, agent and s  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat ir  Estimate time to potential impact:	Actual Ac	Clumps	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	otal area of Senesco	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver   ent   nt  Potential  Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H  COMMENT:  THREATS - type, agent and s  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat in	Actual Ac	Clumps	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	otal area of Senesco	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver   ent   nt  Potential  Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H  COMMENT:  THREATS - type, agent and s  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat ir  Estimate time to potential impact: s  • Dieback has been mapped	Actual Ac	Clumps	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	otal area of Senesco	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver   ent   nt  Potential  Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H  COMMENT:  THREATS - type, agent and s  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat ir  Estimate time to potential impact:	Actual Ac	Clumps	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	otal area of Senesco	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver   ent   nt  Potential  Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H  COMMENT:  THREATS - type, agent and s  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat ir  Estimate time to potential impact: s  • Dieback has been mapped	Actual Ac	Clumps	Estimate (Refer to (Refer	Count me o field manual  Totals:  99	otal area of Senesco	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver   ent   nt  Potential  Impact	Potential Threat Onset



Submitter of Record: Angela Benkovic

# Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	<b>ROCK TYPE:</b>	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest ☐	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally
Ridge ☐	Laterite	0.400/ 57	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	0 15 1 2 2 15 2 2	. <b>.</b>			
Wetland □	Specific <b>Landforn</b> (Refer to field manual for a				
CONDITION OF SOIL:	Dry 🛛	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	Eucalyptus marginat woodland	a subsp. marginata, Allo	casuarina fraseriana, l	Banksia menziesii and	Banksia attenuata
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland	2. Adenanthos cygnoru	ım subsp. cygnorum and	l Allocasuarina humilis	tall to mid open shrubl	and
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of	3. Stirlingia latifolia and	Hibbertia hypericoides	low open shrubland		
sedges (M.tetragona)	4. Patersonia occidenta	alis var. occidentalis and	Mesomelaena pseudo	ostygia herb/sedgeland	
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the and Land Survey Field Handboo				ructural Formations should fol	low 2009 Australian Soil
CONDITION OF HABITAT	: Pristine □	Excellent	od ⊠ Good □	Degraded	pletely degraded
COMMENT:					
FIRE HISTORY: La	st Fire: Season/Month:	Year:	Fire Intensity: Hig	h   Medium   Low	] No signs of fire ⊠
FENCING:	Not required  —	•	e / repair 🔲		th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quar	itity req'd:
OTHER COMMENTS: (date. Also include detail				ed actions - include	
				•	
	cence is required. For further in	62000080-3 and TFL 2 formation on authorisation and /licences should be recorded al	licening requirements see the		•
SPECIMEN: Collect	ctors No: W	A Herb. Regional I	Herb. District Her	b. Other:	
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ Ph	noto ☐ GIS data ⊠	Field notes ☐	Other:	
COPY SENT TO: Re	gional Office 🔲 💢	District Office	Other:		
			For house	- -	

Please return completed form to **Species And Communities Program** DBCA, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: flora.data@dbca.wa.gov.au

Role: Snr. Botanist

Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TPF	L Pop. No:	4j
OBSERVATION DATE:	21/11/2023	CONSE	RVATION STAT	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGAI	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least nea	rest town/named locality, ar	nd the distance and direc	tion to that pla	ce):		
Sultana Road West Bushland							
					Reser	rve No:	
DBCA DISTRICT: Swan Coa			alamunda 		•	present:	
	·	M coords provided, <b>Zone</b> is DegMinSec U		THOD USE SPS □		al GPS ⊠ M	4on □
GDA94 / MGA94 🖂		shapefile attached					-
AGD84 / AMG84 L		Shapenie attached		satellites: indary poly		Map used:	
	g / Easting:			tured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:							
Nature reserve ⊠ National park □	Timber reserve ☐ State forest ☐	Private propert		Rail reserve	- <del>-</del>	Shire road Other Crown	d reserve
Conservation park	Water reserve		SLK/Pole			Specify other:	
AREA ASSESSMENT: Edge EFFORT: Time s	-	•	survey 🖂 Are No. of minut			<u>iha</u>	
POP'N COUNT ACCURACY:	spent surveying (m Actual ⊠	Extrapolation	Estimate	Count me	ethod:		
	7 to to a		<del></del>	o field manual	ind	<u>dividuals</u>	
WHAT COUNTED:	Plants 🛚	Clumps	Clonal stems	ı			
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	263	5		268		Area of pop (m²)	):
Dead						Note: Pls record cou (not percentages) for	
QUADRATS PRESENT:	No.	Size	Data attached	<u> </u>		of quadrats (m²)	
Summary Quad. Totals: Alive						. ,	
REPRODUCTIVE STATE:	Clonal	 Vegetative ⊠	Flowerbud		Flow	er 🛛	
Immatu	ıre fruit 🗌	Fruit 🗌	Dehisced fruit		Percentage	in flower:%	0
CONDITION OF PLANTS:	Healthy 🛚	Moderate	Poor 🗆		Senesce	ent 🗌	
COMMENT:							
THREATS - type, agent and	supporting inforn	nation:			Curren	t Potential	Potential
Eg clearing, too frequent fire, weed, dis		· ·		e relevant.	impact	_	Threat Onset
Rate current and potential threat i Estimate time to potential impact:	•	. •			(N-E)	(L-E)	(S-L)
Dieback has been mappe		( J, J, L Long (c	, ,				
11					-	-	
•							
					┨ —	_	
•							



Submitter of Record: Angela Benkovic

# Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	<b>ROCK TYPE:</b>	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest ☐	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally
Ridge ☐	Laterite	0.400/ 57	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam	White	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	0 '6 1 16	. 51			
Wetland □	Specific <b>Landforn</b> (Refer to field manual for a				
CONDITION OF SOIL:	Dry 🛛	Moist	Waterlogged ☐	Inundated	
VEGETATION CLASSIFICATION*:	Eucalyptus marginat woodland	a subsp. marginata, Allo	casuarina fraseriana, l	Banksia menziesii and	Banksia attenuata
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland	2. Adenanthos cygnoru	ım subsp. cygnorum and	l Allocasuarina humilis	tall to mid open shrubl	and
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of	3. Stirlingia latifolia and	Hibbertia hypericoides	low open shrubland		
sedges (M.tetragona)	4. Patersonia occidenta	alis var. occidentalis and	Mesomelaena pseudo	ostygia herb/sedgeland	
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the and Land Survey Field Handboo				ructural Formations should fol	low 2009 Australian Soil
CONDITION OF HABITAT	: Pristine □	Excellent  Very goo	od ⊠ Good □	Degraded ☐ Com	pletely degraded
COMMENT:					
	st Fire: Season/Month:		-	<u></u>	No signs of fire ⊠
FENCING:	Not required	•	e / repair 🔲		th req'd:
ROADSIDE MARKERS:	Not required	-	e / reposition		tity req'd:
OTHER COMMENTS: (date. Also include detail				ed actions - include	
				·	
	ON / LICENCE No: FB(cence is required. For further in carried out under authorisations	nformation on authorisation and	licening requirements see th		•
SPECIMEN: Collect	ctors No: W	A Herb. Regional I	Herb. District Her	b. Other:	
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ Ph	noto ☐ GIS data ⊠	Field notes ☐	Other:	
COPY SENT TO: Re	gional Office 🔲 💢	District Office	Other:		
			Hors have		

Please return completed form to **Species And Communities Program** DBCA, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 **OR** email to: flora.data@dbca.wa.gov.au

RECORDS: Please forward to Flora Administrative Officer, Species and Communities Program.

Role: Snr. Botanist

Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TPF	L Pop. No:	41
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STATE	JS: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	ep			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com	<del>.</del>					
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least nea	rest town/named locality, ar	nd the distance and direct	ion to that plac	ce) <b>:</b>		
43 Brae Road					-		
					Rese	rve No:	
DBCA DISTRICT: Swan Coa		_ <u></u>	alamunda		ŭ	present:	
	· ·	M coords provided, <b>Zone</b> is DegMinSec ☐ U7		THOD USE		-LODG 🖾 . N	4 🗆
GDA94/MGA94 🗆	_	e shapefile attached	_	<del></del>		al GPS ⊠ N	•
AGD84 / AMG84 📋	/ Northing. See	s snapenie attached		satellites: _ ndary poly			
	g / Easting:		oon	tured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:							
<u> </u>	Timber reserve	Private propert	·	Rail reserve			I reserve
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease	e ⊔	road reserve		Other Crowr Specify other:	
·							
AREA ASSESSMENT: Edge	-					<del></del>	
EFFORT: Time s POP'N COUNT ACCURACY:	spent surveying (m Actual ⊠	Extrapolation	No. of minut Estimate ☐	es spent / * Count me			
TOT NOODNI ACCONACT.	Actual 🖂	Extrapolation [		field manual	ind	<u>dividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems				
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	6			6		Area of pop (m²)	):
Dead						Note: Pls record cou	
QUADRATS PRESENT:	No.	Size	Data attached	<del> </del>		(not percentages) for of quadrats (m²):	
Summary Quad. Totals: Alive						4	
REPRODUCTIVE STATE:	Clonal	 Vegetative ⊠	_l Flowerbud □		Flow	er 🛛	
	re fruit 🗌	Fruit 🗌	Dehisced fruit		Percentage		,
CONDITION OF PLANTS:	Healthy ⊠	Moderate	Poor 🗌		Senesce	ent 🗌	
COMMENT:							
THREATS - type, agent and	supporting infor	nation:			Curren	t Potential	Potential
Eg clearing, too frequent fire, weed, dis	•		nts. Specify agent where	relevant.	impac	· ·	Threat
Rate current and potential threat i	•	. •			(N-E)	(L-E)	Onset (S-L)
Estimate time to potential impact:	>=>norτ (<12mths), M=	=ivieaium (<5yrs), L=Long (5	yrs+)				. ,
•						_	
_							
						_	
•						_	
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Version 1.4 March 2021

HABITAT INFORMATIO	N:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge ☐	Laterite	0.100/ 🖂	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛚	Quartz 🗌	30-50% □ 50-100% □	Peat ☐	Black ☐	ridar 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line		_			
Closed depression	Specific <b>Landfo</b>	rm Flement			
Wetland	(Refer to field manual fo				
CONDITION OF SOIL:	Dry ⊠	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Allocasuarina frase	eriana, Eucalyptus margin	ata subsp. marginata i	solated trees	
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);	2. Xanthorrhoea preis	ssii, Lambertia multiflora v	ar. darlingensis and A	llocasuarina humilis spa	arse shrubland
<ul><li>2. Open shrubland</li><li>(Hibbertia sp., Acacia spp.);</li><li>3. Isolated clumps of</li></ul>	3. Mesomelaena pse	udostygia and Amphipogo	on turbinatus open sed	ge/grassland	
sedges (M.tetragona)	4.				
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the industrial and Survey Field Handbook	most representative vegetati k guidelines – refer to field m	on layers (with up to three domin nanual for further information and	ant species in each layer). Si structural formation table.	tructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT COMMENT:	: Pristine 🗌	Excellent	od ⊠ Good □	Degraded	pletely degraded
FIRE HISTORY: Las	st Fire: Season/Month	n: Year:	Fire Intensity: Hig	h Medium Low	☐ No signs of fire 🖂
FENCING:	Not required	Present Replac	e / repair 🔲	Required Leng	th req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replac	e / reposition 🔲	Required  Quar	ntity req'd:
		mended management acti ailable, and how to locate		ed actions - include	
dato. 7 100 morado dotam	o or additional data av	anabio, and now to locate	n.,		
	ence is required. For furthe	B62000080-3 and TFL: r information on authorisation and ns/licences should be recorded a	d licening requirements see t		-
		WA Herb. Regional			
	·				
_	erb Lodgement No:				
ATTACHED: Map [		Photo ☐ GIS data ☑	☐ Field notes	Other:	
·	_	Photo GIS data D	☐ Field notes ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	Other:	

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TPF	L Pop. No:	4m
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STAT	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	·p			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com		-				
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least nea	rest town/named locality, ar	nd the distance and direct	ion to that plac	ce):		
Brae Road					-		
					Rese	rve No:	
DBCA DISTRICT: Swan Coa		_ <u></u>	alamunda		ŭ	present:	
	· ·	M coords provided, <b>Zone</b> is DegMinSec ☐ U1		THOD USE			lon □
GDA94/MGA94 🗆	_	shapefile attached		SPS		al GPS ⊠ N	•
AGD84 / AMG84 📋	/ Northing. See	snapenie attached		satellites: _ indary poly			
	g / Easting:		oon	tured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:							
<u> </u>	Timber reserve	Private propert	_	Rail reserve			I reserve
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease	e ∐	road reserve		Other Crowr Specify other:	
AREA ASSESSMENT: Edge	-	•					
EFFORT: Time s POP'N COUNT ACCURACY:	spent surveying (m Actual ⊠	inutes): <u>2 nours</u> Extrapolation □	No. of minut Estimate ☐	es spent / 1 Count me			
TOT NOODNI ACCONACT.	Actual 🖂	Extrapolation [		field manual	ind	<u>dividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems				
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	2			2		Area of pop (m²)	):
Dead						Note: Pls record cou	
QUADRATS PRESENT:	No.	Size	Data attached	т		(not percentages) for of quadrats (m²):	
Summary Quad. Totals: Alive						4	
REPRODUCTIVE STATE:	Clonal	 Vegetative □	 Flowerbud □		Flow	er 🛛	
	re fruit 🗌	Fruit	Dehisced fruit		Percentage		0
CONDITION OF PLANTS:	Healthy 🛚	Moderate	Poor 🗆		Senesce	ent 🗌	
COMMENT:							
THREATS - type, agent and	supporting inform	nation:			Curren	t Potential	Potential
Eg clearing, too frequent fire, weed, dis	•		nts. Specify agent where	e relevant.	impac	· ·	Threat
Rate current and potential threat i	•				(N-E)	(L-E)	Onset (S-L)
Estimate time to potential impact:  • weeds	S=Snort (<12mths), M=	ivieaium (<5yrs), L=Long (5	pyrs+)				. ,
road						_	
Todu							
						_	
•						_	
					1		



Version 1.4 March 2021

HABITAT INFORMATIO	N:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest ☐	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge ☐	Laterite	0.100/ 🖂	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛚	Quartz 🗌	30-50% □ 50-100% □	Peat ☐	Black ☐	ridar 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line		_			
Closed depression	Specific <b>Landfo</b>	rm Flement			
Wetland	(Refer to field manual fo				
CONDITION OF SOIL:	Dry ⊠	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Allocasuarina frase	eriana, Eucalyptus margin	ata subsp. marginata i	solated trees	
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);	2. Xanthorrhoea preis	ssii, Lambertia multiflora v	ar. darlingensis and A	llocasuarina humilis spa	arse shrubland
<ul><li>2. Open shrubland</li><li>(Hibbertia sp., Acacia spp.);</li><li>3. Isolated clumps of</li></ul>	3. Mesomelaena pse	udostygia and Amphipogo	on turbinatus open sed	ge/grassland	
sedges (M.tetragona)	4.				
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the industrial and Survey Field Handbook	most representative vegetati k guidelines – refer to field m	on layers (with up to three domin nanual for further information and	ant species in each layer). Si structural formation table.	tructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT COMMENT:	: Pristine 🗌	Excellent	od ⊠ Good □	Degraded	pletely degraded
FIRE HISTORY: Las	st Fire: Season/Month	n: Year:	Fire Intensity: Hig	h Medium Low	☐ No signs of fire 🖂
FENCING:	Not required	Present Replac	e / repair 🔲	Required Leng	th req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replac	e / reposition 🔲	Required  Quar	ntity req'd:
		mended management acti ailable, and how to locate		ed actions - include	
dato. 7 100 morado dotam	o or additional data av	anabio, and now to locate	n.,		
	ence is required. For furthe	B62000080-3 and TFL: r information on authorisation and ns/licences should be recorded a	d licening requirements see t		-
		WA Herb. Regional			
	·				
_	erb Lodgement No:				
ATTACHED: Map [		Photo ☐ GIS data ☑	☐ Field notes	Other:	
·	_	Photo GIS data D	☐ Field notes ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	Other:	

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermun	n undulatum				TPI	FL Pop. No: 4	4t
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STA	TUS: VU		New populat	ion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GH	D Pty Ltd	<u>-</u>		
EMAIL: angela.benkovic@	@ghd.com						
DESCRIPTION OF LOCATIO	N (Provide at least near	rest town/named locality, a	nd the distance and dire	ection to that pla	ce):		
62 Brae Road							
						erve No:	
DBCA DISTRICT: Swan Coa		LGA: City of K			_	r present:	
	·	of coords provided, <b>Zone</b> is degMinSec		ETHOD USE		ial GPS ⊠ M	4on □
GDA94 / MGA94 🗌	_	shapefile attached		o. satellites:			•
AGD84 / AMG84 📋		Shaponio attaonio	_	o. sateilites. oundary poly			
WGS84 ☐ <b>Lon</b> Unknown ☐	g / Easting:		00	ptured:		Map scale:	
OHKHOWH L	ZONE:						
LAND TENURE:					_	21.1	
Nature reserve ☐ National park ☐	Timber reserve  State forest	Private propert Pastoral leas	•	Rail reserve A road reserve	_	Shire road Other Crown	reserve  reserve
Conservation park	Water reserve		E ☐ MRW. L ☐ SLK/Pole _		_	Specify other:	
ADEA ACCECCMENT. Ed.	Da						
AREA ASSESSMENT: Edge EFFORT: Time s	e survey	•	•	ea opserved utes spent /		<u>.7ha</u>	
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count me	thod:		
		•	(Refer	to field manual	for list)	<u>dividuals</u>	
WHAT COUNTED:	Plants 🛚	Clumps 🗌	Clonal stems	ī	ı		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	17			17		Area of pop (m²)	):
Dead						Note: Pls record cour (not percentages) for	
QUADRATS PRESENT:	No	Size	Data attache	ed 🔲 🗀	otal area	of quadrats (m²):	
Summary Quad. Totals: Alive							<u> </u>
REPRODUCTIVE STATE:	Clonal	Vegetative □	Flowerbud [	_ <del>'</del>	Flov	ver 🛛	
Immatu	ure fruit 🗌	Fruit 🗌	Dehisced fruit [		Percentage	in flower:%	Ď
CONDITION OF PLANTS:	Healthy ⊠	Moderate	Poor [		Senesce	ent 🗌	
COMMENT:							
THREATS - type, agent and	supporting inform	nation:			Curre		Potential
Eg clearing, too frequent fire, weed, dis		•		ere relevant.	impac (N-E)		Threat Onset
Rate current and potential threat Estimate time to potential impact:	•	. •			(14-1)	()	(S-L)
• weeds	, , , , , , , , , , , , , , , , , , ,		,,,,,				
						_	
•							
						_	
•							
						_	



Version 1.4 March 2021

HABITAT INFORMATIO	N:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest ☐	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge ☐	Laterite	0.100/ 🖂	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛚	Quartz 🗌	30-50% □ 50-100% □	Peat ☐	Black ☐	ridar 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line		_			
Closed depression	Specific <b>Landfo</b>	rm Flement:			
Wetland	(Refer to field manual fo				
CONDITION OF SOIL:	Dry ⊠	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Allocasuarina frase	eriana, Eucalyptus margin	ata subsp. marginata i	solated trees	
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);	2. Xanthorrhoea preis	ssii, Lambertia multiflora v	ar. darlingensis and A	llocasuarina humilis spa	arse shrubland
<ul><li>2. Open shrubland</li><li>(Hibbertia sp., Acacia spp.);</li><li>3. Isolated clumps of</li></ul>	3. Mesomelaena pse	udostygia and Amphipogo	on turbinatus open sed	ge/grassland	
sedges (M.tetragona)	4.				
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the industrial that the industrial tha	most representative vegetati k guidelines – refer to field m	on layers (with up to three domin nanual for further information and	ant species in each layer). Si structural formation table.	tructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT COMMENT:	: Pristine 🗌	Excellent	od ⊠ Good □	Degraded	pletely degraded
FIRE HISTORY: Las	st Fire: Season/Month	n: Year:	Fire Intensity: Hig	h Medium Low	☐ No signs of fire 🖂
FENCING:	Not required	Present Replac	e / repair 🔲	Required Leng	th req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replac	e / reposition 🔲	Required  Quar	ntity req'd:
		mended management acti ailable, and how to locate		ed actions - include	
dato. 7 100 morado dotam	o or additional data av	anabio, and now to locate	n.,		
	ence is required. For furthe	B62000080-3 and TFL: r information on authorisation and ns/licences should be recorded a	d licening requirements see t		-
		WA Herb. Regional			
	·				
_	erb Lodgement No:				
ATTACHED: Map [		Photo ☐ GIS data ☑	☐ Field notes	Other:	
·	_	Photo GIS data D	☐ Field notes ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	Other:	

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermur	n undulatum				TPFL	Pop. No:	10c
OBSERVATION DATE:	24/10/2023	CONSE	RVATION STA	ATUS: VU		New populat	tion 🗌
OBSERVER/S: A.Ber	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGAN	NISATION: GH	HD Pty Ltd			
EMAIL: angela.benkovic@	@ghd.com						
DESCRIPTION OF LOCATION	N (Provide at least near	est town/named locality, an	d the distance and di	rection to that pla	ce):		
Tonkin Hwy near Hartfield Pa							
					Reserv	/e No:	
DBCA DISTRICT: Swan Coa		LGA: City of Ka			ind manager p	oresent:	
	•	I coords provided, <b>Zone</b> is	' '	METHOD USE			. –
GDA94 / MGA94 🖂	_	egMinSec UT		GPS □			∕Іар □
AGD84 / AMG84	/ Northing: see	shapefile attached		lo. satellites:		Map used:	
WGS84 ☐ Lon	g / Easting:		0	Boundary poly aptured:	gon	Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:							
Nature reserve	Timber reserve □	Private property	<i>'</i> 🗆	Rail reserve	e 🗆	Shire road	reserve 🗌
National park	State forest	Pastoral lease		VA road reserve	<u> </u>	Other Crown	<del></del>
Conservation park	Water reserve	UCL	_ ∐ SLK/Pole	to	Sp	pecify other:	
AREA ASSESSMENT: Edg	e survey 📗 🛮 Pai	tial survey 📗 Full	survey ⊠ A	rea observed	(m²): <u>2.5</u>	<u>ha</u>	
	spent surveying (mi	nutes): 2 hours	No. of mir	nutes spent /	100 m²:	<u> </u>	
POP'N COUNT ACCURACY	: Actual ⊠	Extrapolation	Estimate	Count me	ındı	viduals	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	er to field manual	ior list)		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	8	1	- Cooumigo.	9		rea of pop (m²)	١٠
	0	1		9		ote: Pls record cou	· · ·
Dead						not percentages) for	
QUADRATS PRESENT:	No	Size	Data attach	ned 🔲 T	otal area of	quadrats (m²)	:
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal	Vegetative	Flowerbud		Flowe		,
	ure fruit	Fruit	Dehisced fruit	_	Percentage in		0
	Healthy 🗵	Moderate	Poor		Senescen	t 📙	
COMMENT:							
THREATS - type, agent and	supporting inform	ation:			Current	_	Potential Threat
Eg clearing, too frequent fire, weed, di Rate current and potential threat		•		here relevant.	impact (N-E)	Impact (L-E)	Onset
Estimate time to potential impact	•				, ,	, ,	(S-L)
• weeds							
road					T	<del></del>	
•							
					┨ ──	<del></del>	
•							
					$\neg$		



Version 1.4 March 2021

Please return completed form to Species And Communities Program DBCA,

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite	(on soil surface; eg	Sand 🗵	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge ☐	Laterite	0.400/ 1	Loam 🗌	Yellow □	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛚	Quartz 🗌	30-50%	Peat □	Black ☐	Пап
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line 🗌					
Closed depression	Specific Landfo	- rm Flomont:			
Wetland	Specific <b>Landfor</b> (Refer to field manual for				
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Allocasuarina frase	eriana and Banksia menzi	esii open woodland		
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	2. Adenanthos cygno	rum subsp. cygnorum and	d Allocasuarina humili	s tall to mid shrubland	
<ol> <li>Open shrubland (Hibbertia sp., Acacia spp.);</li> <li>Isolated clumps of</li> </ol>	3. Dasypogon bromel	liifolius, Desmocladus flex	uosus and * Ehrharta	calycina herb/sedgelan	d
sedges (M.tetragona)	4.				
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
		on layers (with up to three domina anual for further information and		Structural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT	<u> </u>	Excellent  Very goo		Degraded ☐ Com	pletely degraded
COMMENT:	Thouse 🗖	Excollent 🗀 Very get	54 <u> </u>	Dograded 🗀 Oom	protory dogradod
FIRE HISTORY: La	ast Fire: Season/Month	n: Year:	Fire Intensity: Hig	gh Medium Low	No signs of fire ⊠
FENCING:	Not required □	Present Replace	e / repair 🔲	Required  Leng	th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition 🔲	Required  Quar	ntity req'd:
		nended management acti ailable, and how to locate		ed actions - include	
taken) then no authorisation/li	icence is required. For further	B62000080-3 and TFL 2 rinformation on authorisation and ns/licences should be recorded a	d licening requirements see	the Threatened Flora and Wild	
SPECIMEN: Collect	ctors No: V	NA Herb. Regional	Herb. District He	erb. 🗌 Other:	
LODGEMENT: WA H	Herb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ F	Photo ☐ GIS data ⊠	☐ Field notes	Other:	
COPY SENT TO: Re	egional Office	District Office	Other:		
			Buban		
Submitter of Record: An	igela Benkovic Role	e: <u>Snr. Botanist</u> Signe	d:	Date: 19/0	6/2024



Version 1.4 March 2021

Please return completed form to Species And Communities Program DBCA,



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TPF	FL Pop. No: 1	13a
OBSERVATION DATE:	24/10/2023	CONSE	RVATION STATI	JS: VU		New populat	ion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGAI	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	EMAIL: angela.benkovic@ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least nea	rest town/named locality, ar	nd the distance and direct	ion to that plac	e):		
Clifford Street Reserve							
					Rese	rve No:	
DBCA DISTRICT: Swan Coa		LGA: City of G			_	r present:	
	·	M coords provided, <b>Zone</b> is DegMinSec U		THOD USE		: CDC 💆 . N	· □
GDA94 / MGA94 🖂	-	shapefile attached	_			ial GPS ⊠ M	•
AGD84 / AMG84 📋	/ Northing. See	snapenie attacheu		satellites: _ ndary polyg			
	g / Easting:		000	tured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:							
	Timber reserve ☐ State forest ☐	Private property		Rail reserve		Shire road Other Crown	reserve
National park ☐ Conservation park ☐	Water reserve	Pastoral lease UCI	s □ MRWA - □ SLK/Pole <u> </u>		_	Specify other:	
·							
AREA ASSESSMENT: Edge	•	•	•			<u>2ha</u>	
EFFORT: Time spent surveying (minutes): 16 hours No. of minutes spent / 100 m <sup>2</sup> :							
POP'N COUNT ACCURACY:	Actual 🕅	Extrapolation		Count me	thod:		
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate	Count me	ın	<u>dividuals</u>	
POP'N COUNT ACCURACY: WHAT COUNTED:	Actual ⊠	Extrapolation  Clumps	Estimate	_	ın	dividuals	
	<del></del>	•	Estimate (Refer to	_	ın	<u>dividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps 🗌	Estimate (Refer to	field manual f	or list)	dividuals  Area of pop (m²)	ı:
WHAT COUNTED: TOTAL POP'N STRUCTURE:	Plants ⊠ <b>Mature</b> :	Clumps   Juveniles:	Estimate (Refer to	Totals:	or list) In	Area of pop (m²)	nt as numbers
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive	Plants ⊠ Mature: 373	Clumps   Juveniles:  6	Estimate (Refer to (Refer to Seedlings:	Totals:	for list)	Area of pop (m²) Note: Pls record cour (not percentages) for	nt as numbers database.
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT:	Plants ⊠ <b>Mature</b> :	Clumps   Juveniles:	Estimate (Refer to	Totals:	for list)	Area of pop (m²)	nt as numbers database.
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive	Plants ⊠ Mature: 373	Clumps  Juveniles:  6  Size	Estimate (Refer to (Refer to Seedlings:	Totals:	otal area o	Area of pop (m²) Note: Pls record cour (not percentages) for	nt as numbers database.
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE:	Plants   Mature:  373  No	Clumps   Juveniles:  6	Estimate	Totals: 379	otal area o	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):	nt as numbers database.
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu	Plants   Mature:  373  No	Clumps  Juveniles:  6  Size  Vegetative  Vegetative	Estimate	Totals: 379	otal area o	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver ⊠ in flower:%	nt as numbers database.
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu	Plants   Mature:  373  No  Clonal  re fruit	Clumps  Juveniles:  6  Size  Vegetative  Fruit	Estimate	Totals: 379	otal area of Flow Percentage	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver ⊠ in flower:%	nt as numbers database.
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu	Plants   Mature:  373  No Clonal	Clumps	Estimate	Totals: 379	otal area of Flow Percentage	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver  in flower:%	nt as numbers database.
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: COMMENT:	Plants   Mature:  373  No  Clonal	Clumps	Estimate	Totals: 379	otal area of Senesce  Currer impac	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: COMMENT: THREATS - type, agent and seg clearing, too frequent fire, weed, dis Rate current and potential threat in	Plants  Mature:  373  No Clonal	Clumps	Clonal stems	Totals: 379	otal area of Flow Percentage Senesce	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	nt as numbers database.
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: H COMMENT: THREATS - type, agent and seg clearing, too frequent fire, weed, dis Rate current and potential threat in Estimate time to potential impact:	Plants  Mature:  373  No Clonal	Clumps	Clonal stems	Totals: 379	otal area of Senesce  Currer impac	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: F COMMENT: THREATS - type, agent and seg clearing, too frequent fire, weed, disented and potential threat in Estimate time to potential impact:  • Weeds	Plants  Mature:  373  No Clonal	Clumps	Clonal stems	Totals: 379	otal area of Senesce  Currer impac	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: H COMMENT: THREATS - type, agent and seg clearing, too frequent fire, weed, dis Rate current and potential threat in Estimate time to potential impact:	Plants  Mature:  373  No Clonal	Clumps	Clonal stems	Totals: 379	otal area of Senesce  Currer impac	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: F COMMENT: THREATS - type, agent and seg clearing, too frequent fire, weed, disented and potential threat in Estimate time to potential impact:  • Weeds	Plants  Mature:  373  No Clonal	Clumps	Clonal stems	Totals: 379	otal area of Senesce  Currer impac	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: F COMMENT: THREATS - type, agent and seg clearing, too frequent fire, weed, disented and potential threat in Estimate time to potential impact:  • Weeds	Plants  Mature:  373  No Clonal	Clumps	Clonal stems	Totals: 379	otal area of Senesce  Currer impac	Area of pop (m²)  Note: Pls record cour (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset



Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge □	Laterite	0.400/ 57	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam	White □	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛚	Quartz 🗌	30-50%	Peat □	Black ☐	iluai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	On a sifin I am alfam				
Wetland	Specific <b>Landfor</b> (Refer to field manual for				
CONDITION OF SOIL:	Dry 🖾	Moist	Waterlogged	Inundated	
VEGETATION	1. Eucalyptus margina	ıta subsp. marginata, Ba	nksia menziesii and All	ocasuarina fraseriana l	low woodland
CLASSIFICATION*: Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);	2. Xanthorrhoea preiss	sii and Adenanthos cygn	orum subsp. cygnorum	n tall isolated shrubs	
2. Open shrubland (Hibbertia sp., Acacia spp.);	3. Allocasuarina humil	is and Hibbertia hyperico	oides subsp. hypericoid	les mid to low open shr	rubland
3. Isolated clumps of sedges (M.tetragona)	4. Mesomelaena pseu	dostygia Alexgeorgea ni	tens and Dasypogon b	romeliifolius sparse sed	dge/herbland
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
		n layers (with up to three domin nual for further information and		ructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT	: Pristine	Excellent	od 🛛 Good 🗆	Degraded ☐ Com	pletely degraded
COMMENT:	at Fire: Casaar/Manth	Vaam	Fire Interests of the	ь П. М. <i>В</i> П 1 Г	7 No class of 6 to 7
	st Fire: Season/Month:			_	☐ No signs of fire ☑
FENCING: ROADSIDE MARKERS:	Not required ☐ Not required ☐		e / repair   □ e / reposition   □		th req'd: ntity req'd:
	•	'	•	<u> </u>	
		ended management acti ilable, and how to locate		ed actions - include	
			,		
	cence is required. For further	362000080-3 and TFL : information on authorisation and s/licences should be recorded a	d licening requirements see the		
		/A Herb. Regional		_	
	erb Lodgement No:				
ATTACHED: Map		hoto ☐ GIS data ▷	☐ Field notes ☐	Other:	
•		District Office ☐	Other:	<u></u>	_
	g u				_
			Q/ 1		

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024



Version 1.4 March 2021

OBSERVATION DATE: 24/10/2023 CONSERVATION STATUS: VU New population OBSERVER/S: A.Benkovic and A.Sleep PHONE 62228361  ROLE: Snr. Botanists ORGANISATION: GHD Pty Ltd  EMAIL: angela.benkovic@ghd.com  DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place): Pitt Road Reserve  Reserve No:	
ROLE: Snr. Botanists ORGANISATION: GHD Pty Ltd  EMAIL: angela.benkovic@ghd.com  DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):  Pitt Road Reserve	
EMAIL: angela.benkovic@ghd.com  DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):  Pitt Road Reserve	
DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):  Pitt Road Reserve	
Pitt Road Reserve	
Reserve No:	
Reserve No:	
<del>-</del>	
DBCA DISTRICT: Swan Coastal LGA: City of Gosnels Land manager present:	
DATUM:       COORDINATES: (If UTM coords provided, Zone is also required)       METHOD USED:         DecDegrees       □ DegMinSec       □ UTMs       □ GPS       □ Differential GPS       □ Map       □	
GDA94 / MGA94 □	
AGD84 / AMG84 L	
wg564 Long / Easting: captured:	_
Unknown	
LAND TENURE:	
Nature reserve ☐ Timber reserve ☐ Private property ☐ Rail reserve ☐ Shire road reserve  National park ☐ State forest ☐ Pastoral lease ☐ MRWA road reserve ☐ Other Crown reserve	_
National park State forest Pastoral lease MRWA road reserve Mrwa road reserve State forest UCL SLK/Pole to Specify other:	
AREA ASSESSMENT: Edge survey ☐ Partial survey ☑ Full survey ☐ Area observed (m²): 12ha  EFFORT: Time spent surveying (minutes): 4 hours No. of minutes spent / 100 m²:	
POP'N COUNT ACCURACY: Actual Stranglation Stranglation Count method:	
(Refer to field manual for list)	
WHAT COUNTED: Plants ⊠ Clumps □ Clonal stems □	
TOTAL POP'N STRUCTURE: Mature: Juveniles: Seedlings: Totals:	
Alive 5 Area of pop (m²):	
Note: Pls record count as nun	
Dead (not proportions) for database	5.
(not percentages) for database	
QUADRATS PRESENT:  No Size Data attached Total area of quadrats (m²):	
QUADRATS PRESENT:  No Size Data attached Total area of quadrats (m²):  Summary Quad. Totals: Alive	
QUADRATS PRESENT:  No Size Data attached Total area of quadrats (m²):	
QUADRATS PRESENT:       No       Size       Data attached □       Total area of quadrats (m²):         Summary Quad. Totals: Alive        Vegetative □       Flowerbud □       Flower □	
QUADRATS PRESENT:       No       Size       Data attached □       Total area of quadrats (m²):         Summary Quad. Totals: Alive        Flowerbud □       Flower □         REPRODUCTIVE STATE:       Clonal □       Vegetative □       Flowerbud □       Percentage in flower:%	
QUADRATS PRESENT:       No       Size       Data attached □       Total area of quadrats (m²):         Summary Quad. Totals:       Alive        Flowerbud □       Flower □         REPRODUCTIVE STATE:       Clonal □       Vegetative □       Flowerbud □       Percentage in flower:%         CONDITION OF PLANTS:       Healthy □       Moderate □       Poor □       Senescent □         COMMENT:        Senescent □	
QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m²):  Summary Quad. Totals: Alive  REPRODUCTIVE STATE: Clonal Vegetative Flowerbud Percentage in flower: Percentage in flower: Percentage in flower: Senescent COMDITION OF PLANTS: Healthy Moderate Poor Senescent COMMENT:  THREATS - type, agent and supporting information:  Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant.	ntial eat
QUADRATS PRESENT: No Size Data attached Total area of quadrats (m²): Summary Quad. Totals: Alive Percentage in flower: %  REPRODUCTIVE STATE: Clonal Vegetative Flowerbud Percentage in flower: %  CONDITION OF PLANTS: Healthy Moderate Poor Senescent COMMENT:  THREATS - type, agent and supporting information:  Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant.  Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme    Continue   Current impact   Current   Current impact   Current   Current	ntial eat eet
QUADRATS PRESENT: No Size Data attached Total area of quadrats (m²):	ntial eat eet
QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m²):  Summary Quad. Totals: Alive  REPRODUCTIVE STATE: Clonal Vegetative Flowerbud Percentage in flower: %  CONDITION OF PLANTS: Healthy Moderate Poor Senescent  COMMENT:  THREATS - type, agent and supporting information:  Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant.  Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)  • WeedS	ntial eat eet
QUADRATS PRESENT: No Size Data attached Total area of quadrats (m²):	ntial eat eet
QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m²):  Summary Quad. Totals: Alive  REPRODUCTIVE STATE: Clonal Vegetative Flowerbud Percentage in flower: %  CONDITION OF PLANTS: Healthy Moderate Poor Senescent  COMMENT:  THREATS - type, agent and supporting information:  Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant.  Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)  • WeedS	ntial eat eet
QUADRATS PRESENT: No. Size Data attached Total area of quadrats (m²):  Summary Quad. Totals: Alive  REPRODUCTIVE STATE: Clonal Vegetative Flowerbud Percentage in flower: %  CONDITION OF PLANTS: Healthy Moderate Poor Senescent  COMMENT:  THREATS - type, agent and supporting information:  Eg clearing, too frequent fire, weed, disease. Refer to field manual for list of threats & agents. Specify agent where relevant.  Rate current and potential threat impact: N=Nil, L=Low, M=Medium, H=High, E=Extreme Estimate time to potential impact: S=Short (<12mths), M=Medium (<5yrs), L=Long (5yrs+)  • WeedS	ntial eat eet



Version 1.4 March 2021

HABITAT INFORMAT	ION:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	] Granite □	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge [	] Laterite □	0.400/ 57	Loam 🗌	Yellow	inundated 📙
Outcrop	] Ironstone □	0-10%	Clay loam	White □	Permanently inundated ☐
Slope [	] Limestone □	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat ⊠	]	30-50%	Peat □	Black ☐	ridai 🗀
Open depression	] Specify other:	50-100%	Specify other:	Specify other:	
Drainage line	]				
Closed depression	]	<b>.</b>			
Wetland	Specific <b>Landforn</b> (Refer to field manual for a		<u></u>		
CONDITION OF SOIL:	Dry 🛛	Moist	Waterlogged □	Inundated	
VEGETATION CLASSIFICATION*:		. Accesss wasn't given			
Eg: 1. Banksia woodland (B.					
attenuata, B. ilicifolia);  2. Open shrubland	-				
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of	-				
sedges (M.tetragona)					
ASSOCIATED SPECIES:					
Other (non-dominant) spp	e most representative vegetation	layers (with up to three domin	ant enocios in each lavor). S	tructural Formations should fo	llow 2000 Australian Soil
	ook guidelines – refer to field man			u detarar i ormanons snound ro	ilow 2009 Australian Goll
CONDITION OF HABITA	.T: Pristine □ I	Excellent	od 🛛 Good 🗆	Degraded ☐ Com	pletely degraded
COMMENT:					
FIRE HISTORY: L	ast Fire: Season/Month:	Year:	Fire Intensity: Hig	jh ☐ Medium ☐ Low ☐	No signs of fire ⊠
FENCING:	Not required		e / repair 🔲	· · · · · · · · · · · · · · · · · · ·	th req'd:
ROADSIDE MARKERS:	Not required	Present Replac	e / reposition	Required  Quar	ntity req'd:
	(Please include recomme			ed actions - include	
date. Also include deta	ills of additional data avail	able, and now to locate	π.)		
taken) then no authorisation/	TION / LICENCE No: FB6/ licence is required. For further in carried out under authorisations.	nformation on authorisation and	d licening requirements see t		imens or plant matieral is life Licensing pages on
		A Herb.  Regional		_	
	Herb Lodgement No:	J			
ATTACHED: Map		noto ☐ GIS data ▷	☐ Field notes ☐	Other:	
•	•	District Office	Other:		
	<u> </u>				-
			92 1	-	
			Puhowe		
Submitter of Record: A	ngela Benkovic Role:	Snr. Botanist Signe	d:	Date: 19/0	6/2024

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024

Please return completed form to Species And Communities Program DBCA,

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_ Record Entered in Database □



Version 1.4 March 2021

TAXON: Conospermu	m undulatum				TPF	L Pop. No:	16a
OBSERVATION DATE:	26/02/2024	CONSE	RVATION STA	TUS: VU		New populat	ion 🗌
OBSERVER/S: A.Be	nkovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GH	D Pty Ltd	<u> </u>		
EMAIL: angela.benkovid	@ghd.com						
DESCRIPTION OF LOCATION	ON (Provide at least nea	rest town/named locality, ar	nd the distance and dire	ection to that pla	ce):		
Korung National Park							
							<del>-</del> _
					Rese	rve No: R4788	31
DBCA DISTRICT: Perth HII		_	alamunda		J	present:	
	·	M coords provided, <b>Zone</b> is legMinSec ☐ U1		ETHOD USE		-LODE M M	4-n 🗆
GDA94 / MGA94 🖂	-	shapefile attached		GPS		al GPS ⊠ M	•
AGD84 / AMG84		Shapenie attached		o. satellites: oundary poly			
	ng / Easting:		0.0	aptured:		Map scale:	
Unknown □	ZONE:						
LAND TENURE:							_
Nature reserve	Timber reserve	Private propert	•	Rail reserve	- <b>-</b>	Shire road Other Crown	reserve
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease UC	e ⊔ MRW. L □ SLK/Pole _	'A road reserve to		Other Grown Specify other:	
· · · · · · · · · · · · · · · · · · ·							
AREA ASSESSMENT: Edg	-	•	•				
POP'N COUNT ACCURACY	spent surveying (m ∕: Actual ⊠	Extrapolation	Estimate	utes spent / Count me	thod.		
TOT RECORD ACCULATE	. / totaci 🖂	Extrapolation _	<del></del>	r to field manual	ind	<u>dividuals</u>	
WHAT COUNTED:	Plants 🗵	Clumps	Clonal stems				
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	192			192		Area of pop (m²)	):
Dead						Note: Pls record cour (not percentages) for	
QUADRATS PRESENT:	No.	Size	Data attache	L ed □		of quadrats (m²):	
Summary Quad. Totals: Alive						··· •¶ (	
REPRODUCTIVE STATE:	L Clonal □	_I Vegetative ⊠	   Flowerbud	 П	Flow	er 🛛	
	ture fruit	Fruit 🗌	Dehisced fruit		Percentage		Ď
CONDITION OF PLANTS:	Healthy 🛚	Moderate	Poor [		Senesce	ent 🗌	
COMMENT:							
THREATS - type, agent and	supporting inform	nation:			Curren	t Potential	Potential
Eg clearing, too frequent fire, weed, o	• • •		nts. Specify agent whe	ere relevant.	impact	t Impact	Threat
Rate current and potential threa	•				(N-E)	(L-E)	Onset (S-L)
Estimate time to potential impact     Weeds	t: S=Short (<12mtns), ivi=	Medium (<5yrs), L=Long (	Syrs+)				• •
_					┥	_	
grazing							
•						_	
_							
•						_	



Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🖂	Seasonally
Ridge □	Laterite	0.400/ 🔽	Loam 🗌	Yellow □	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White $\square$	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay 🔲	Grey 🛛	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat	Black 🗌	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	Charifia Landforn	m Flament:			
Wetland	Specific Landforr (Refer to field manual for a				
CONDITION OF SOIL:	Dry ⊠	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Eucalyptus margina	ta subsp. marginata, Allo	ocasuarina fraseriana t	all open woodland	
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	Xanthorrhoea preissii,	*Acacia iteaphylla and F	lakea lissocarpha tall t	o mid sparse shrubland	<u> </u>
2. Open shrubland (Hibbertia sp., Acacia spp.); 3. Isolated clumps of	Banksia dallanneyi, *U	rsinia anthemoides, *Bri	za maxima and *Ehrha	rta calycina herb/grass	land
sedges (M.tetragona)					
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the and Land Survey Field Handboo				ructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT COMMENT:	: Pristine □	Excellent	od □ Good ⊠	Degraded 🛛 Com	pletely degraded 🛚
FIRE HISTORY: La	st Fire: Season/Month:	Year:	Fire Intensity: Hig	h 🗌 Medium 🔲 Low 🗆	No signs of fire ⊠
FENCING:	Not required	Present Replac	e / repair 🔲	Required  Leng	th req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replac	e / reposition	Required  Quar	ntity req'd:
OTHER COMMENTS: (date. Also include detail				ed actions - include	
	cence is required. For further i	62000080-3 and TFL 3  nformation on authorisation and s/licences should be recorded a	d licening requirements see the		=
		'A Herb. Regional			
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map		noto ☐ GIS data ☑	☐ Field notes ☐	Other:	
·	·	District Office 🛛	Other:		
			$\mathscr{A}$ $\Lambda$		

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_ Record Entered in Database □



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TPF	L Pop. No:	16j
OBSERVATION DATE:	11/01/2024	CONSE	RVATION STAT	JS: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGAI	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least near	rest town/named locality, ar	nd the distance and direct	ion to that pla	ce):		
254 Kelvin Rd							
					Rese	rve No:	
DBCA DISTRICT: Perth Hills		LGA: City of G		La	ind manage	r present:	
	·	A coords provided, <b>Zone</b> is		THOD USE			. –
GDA94/MGA94 🗆		egMinSec UT		<del></del>		ial GPS ⊠ N	•
AGD84 / AMG84 🗌	/ Northing: see	shapefile attached		satellites:		Map used:	
	g / Easting:		oon	indary poly tured:	gon	Map scale:	
Unknown 🗌	ZONE:		<u> </u>				
LAND TENURE:							
<u> </u>	Timber reserve	Private property	·	Rail reserve			I reserve
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease	_	road reserve	_	Other Crowr	
Conservation park	water reserve	001	SLK/Pole	10		Specify other:	
AREA ASSESSMENT: Edge	•		•			<u>na</u>	
	spent surveying (mi	· -	No. of minut		·		
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate  (Refer to	Count me field manual	ın	<u>dividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems		,		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	6	2		8		Area of pop (m²	<b>)</b> :
Dead						Note: Pls record cou	
	No	Sizo	Data attached			(not percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	<u> </u>	otal area o	of quadrats (m²)	<u> </u>
Summary Quad. Totals: Alive		<u> </u>					
REPRODUCTIVE STATE:	Clonal □ ure fruit □	Vegetative ⊠ Fruit □	Flowerbud  Dehisced fruit		Percentage	/er □ in flower:%	, D
	Healthy ⊠	Moderate □	Poor 🗆		Senesce	_	
COMMENT:					20220		
TUDEATO (		0			- C	nt Dotomtici	Detential
THREATS - type, agent and Eg clearing, too frequent fire, weed, dis	•		nts Snacify agent where	relevant	Currer impac		Potential Threat
Rate current and potential threat i		•		relevant.	(N-E)	(L-E)	Onset
Estimate time to potential impact:	S=Short (<12mths), M=	Medium (<5yrs), L=Long (5	yrs+)				(S-L)
• weeds					_		
•					_		
							<del></del>
•							



Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite 🗌	(on soil surface; eg	Sand 🛚	Red □	Well drained $oxtimes$
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge □	Laterite	0.100/ 🖂	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10% ⊠	Clay loam 🔲	White □	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛚	Quartz 🗌	30-50% □ 50-100% □	Peat ☐	Black ☐	ngai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line		_			
Closed depression $\square$	Specific <b>Landfo</b>	- 			
Wetland $\square$	(Refer to field manual fo		<u></u>		
CONDITION OF SOIL:	Dry ⊠	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Allocasuarina fras	eriana, Banksia menziesii	isolated trees		
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	Xanthorrhoea preiss	ii and Jacksonia floribunda	a open shrubland		
<ul><li>2. Open shrubland (Hibbertia sp., Acacia spp.);</li><li>3. Isolated clumps of</li></ul>	Mesomelaena pseud	dostygia open sedgeland			
sedges (M.tetragona)					
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
		tion layers (with up to three domin nanual for further information and		Structural Formations should f	ollow 2009 Australian Soil
CONDITION OF HABITAT COMMENT:	: Pristine	Excellent	od 🗌 Good 🛚	Degraded ⊠ Cor	npletely degraded
FIRE HISTORY: La	st Fire: Season/Mont	h: Year: <u>5&lt;10y</u> r	s Fire Intensity: Hi	gh 🗌 Medium 📗 Low	No signs of fire      □
FENCING:	Not required	Present Replac	e / repair 🔲	Required  Len	gth req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replac	e / reposition	Required  Qua	intity req'd:
		mended management activally		ted actions - include	
date. 7 libe iriolade detail	o or additional data as	ranabio, and now to locate	ш,		
	cence is required. For further	FB62000080-3 and TFL are information on authorisation and ons/licences should be recorded a	d licening requirements see		=
•		WA Herb. Regional			
	erb Lodgement No:	_ 0	<del>_</del>		
ATTACHED: Map	_	Photo  GIS data	☐ Field notes ☐	Other:	
•	gional Office	District Office	Other:		
	<u> </u>	<b>ப</b>			
			92/1		

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermum	ı undulatum				TPFL	L Pop. No:	161
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STATE	JS: VU		New populat	ion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):						
79 Dale Pl					•		
					Reserv	ve No:	
DBCA DISTRICT: Perth Hills		LGA: City of G				present:	
	·	M coords provided, <b>Zone</b> is DegMinSec UT		THOD USED		1000 M	4 🗆
GDA94/MGA94 🗆		_	_			IGPS ⊠ M	•
AGD84 / AMG84 🗌	/ Northing: See	shapefile attached		satellites: _ ndary polyg		Map used:	
	g / Easting:		cont	ridary polygi :ured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:							
<u> </u>	Timber reserve	Private property	' <del>-</del>	Rail reserve	_		reserve
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease	e	road reserve	_	Other Crown pecify other:	
·						poony outer.	<del>-</del>
AREA ASSESSMENT: Edge	•	· · · · · · · · · · · · · · · · · · ·				_	
EFFORT: Time s POP'N COUNT ACCURACY:	pent surveying (m	• ———	No. of minute	es spent / 10 Count metl	·		
POP'N COUNT ACCURACY:	Actual 🖂	Extrapolation	Estimate [] (Refer to	field manual fo	indi	<u>ividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems		·		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	21		1	22	Δ	Area of pop (m²)	):
Dead						lote: Pls record coul	
QUADRATS PRESENT:	No.	Size	Data attached	<u> </u> П То		not percentages) for f quadrats (m²):	
Summary Quad. Totals: Alive	140.	<u> </u>	Data attached		nai area oi	quadrats (iii ).	·
REPRODUCTIVE STATE:	Clonal	 Vegetative ⊠	I Flowerbud □		Flowe	ar 🕅	
	re fruit	Fruit	Dehisced fruit	Р	ercentage ir		Ď
CONDITION OF PLANTS:	Healthy ⊠	Moderate □	Poor 🗆		Senescen	nt 🗌	
COMMENT:	-						
THREATS - type, agent and	supporting inform	nation:			Current	Potential	Potential
Eg clearing, too frequent fire, weed, dis	•		nts. <b>Specify agent</b> where	relevant.	impact	Impact	Threat
Rate current and potential threat i		, , ,			(N-E)	(L-E)	Onset (S-L)
Estimate time to potential impact:	S=Short (<12mths), M=	Medium (<5yrs), L=Long (5	yrs+)				\- <del>-</del> /
• weeds					<u> </u>	.	
•							
•							
ĺ					1	·	



Version 1.4 March 2021

HABITAT INFORMATIO	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite 🗌	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge □	Laterite	0.100/ 🖂	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White □	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛚	Quartz 🗌	30-50% □ 50-100% □	Peat ☐	Black ☐	naar 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line		_			
Closed depression	Specific <b>Landfo</b>	rm Flement			
Wetland	(Refer to field manual fo				
CONDITION OF SOIL:	Dry ⊠	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Eucalyptus margir	nata subsp. marginata, Allo	ocasuarina fraseriana	and Banksia menziesii l	low open woodland
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	Melaleuca seriata,	Allocasuarina humilis a	nd <i>Xanthorrhoea pr</i>	<i>eissii</i> open shrubland	
<ul><li>2. Open shrubland (Hibbertia sp., Acacia spp.);</li><li>3. Isolated clumps of</li></ul>	Alexgeorgea nitens of	open sedgeland			
sedges (M.tetragona)					
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the and Land Survey Field Handbook	most representative vegetat $k$ guidelines – refer to field n	tion layers (with up to three domin manual for further information and	ant species in each layer). S structural formation table.	tructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT COMMENT:	: Pristine	Excellent	od ⊠ Good □	Degraded ⊠ Com	pletely degraded
FIRE HISTORY: La	st Fire: Season/Mont	h: Year: + <u>10yrs</u>	Fire Intensity: Hig	gh 🗌 Medium 📗 Low 🛭	☐ No signs of fire ☑
FENCING:	Not required	Present Replac	e / repair 🔲	Required  Leng	th req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replac	e / reposition	Required  Quar	ntity req'd:
		mended management acti ailable, and how to locate		ed actions - include	
			,		
	cence is required. For further	FB62000080-3 and TFL : er information on authorisation and ons/licences should be recorded a	d licening requirements see t		-
•		WA Herb. Regional			
	erb Lodgement No:		<del>-</del>		
ATTACHED: Map [	_	Photo ☐ GIS data ▷	☐ Field notes ☐	Other:	
•	gional Office	District Office	Other:	<u></u>	
	<u> </u>	<b>-</b>			
			92/1	_	

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024

Record entered by: \_\_\_\_\_ Sheet No.: \_\_\_\_ Record Entered in Database □



Version 1.4 March 2021

TAXON: Conospermun	n undulatum				TPF	FL Pop. No:	16m
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STAT	US: VU		New populat	ion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd		<u></u>	
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least near	est town/named locality, ar	nd the distance and direct	ion to that plac	ce):		
Kelvin Road							
						rve No:	
DBCA DISTRICT: Perth Hills		LGA: City of Go			_	r present:	
	·	I coords provided, <b>Zone</b> is egMinSec UT	<u></u>	THOD USE		ial GPS ⊠ M	lon □
GDA94 / MGA94 🗌		shapefile attached		satellites: _			•
AGD84 / AMG84 📋		onaponio attacine a		indary poly			
WGS84 ☐ <b>Lon</b> Unknown ☐	g / Easting:		000	tured:		Map scale:	
OHKHOWH L	ZONE:						
LAND TENURE:	_		_		_	21.	
Nature reserve ☐ National park ☐	Timber reserve ☐ State forest ☐	Private property Pastoral lease	_	Rail reserve		Shire road Other Crown	reserve 🖂
Conservation park	Water reserve		SLK/Pole		_	Specify other:	
AREA ASSESSMENT: Edge	- ourvov □ Par	tial autrov 🗆 — Full	Lauriou M Are	- checryed		2ha	
_	e survey	•	No. of minut				
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count me	thod.	dividuals	
	_	_	·	o field manual	for list)	<u>uividuais</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	1	ļ		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	62	2		64		Area of pop (m²)	<u></u>
Dead						Note: Pls record cour (not percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	П	otal area	of quadrats (m²):	
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal	Vegetative 🗵	Flowerbud			ver 🛛	
	ure fruit 🗌	Fruit	Dehisced fruit		Percentage		)
	Healthy ⊠	Moderate	Poor		Senesce	ent 🗌	
COMMENT:							
THREATS - type, agent and	supporting inform	nation:			Currer		Potential Threat
Eg clearing, too frequent fire, weed, dis Rate current and potential threat i		•		e relevant.	impac (N-E)	-	Onset
Estimate time to potential impact:	•	. •			` .		(S-L)
• weeds							
road						- <u> </u>	
•							
					T	-   <u></u>	
•							
					T	-	



Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite 🗌	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛛	Seasonally
Ridge □	Laterite	0.100/ 🖂	Loam 🗌	Yellow	inundated 📙
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently ☐
Slope □	Limestone	10-30%	Light clay 🗌	Grey ⊠	Tidal
Flat 🖂	Quartz 🗌	30-50%	Peat □	Black ☐	ngai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression $\square$	Specific <b>Landf</b> e	orm Flement:			
Wetland 🗌	(Refer to field manual f				
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Road Reserve				
Eg: 1. Banksia woodland (B.					
attenuata, B. ilicifolia);  2. Open shrubland					
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)					
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the		tion layers (with up to three domin manual for further information and		Structural Formations should f	ollow 2009 Australian Soil
CONDITION OF HABITAT	: Pristine	Excellent	ood 🗌 Good 🗎	Degraded ⊠ Cor	npletely degraded
<del></del>	st Fire: Season/Mon	th: Year: + <u>10yr</u>	Fire Intensity: Hi	gh  Medium  Low	☐ No signs of fire ☑
FENCING:	Not required □	Present Replac	ce / repair 🔲	Required  Len	gth req'd:
ROADSIDE MARKERS:	Not required	Present Replac	ce / reposition	Required  Qua	intity req'd:
		nmended management ac		ted actions - include	
date. 7430 monde detail	o additional data a	valiable, and now to locate	5 it.)		_
	cence is required. For furth	FB62000080-3 and TFL er information on authorisation arons/licences should be recorded	nd licening requirements see		
· · · · · · · · · · · · · · · · · · ·	arned out under authorisati tors No:		Herb. District He		
	erb Lodgement No:				
ATTACHED: Map		Photo GIS data	∀ Field notes □	Other:	
·	gional Office	District Office	Other:	<u></u>	_
10. 10. 10.	g.c.iai CiiioC 🗀	2.54.64 01100 🖂			
			92/1		

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermum	undulatum				TPFL	Pop. No:	17
OBSERVATION DATE:	05/12/2023	CONSE	RVATION STATE	JS: VU		New populat	ion 🗌
OBSERVER/S: A.Benl	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGAN	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATION	<b>N</b> (Provide at least nea	rest town/named locality, an	nd the distance and directi	ion to that place	e):		
Smokebush Pl							
					Reserv	/e No:	
DBCA DISTRICT: Swan Coas			alamunda			oresent:	
	·	M coords provided, <b>Zone</b> is	<u> </u>	THOD USED			. –
GDA94 / MGA94 🖂	•	egMinSec UT				IGPS ⊠ N	•
AGD84 / AMG84 📙	/ Northing: See	shapefile attached		satellites: ndary polygo		Map used:	
	g / Easting:					Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:							
<u> </u>	Timber reserve	Private property	′ =	Rail reserve			reserve 🛛
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease	e □	road reserve		Other Crowr pecify other:	
Conservation paint _					<u> </u>		
AREA ASSESSMENT: Edge	•			•		-	
		inutes): 12 hours		-	•		
POP'N COUNT ACCURACY:	Actual 🖂	Extrapolation	Estimate (Refer to	Count meth field manual fo	ındı	<u>viduals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems		,		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	166			166	А	rea of pop (m²)	):
Dead						ote: Pls record cou not percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	<u>I</u> То		quadrats (m²):	
Summary Quad. Totals: Alive						<b>4</b> (··· )	·
•	Clonal	 Vegetative ⊠	Flowerbud		 Flowe	r ⊠	
	re fruit 🗌	Fruit	Dehisced fruit	P	ercentage ir	<del></del>	Ď
CONDITION OF PLANTS:	lealthy 🛚	Moderate □	Poor		Senescen	t 🗆	
COMMENT:							
TUDEATS type agent and a	supporting inform	nation:			Current	Potential	Potential
THREATS - type, agent and s Eg clearing, too frequent fire, weed, dis			nts. <b>Specify agent</b> where	relevant.	impact	Impact	Threat
Rate current and potential threat in	•	. •			(N-E)	(L-E)	Onset (S-L)
Estimate time to potential impact:	S=Short (<12mths), M=	Medium (<5yrs), L=Long (5	yrs+)				ν/
• weeds					<del> </del>		
road							
•					<del> </del>		
•					·		



Version 1.4 March 2021

HABITAT INFORMATIO	N:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite 🗌	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge □	Laterite	0.100/ 🖂	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat ⊠	Quartz 🗌	30-50% □ 50-100% □	Peat ☐	Black ☐	naar 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line		_			
Closed depression	Specific <b>Landfo</b>	rm Flement			
Wetland	(Refer to field manual for				
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Eucalyptus margin	ata subsp. marginata, Allo	ocasuarina fraseriana	and Banksia menziesii i	tall isolated trees
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	Lambertia multiflora v	var. darlingensis, Jackson	ia floribunda and Xant	horrhoea ?brunonis mid	d open shrubland
<ul><li>2. Open shrubland (Hibbertia sp., Acacia spp.);</li><li>3. Isolated clumps of</li></ul>	Anigozanthos mangle	esii subsp. manglesii, Sca	evola repens and Cya	thochaeta equitans her	b/ sedgeland
sedges (M.tetragona)					
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the rand Land Survey Field Handbook	most representative vegetati k guidelines – refer to field m	on layers (with up to three domin anual for further information and	ant species in each layer). S structural formation table.	tructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITATS	: Pristine	Excellent	od ☐ Good ⊠	Degraded ☐ Com	pletely degraded
FIRE HISTORY: Las	st Fire: Season/Month	n: Year: <2 <u>yrs</u>	Fire Intensity: Hig	gh ⊠ Medium □ Low □	☐ No signs of fire ☐
FENCING:	Not required	Present Replac	e / repair 🔲	Required  Leng	yth req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replac	e / reposition	Required  Quar	ntity req'd:
		nended management acti ailable, and how to locate		ed actions - include	
			•		
	ence is required. For further	B62000080-3 and TFL : r information on authorisation and ns/licences should be recorded a	licening requirements see t		-
		NA Herb. Regional			
	erb Lodgement No:				
ATTACHED: Map [		Photo ☐ GIS data ⊠	☐ Field notes ☐	Other:	
·	gional Office	District Office	Other:		
			al n		

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermum	undulatum				TPFL	DON NO.	18a and 18o
OBSERVATION DATE:	31/10/2023	CONSE	RVATION STA	TUS: VU		New populat	tion 🗌
OBSERVER/S: A.Benk						62228361	_
ROLE: Snr. Botanists	·		NISATION: GF	ID Pty Ltd			
EMAIL: angela.benkovic@	ghd.com			<u> </u>			
DESCRIPTION OF LOCATION		et town/nomed locality, on	ed the distance and dir	raction to that place	·o)*		
Dundas Road Bushland	(Frovide at least fleares	st town/named locality, an	id the distance and dir	ection to that place			
Dundas Road Busiliand							
					Reserv	/e No: R 379	197
DBCA DISTRICT: Swan Coas	stal	LGA: City of Ka	alamunda	Lar	nd manager p		
-	RDINATES: (If UTM o			METHOD USE			
Decl	·	gMinSec ☐ UT		GPS □	Differential	IGPS ⊠ N	/lap □
GDA94 / MGA94 ☐ Lat /	/ Northing: see s	hapefile attached	N	lo. satellites: _		Map used:	-
	 ي / Easting:			Soundary polyg		Map scale:	
Unknown 🗌			C:	aptured:		' -	
LAND TENURE:	ZONE:						
<u>_</u>	Timber reserve	Private property	, $\square$	Rail reserve		Shire road	d reserve □
National park □	State forest	Private property		Kall reserve VA road reserve	_	Other Crown	
· ·	Water reserve			to		pecify other:	
ADEA ACCECCMENT. E.					/ 2\ OFI		
	survevii Parti	ıaı survev i i 🕒 Euli	I SURVEV IXI — A	rea observed	(m <sup>2</sup> ): 25h	<u>1a</u>	
AREA ASSESSMENT: Edge	•	•	-		00 m <sup>2</sup> ·		
EFFORT: Time sp	pent surveying (mini	utes): 40 hours	No. of mir	nutes spent / 1	thod:		
	pent surveying (mini	•	No. of mir Estimate ☐		thod: indi	<u>viduals</u>	
EFFORT: Time sp POP'N COUNT ACCURACY:	pent surveying (mini	utes): 40 hours	No. of mir Estimate ☐	nutes spent / 1 Count met er to field manual f	thod: indi		
EFFORT: Time sp POP'N COUNT ACCURACY:	pent surveying (mini Actual ⊠ E	utes): 40 hours Extrapolation	No. of mir Estimate  (Refe	nutes spent / 1 Count met er to field manual f	thod: indi		
EFFORT: Time sp POP'N COUNT ACCURACY: WHAT COUNTED:	pent surveying (mini Actual ⊠ E	utes): 40 hours Extrapolation  Clumps	No. of mir Estimate (Refe Clonal stems	nutes spent / 1  Count meter to field manual f	thod: indi	viduals	):
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive	pent surveying (mini Actual ⊠ E Plants ⊠ <b>Mature:</b>	utes): 40 hours Extrapolation   Clumps   Juveniles:	No. of mir Estimate (Refe Clonal stems Seedlings:	Count mei r to field manual f	thod: indi	viduals  urea of pop (m²) ote: Pls record cou	nt as numbers
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead	pent surveying (mining Actual ⊠ E  Plants ⊠  Mature:  1180	utes): 40 hours Extrapolation  Clumps  Juveniles:  189	No. of mir Estimate  (Refe Clonal stems  Seedlings:	Count meter to field manual f  Totals:	thod: indi	viduals  Area of pop (m²) ote: Pls record coulot percentages) for	nt as numbers database.
EFFORT: Time sp POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead  QUADRATS PRESENT:	pent surveying (mining Actual ⊠ E  Plants ⊠  Mature:  1180	utes): 40 hours Extrapolation   Clumps   Juveniles:	No. of mir Estimate (Refe Clonal stems Seedlings:	Count meter to field manual f  Totals:	thod: indi	viduals  urea of pop (m²) ote: Pls record cou	nt as numbers database.
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive	pent surveying (mini Actual ⊠ E  Plants ⊠  Mature:  1180  No	cutes): 40 hours Extrapolation   Clumps   Juveniles:  189  Size	No. of mir Estimate  (Refe Clonal stems  Seedlings:	Count meter to field manual f  Totals:	thod: indi	viduals  urea of pop (m²) ote: Pls record counot percentages) for quadrats (m²)	nt as numbers database.
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE:	pent surveying (mini Actual ☑ E  Plants ☑  Mature:  1180  No	ctrapolation   Clumps   Juveniles:  189  Size   Vegetative   Vegetativ	No. of mir Estimate (Refe Clonal stems Seedlings: 19  Data attach	Count meter to field manual for Totals:  1388	thod: indicated in	viduals  viea of pop (m²) ote: Pls record counot percentages) for quadrats (m²)	nt as numbers r database.
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive  REPRODUCTIVE STATE: (Immature)	pent surveying (mini Actual ☑ E  Plants ☑  Mature:  1180  No  Clonal □ re fruit □	tes): 40 hours Extrapolation   Clumps   Juveniles:  189  Size   Vegetative  Fruit	No. of mir Estimate (Refe Clonal stems Seedlings: 19  Data attach Flowerbud Dehisced fruit	Count meter to field manual for Totals:  1388	thod: indicated in	viduals  viea of pop (m²) ote: Pls record count percentages) for quadrats (m²)  r 🌣	nt as numbers r database.
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatur  CONDITION OF PLANTS: H	pent surveying (mini Actual ☑ E  Plants ☑  Mature:  1180  No	ctrapolation   Clumps   Juveniles:  189  Size   Vegetative   Vegetativ	No. of mir Estimate (Refe Clonal stems Seedlings: 19  Data attach	Count meter to field manual for Totals:  1388	thod: indicated in	viduals  viea of pop (m²) ote: Pls record count percentages) for quadrats (m²)  r 🌣	nt as numbers r database.
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatur  CONDITION OF PLANTS: H COMMENT:	pent surveying (mini Actual ⊠ E  Plants ⊠  Mature:  1180  No  Clonal □ re fruit □	vites): 40 hours Extrapolation   Clumps   Juveniles:  189  Size   Vegetative  Fruit   Moderate   Moderate	No. of mir Estimate (Refe Clonal stems Seedlings: 19  Data attach Flowerbud Dehisced fruit	Count meter to field manual for Totals:  1388	thod: indicated in	viduals  viea of pop (m²) ote: Pls record count percentages) for quadrats (m²)  r 🌣	nt as numbers r database. :
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immature  CONDITION OF PLANTS: H COMMENT: THREATS - type, agent and sy	Pent surveying (minimal Actual	vites): 40 hours Extrapolation   Clumps   Juveniles:  189  Size   Vegetative  Fruit   Moderate   Moderate   ution:	No. of mir Estimate (Refe Clonal stems Seedlings: 19  Data attach  Flowerbud Dehisced fruit	Totals:    1388	thod: indicated in	viduals  area of pop (m²) ote: Pls record count percentages) for quadrats (m²)  r 🗵 n flower:%  t 🗆	nt as numbers database.
EFFORT: Time sp POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatur  CONDITION OF PLANTS: H COMMENT:  THREATS - type, agent and se Eg clearing, too frequent fire, weed, dise	Plants   Plants   Mature:  1180  No  Clonal   re fruit   lealthy   supporting informatease. Refer to field manual	vites): 40 hours Extrapolation   Clumps   Juveniles:  189  Size   Vegetative  Fruit   Moderate   Moderate   attion: al for list of threats & ageing	No. of mir Estimate  (Refe Clonal stems   Seedlings: 19  Data attach Flowerbud Dehisced fruit Poor	Totals:    1388	thod: indicated in	viduals  Area of pop (m²) ote: Pls record coulot percentages) for quadrats (m²)  r 🖾 n flower:%  t 🔲  Potential Impact	nt as numbers r database. :
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immature  CONDITION OF PLANTS: H COMMENT:	Plants   Plants   Mature:  1180  No  Clonal  re fruit   lealthy   supporting informatease. Refer to field manual mpact: N=Nil, L=Low, M=N	vites): 40 hours Extrapolation   Clumps  Juveniles:  189  Size  Vegetative  Fruit  Moderate   Moderate  al for list of threats & agenteed  Medium, H=High, E=Extre	No. of mir Estimate  (Refe Clonal stems   Seedlings:  19  Data attach  Flowerbud Dehisced fruit  Poor  hts. Specify agent wheme	Totals:    1388	thod: indicated in	viduals  area of pop (m²) ote: Pls record count percentages) for quadrats (m²)  r 🗵 n flower:%  t 🗆	nt as numbers database.  Potential Threat
EFFORT: Time sp POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatur  CONDITION OF PLANTS: H COMMENT:  THREATS - type, agent and so Eg clearing, too frequent fire, weed, dise Rate current and potential threat in	Plants   Plants   Mature:  1180  No  Clonal  re fruit   lealthy   supporting informatease. Refer to field manual mpact: N=Nil, L=Low, M=N	vites): 40 hours Extrapolation   Clumps  Juveniles:  189  Size  Vegetative  Fruit  Moderate   Moderate  al for list of threats & agenteed  Medium, H=High, E=Extre	No. of mir Estimate  (Refe Clonal stems   Seedlings:  19  Data attach  Flowerbud Dehisced fruit  Poor  hts. Specify agent wheme	Totals:    1388	thod: indicated in	viduals  Area of pop (m²) ote: Pls record coulot percentages) for quadrats (m²)  r 🖾 n flower:%  t 🔲  Potential Impact	Potential Threat Onset
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatur  CONDITION OF PLANTS: H COMMENT:  THREATS - type, agent and so Eg clearing, too frequent fire, weed, disk Rate current and potential threat in Estimate time to potential impact: S	Plants   Plants   Mature:  1180  No  Clonal  re fruit   lealthy   supporting informatease. Refer to field manual mpact: N=Nil, L=Low, M=N	vites): 40 hours Extrapolation   Clumps  Juveniles:  189  Size  Vegetative  Fruit  Moderate   Moderate  al for list of threats & agenteed  Medium, H=High, E=Extre	No. of mir Estimate  (Refe Clonal stems   Seedlings:  19  Data attach  Flowerbud Dehisced fruit  Poor  hts. Specify agent wheme	Totals:    1388	thod: indicated in	viduals  Area of pop (m²) ote: Pls record coulot percentages) for quadrats (m²)  r 🖾 n flower:%  t 🔲  Potential Impact	Potential Threat Onset
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatur  CONDITION OF PLANTS: H COMMENT:  THREATS - type, agent and so Eg clearing, too frequent fire, weed, disk Rate current and potential threat in Estimate time to potential impact: S	Plants   Plants   Mature:  1180  No  Clonal  re fruit   lealthy   supporting informatease. Refer to field manual mpact: N=Nil, L=Low, M=N	vites): 40 hours Extrapolation   Clumps  Juveniles:  189  Size  Vegetative  Fruit  Moderate   Moderate  al for list of threats & agenteed  Medium, H=High, E=Extre	No. of mir Estimate  (Refe Clonal stems   Seedlings:  19  Data attach  Flowerbud Dehisced fruit  Poor  hts. Specify agent wheme	Totals:    1388	thod: indicated in	viduals  Area of pop (m²) ote: Pls record coulot percentages) for quadrats (m²)  r 🖾 n flower:%  t 🔲  Potential Impact	Potential Threat Onset
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatur  CONDITION OF PLANTS: H COMMENT:  THREATS - type, agent and so Eg clearing, too frequent fire, weed, disc Rate current and potential threat in Estimate time to potential impact: So weeds	Plants   Plants   Mature:  1180  No  Clonal  re fruit   lealthy   supporting informatease. Refer to field manual mpact: N=Nil, L=Low, M=N	vites): 40 hours Extrapolation   Clumps  Juveniles:  189  Size  Vegetative  Fruit  Moderate   Moderate  al for list of threats & agenteed  Medium, H=High, E=Extre	No. of mir Estimate  (Refe Clonal stems   Seedlings:  19  Data attach  Flowerbud Dehisced fruit  Poor  hts. Specify agent wheme	Totals:    1388	thod: indicated in	viduals  Area of pop (m²) ote: Pls record coulot percentages) for quadrats (m²)  r 🖾 n flower:%  t 🔲  Potential Impact	Potential Threat Onset
EFFORT: Time sy POP'N COUNT ACCURACY:  WHAT COUNTED: TOTAL POP'N STRUCTURE:  Alive Dead  QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatur  CONDITION OF PLANTS: H COMMENT:  THREATS - type, agent and so Eg clearing, too frequent fire, weed, disc Rate current and potential threat in Estimate time to potential impact: So weeds	Plants   Plants   Mature:  1180  No  Clonal  re fruit   lealthy   supporting informatease. Refer to field manual mpact: N=Nil, L=Low, M=N	vites): 40 hours Extrapolation   Clumps  Juveniles:  189  Size  Vegetative  Fruit  Moderate   Moderate  al for list of threats & agenteed  Medium, H=High, E=Extre	No. of mir Estimate  (Refe Clonal stems   Seedlings:  19  Data attach  Flowerbud Dehisced fruit  Poor  hts. Specify agent wheme	Totals:    1388	thod: indicated in	viduals  Area of pop (m²) ote: Pls record coulot percentages) for quadrats (m²)  r 🖾 n flower:%  t 🔲  Potential Impact	Potential Threat Onset



Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite 🗌	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🛛	Seasonally
Ridge ☐	Laterite	0.400/ 57	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam	White	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	Consider Landform	. Clamant			
Wetland ☐	Specific Landform (Refer to field manual for a		<u> </u>		
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	Allocasuarina fraseria woodland	ana, Eucalyptus margin	ata subsp. marginata,	Banksia menziesii and l	Banksia attenuata
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland	Adenanthos cygnorum var. darlingensis and H	subsp. cygnorum tall sp bbertia hypericoides mi	arse shrubland over X d to low shrubland	anthorrhoea preissii, La	mbertia multiflora
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)	Dasypogon bromeliifo herb/sedgeland	olius, Patersonia occi	dentalis var. occiden	ntalis and Mesomelae	na pseudostygia
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
	most representative vegetation k guidelines – refer to field man			ructural Formations should foll	low 2009 Australian Soil
CONDITION OF HABITAT	: Pristine ☐ E	Excellent 🛛 Very god	od 🗌 Good 🗎	Degraded ☐ Comp	oletely degraded
COMMENT:					
FIRE HISTORY: La	st Fire: Season/Month:	Year: +10 <u>yrs</u>	Fire Intensity: Hig	h 🗌 Medium 🔲 Low 🗀	No signs of fire ⊠
FENCING:	Not required	Present Replace	e / repair 🔲	· · · · · · · · · · · · · · · · · · ·	th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quan	tity req'd:
	Please include recomme			ed actions - include	
date. Also include detail	s of additional data avail	able, and how to locate	it.)	-	
taken) then no authorisation/lie	ON / LICENCE No: FB6 cence is required. For further in carried out under authorisations/	formation on authorisation and	l licening requirements see the		•
SPECIMEN: Collect	ctors No: W/	A Herb. 🔲 Regional	Herb. District He	rb. 🗌 Other:	
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ Ph	oto ☐ GIS data ⊠	∏ Field notes ☐	Other:	
COPY SENT TO: Re	gional Office 🔲 🔻 🗅	istrict Office 🛚	Other:		
			A n	-	
			1 Inhouse		
Submitter of Record: And	gela Benkovic Role:	Snr. Botanist Signe	d:	Date: 19/0	6/2024



Version 1.4 March 2021

TAXON: Conospermun	n undulatum				TPF	L Pop. No:	18g
OBSERVATION DATE:	08/01/2024	CONSE	RVATION STATE	JS: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least nea	rest town/named locality, a	nd the distance and directi	on to that plac	ce):		
DFES fire training school							
					Reser	ve No: R 372	:60
DBCA DISTRICT: Swan Coa	stal	LGA: City of K	alamunda	Lar	nd manager	present:	
	·	M coords provided, <b>Zone</b> is		HOD USE		_	_
GDA94 / MGA94 🖂	•	DegMinSec ☐ U		PS 🗌		al GPS ⊠ M	•
AGD84 / AMG84 🗌	/ Northing: see	shapefile attached		satellites: _		Map used:	
WGS84 ☐ Long	g / Easting:		cont	ndary poly( ured:	gon	Map scale:	
Unknown 🗌	ZONE:		oup.	aroa.			
LAND TENURE:							
Nature reserve	Timber reserve	Private propert	у 🗆	Rail reserve	· 🗆	Shire road	reserve 🗌
National park 🔲	State forest	Pastoral leas	_	oad reserve	<del></del>	Other Crown	
Conservation park	Water reserve	UC	L SLK/Pole	to		Specify	other: <u>DFES</u>
AREA ASSESSMENT: Edge	e survey 📗 💮 Pa	rtial survey 📗 🛮 Fu	l survey ⊠ Area	observed	(m²): <u>52</u>	<u>ha</u>	
EFFORT: Time s	spent surveying (m	inutes): 45 hours	N. 6	11	100 m2		
	spent sarveying (in		No. of minute	es spent / 1	100 m		
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count me	thod: inc	<del></del> lividuals	
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate (Refer to	•	thod: inc		
POP'N COUNT ACCURACY: WHAT COUNTED:	Actual ⊠	Extrapolation   Clumps	Estimate (Refer to	Count me	thod: inc		
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	Actual 🖂  Plants 🖂  Mature:	Extrapolation   Clumps   Juveniles:	Estimate	Count me field manual f	thod: inc	<u>lividuals</u>	١٠
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive	Actual ⊠	Extrapolation   Clumps	Estimate (Refer to	Count me	thod: inc	<u>lividuals</u> Area of pop (m²)	
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	Actual  Plants  Mature:  1987	Clumps  Juveniles:  204	Estimate (Refer to (Refer to Seedlings: 538	Totals:	thod: inc	Area of pop (m²) Note: Pls record cou (not percentages) for	nt as numbers database.
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive	Actual 🖂  Plants 🖂  Mature:	Extrapolation   Clumps   Juveniles:	Estimate	Totals:	thod: inc	lividuals  Area of pop (m²)  Note: Pls record cou	nt as numbers database.
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead	Actual  Plants  Mature:  1987	Clumps  Juveniles:  204	Estimate (Refer to (Refer to Seedlings: 538	Totals:	thod: inc	Area of pop (m²) Note: Pls record cou (not percentages) for	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:	Actual  Plants  Mature:  1987  No	Extrapolation   Clumps   Juveniles:  204  Size  Vegetative   Vegetative	Estimate	Totals:  2729	thod: inc	Hividuals  Area of pop (m²)  Note: Pls record count (not percentages) for f quadrats (m²):  er ⊠	nt as numbers r database.
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immate	Actual  Plants  Mature:  1987  No Clonal  ure fruit	Extrapolation   Clumps   Juveniles:  204  Size   Vegetative  Fruit	Estimate	Totals:  2729	thod: inc for list)  otal area o  Flower	Area of pop (m²)  Note: Pls record cour (not percentages) for f quadrats (m²):  er 🏻	nt as numbers r database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu	Actual  Plants  Mature:  1987  No	Extrapolation   Clumps   Juveniles:  204  Size  Vegetative   Vegetative	Estimate	Totals:  2729	thod: inc	Area of pop (m²)  Note: Pls record cour (not percentages) for f quadrats (m²):  er 🏻	nt as numbers r database.
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immate	Actual  Plants  Mature:  1987  No Clonal  ure fruit	Extrapolation   Clumps   Juveniles:  204  Size   Vegetative  Fruit	Estimate	Totals:  2729	thod: inc for list)  otal area o  Flower	Area of pop (m²)  Note: Pls record cour (not percentages) for f quadrats (m²):  er 🏻	nt as numbers r database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and	Actual  Plants  Mature:  1987  No Clonal  ure fruit  Healthy  supporting inform	Extrapolation   Clumps  Juveniles:  204  Size  Vegetative  Fruit  Moderate   Moderate  Ination:	Estimate	Totals:  2729	thod: inc for list)  otal area o  Flower Percentage i  Senesce	Area of pop (m²)  Note: Pls record coul (not percentages) for f quadrats (m²):  er  in flower:%  The potential	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis	Actual Ac	Clumps	Estimate	Totals:  2729	thod: inc for list)  otal area o  Flow Percentage i  Senesce  Curren impact	Area of pop (m²)  Note: Pls record cour (not percentages) for f quadrats (m²):  er  in flower:%  Tt  Potential Impact	nt as numbers r database. :
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and	Actual	Clumps	Estimate	Totals:  2729	thod: inc for list)  otal area o  Flower Percentage i  Senesce	Area of pop (m²)  Note: Pls record coul (not percentages) for f quadrats (m²):  er  in flower:%  The potential	nt as numbers database.  Potential Threat
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: COMMENT: THREATS - type, agent and Eg clearing, too frequent fire, weed, dis Rate current and potential threat if	Actual	Clumps	Estimate	Count merifield manual f	thod: inc for list)  otal area o  Flow Percentage i  Senesce  Curren impact	Area of pop (m²)  Note: Pls record cour (not percentages) for f quadrats (m²):  er  in flower:%  Tt  Potential Impact	Potential Threat Onset
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: COMMENT:  THREATS - type, agent and Eg clearing, too frequent fire, weed, dis Rate current and potential threat is	Actual	Clumps	Estimate	Count merifield manual f	thod: inc for list)  otal area o  Flow Percentage i  Senesce  Curren impact	Area of pop (m²)  Note: Pls record cour (not percentages) for f quadrats (m²):  er  in flower:%  Tt  Potential Impact	Potential Threat Onset
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: COMMENT:  THREATS - type, agent and Eg clearing, too frequent fire, weed, dis Rate current and potential threat is	Actual	Clumps	Estimate	Count merifield manual f	thod: inc for list)  otal area o  Flow Percentage i  Senesce  Curren impact	Area of pop (m²)  Note: Pls record cour (not percentages) for f quadrats (m²):  er  in flower:%  Tt  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:  • Weeds	Actual	Clumps	Estimate	Count merifield manual f	thod: inc for list)  otal area o  Flow Percentage i  Senesce  Curren impact	Area of pop (m²)  Note: Pls record cour (not percentages) for f quadrats (m²):  er  in flower:%  Tt  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:  • Weeds	Actual	Clumps	Estimate	Count merifield manual f	thod: inc for list)  otal area o  Flow Percentage i  Senesce  Curren impact	Area of pop (m²)  Note: Pls record cour (not percentages) for f quadrats (m²):  er  in flower:%  Tt  Potential Impact	Potential Threat Onset



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HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🖂	Seasonally
Ridge ☐	Laterite	0.400/ 57	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat	Black 🗌	ridar 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	Crasifia Landform	. Class aut.			
Wetland □	Specific Landform (Refer to field manual for a				
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Allocasuarina fraseri	ana, Eucalyptus margin	ata subsp. marginata,	Banksia menziesii oper	n woodland
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);	Adenanthos cygnorum	subsp. cygnorum tall op	en shrubland		
<ol> <li>Open shrubland (Hibbertia sp., Acacia spp.);</li> <li>Isolated clumps of sedges (M.tetragona)</li> </ol>	Hibbertia hypericoide	es, Banksia dallanney	i and Stirlingia latifol	ia low shrubland	
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
	most representative vegetation k guidelines – refer to field man			ructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT	: Pristine 🗌 E	Excellent 🛛 Very god	od Good G	Degraded ☐ Com	pletely degraded
COMMENT:					
FIRE HISTORY: La	st Fire: Season/Month:	nov Year: 2022	Fire Intensity: Hig	h ☐ Medium ☐ Low ☑	No signs of fire ☐
FENCING:	Not required		e / repair 🔲		th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quar	ntity req'd:
	Please include recomme s of additional data avail			ed actions - include	
				•	
taken) then no authorisation/lie	ON / LICENCE No: FB6 cence is required. For further in carried out under authorisations/	formation on authorisation and	l licening requirements see the		
SPECIMEN: Collect	ctors No: W/	A Herb. Regional	Herb. District He	rb. 🗌 Other:	
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ Ph	oto ☐ GIS data ⊠	〗 Field notes □	Other:	
COPY SENT TO: Re	gional Office 🔲 🔻 🗅	istrict Office	Other:		_
			An A		
Submitter of Record: And	gela Renkovia - Pola:	Snr. Botanist Signe	d'Anhouse	Date: 19/0	6/2024
oubililitei oi Record: <u>An</u>	gela Delikuvic Kole:	Snr. Botanist Signe	u.	Date: 19/0	U/2U2 <del>4</del>



Version 1.4 March 2021

TAXON: Conospermun	n undulatum			TP	<b>PFL Pop. No:</b> 18h, 18t and 18y
OBSERVATION DATE:	07/11/2023	CONSE	RVATION STATU	S: VU	New population
OBSERVER/S: A.Ben	kovic and A.Slee			PHONI	E 62228361
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd	
EMAIL: angela.benkovic@	ghd.com				
DESCRIPTION OF LOCATIO DFES fire training school	<b>N</b> (Provide at least near	est town/named locality, ar	nd the distance and direction	on to that place):	
Ŭ.					
				Res	erve No: R 29815
DBCA DISTRICT: Perth Hills		LGA: City of K	alamunda	Land manag	er present:
	·	1 coords provided, <b>Zone</b> is egMinSec	<del>-</del>	HOD USED:	" LODO M . M . D
GDA94 / MGA94 🖂		shapefile attached	_		tial GPS Map Map
AGD84 / AMG84 L		snapenie attached		satellites: ndary polygon	Map used:
	g / Easting:			ured:	Map scale:
Unknown 🗌	ZONE:				
LAND TENURE:					о:
<u> </u>	Timber reserve	Private propert		Rail reserve	Shire road reserve  Other Crown reserve
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease UC		oad reserve to	Specify other: Agriculture Pro
					<u>board</u>
AREA ASSESSMENT: Edge EFFORT: Time s	e survey	•	I survey ⊠ Area	observed (m²): <u>′</u> es spent / 100 m²: _	<u>13ha</u>
POP'N COUNT ACCURACY:		Extrapolation	_	Count mothod:	
	_	. —	<del></del>	field manual for list)	<u>ndividuals</u>
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems		ı
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:	
Alive	590	7		597	Area of pop (m²):
Dead					Note: Pls record count as numbers (not percentages) for database.
QUADRATS PRESENT:	No	Size	Data attached	☐ Total area	of quadrats (m²):
Summary Quad. Totals: Alive					
REPRODUCTIVE STATE:	Clonal	Vegetative ⊠	Flowerbud		wer 🛛
	ure fruit	Fruit 🗆	Dehisced fruit		e in flower:%
CONDITION OF PLANTS: 1	Healthy ⊠	Moderate	Poor	Senes	cent
COMMENT.					
THREATS - type, agent and	• • •			Curre impa	
Eg clearing, too frequent fire, weed, dis Rate current and potential threat i		· ·	. , ,	relevant. (N-E	(L-E) Onset
Estimate time to potential impact:	•				(S-L)
• weeds					
•					
•					
					_



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HABITAT INFORMATIO	ON:				
LANDFORM:	<b>ROCK TYPE:</b>	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy Ioam 🔲	Brown 🖂	Seasonally
Ridge □	Laterite	0.400/	Loam 🗌	Yellow □	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently inundated ☐
Slope	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	riuai 🔲
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression		<b>-</b>			
Wetland	Specific <b>Landforr</b> (Refer to field manual for a				
CONDITION OF SOIL:	Dry 🖾	Moist	Waterlogged □	Inundated	
VEGETATION CLASSIFICATION*:		riana, Eucalyptus margin		Banksia attenuata and	Banksia menziesii
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);		and Hibbertia hypericoid	es mid to low open shr	ubland	
<ol> <li>Open shrubland (Hibbertia sp., Acacia spp.);</li> <li>Isolated clumps of sedges (M.tetragona)</li> </ol>	Mesomelaena pseud	dostygia and Cyathocl	naeta equitans sedge	eland	
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
Please record up to four of the and Land Survey Field Handbook		n layers (with up to three domin nual for further information and		ructural Formations should fol	low 2009 Australian Soil
CONDITION OF HABITAT	<u></u>	Excellent ⊠ Very god		Degraded	pletely degraded
COMMENT:		Zaconom Za very go.	24 M 6004 M	Bogradou 🗀 Com	protoly dograded
FIRE HISTORY: La	st Fire: Season/Month:	Year: +10yrs	Fire Intensity: Hig	h 🗌 Medium 🔲 Low 🗆	No signs of fire ⊠
FENCING:	Not required	Present Replac	e / repair 🔲	Required Lengt	th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition 🔲	Required  Quan	tity req'd:
		ended management acti ilable, and how to locate		ed actions - include	
adio. 7 libo infoldad acidii	o or additional data ava	mable, and non to locate	,	-	
	cence is required. For further i	362000080-3 and TFL 2 information on authorisation and s/licences should be recorded a	licening requirements see the		
SPECIMEN: Collect	tors No: W	/A Herb. Regional	Herb. District He	rb. Other:	_
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map [	☐ Mudmap ☐ P	hoto ☐ GIS data ⊠	☐ Field notes	Other:	
COPY SENT TO: Re	gional Office 🔲 🔠	District Office	Other:		
			Poulant		

Signed:

Role: Snr. Botanist

Submitter of Record: Angela Benkovic

Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermur	n undulatum				TPF	I DAN NA'	18i and 18k
OBSERVATION DATE:	21/02/2024	CONSEI	RVATION ST	TATUS: VU		New populat	tion 🗌
OBSERVER/S: A.Ber	kovic and A.Sleep				PHONE	62228361	
ROLE: Snr. Botanists		ORGAN	ISATION: (	GHD Pty Ltd	_		
EMAIL: angela.benkovic(	@ghd.com						
DESCRIPTION OF LOCATION	(Provide at least nearest to	own/named locality, and	d the distance and	direction to that pla	ace):		
Pioneer Park Bushland	•	,		·	, <u> </u>		
					Reser	ve No: R 411	156
DBCA DISTRICT: Perth Hills	s L	.GA: City of Kal	lamunda	Li	and manager	present:	
DATUM: COC	ORDINATES: (If UTM coo	•		METHOD US	ED:		
Del GDA94 / MGA94 □	cDegrees ☐ DegM	/linSec ☐ UTI	VIs ⊠	GPS □	Differentia	alGPS⊠ M	Лар □
AGD84 / AMG84 Lat	t / Northing: see sha	apefile attached		No. satellites:		Map used:	
	g / Easting:			Boundary poly		Map scale:	
Unknown 🗌				captured:			
LAND TENURE:	ZONE:						
Nature reserve	Timber reserve □	Private property	П	Rail reserv	re □	Shire road	d reserve
National park	State forest	Pastoral lease		RWA road reserv	- <b>-</b>	Other Crown	
Conservation park 🔲	Water reserve	UCL	☐ SLK/Po	le to		S	Specify other:
AREA ASSESSMENT: Edg	e survey  Partial	survey  Full	survey 🛚	Area observe	d (m²): <u>46</u> l	<u>ha</u>	
	spent surveying (minute	es): <u>32 hours</u>	No. of n	ninutes spent /	100 m <sup>2</sup> :		
POP'N COUNT ACCURACY	: Actual ⊠ Ext	rapolation	Estimate (R	Count me Refer to field manua	ind	<u>lividuals</u>	
WHAT COUNTED:	Plants 🖂 C	lumps 🗌	Clonal stems				
TOTAL POP'N STRUCTURE:	Mature: J	luveniles:	Seedlings:	Totals:			
Alive	771 4	<b>!</b> 7	1	819	A	Area of pop (m²)	):
Dead						Note: Pls record cou not percentages) for	
QUADRATS PRESENT:	No. Siz	ze	Data atta	ched $\square$	,	f quadrats (m²):	
Summary Quad. Totals: Alive						, ,	
REPRODUCTIVE STATE:	Clonal	getative 🏻	Flowerbu	 ud П	Flowe	er 🛛	
Immat	ure fruit 🗌	Fruit 🗌	Dehisced fru	_	Percentage i	<del></del>	6
CONDITION OF PLANTS:	Healthy  M	oderate 🛚	Poo	or 🗌	Senescer	nt 🔲	
COMMENT: most plan	nts and vege look drought	affected					
THREATS - type, agent and	supporting information	on.			Current	t Potential	Potential
Eg clearing, too frequent fire, weed, di	• •		ts. Specify agent	where relevant.	impact		Threat
Rate current and potential threat	•				(N-E)	(L-E)	Onset (S-L)
Estimate time to potential impact	: S=Short (<12mths), M=Medi	um (<5yrs), L=Long (5y	rs+)				()
• weeds						.	
drought							
•						_	
•							
					-		



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HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally
Ridge □	Laterite	o 400/ M	Loam	Yellow □	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White □	Permanently
Slope	Limestone	10-30%	Light clay	Grey ⊠	inundated
Flat ⊠	Quartz 🗌	30-50%	Peat □	Black	Tidal 🗌
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line	, ,		, ,	, ,	
Closed depression					
Wetland □	Specific Landforr				
CONDITION OF SOIL:	(Refer to field manual for a Dry ⊠	additional values)  Moist	Waterlagged	Inundated	
	ыу 🖂	MOIST 🔲	Waterlogged	inundated 🗀	
VEGETATION CLASSIFICATION*:		iana and Eucalyptus ma			
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland	Xanthorrhoea preissii a	and Lambertia multiflora	var. darlingensis mid o	pen shrubland	
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)	Hibbertia hypericoide	es low shrubland			
ASSOCIATED	Mesomelaena pseudos	stygia, Desmocladus fas	ciculatus and Dasypog	on obliquifolius sedgela	and/ herbland
SPECIES: Other (non-dominant) spp					
Please record up to four of the				ructural Formations should foll	low 2009 Australian Soil
and Land Survey Field Handboo	k guidelines – refer to field ma	nual for further information and	structural formation table.		
CONDITION OF HABITAT COMMENT:	: Pristine □	Excellent	od ⊠ Good □	Degraded ☐ Comp	oletely degraded
FIRE HISTORY: La	st Fire: Season/Month:	Year: +10yrs	Fire Intensity: High	h 🗌 Medium 📗 Low 🗀	No signs of fire ⊠
FENCING:	Not required ☐	Present Replace	e / repair 🔲	Required Lengt	th req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replace	e / reposition 🔲	Required  Quan	tity req'd:
OTHER COMMENTS: ( date. Also include detail				ed actions - include	
date. Also include detail	s or additional data avai	liable, and now to locate	п.)	-	
	cence is required. For further i	62000080-3 and TFL 2 nformation on authorisation and s/licences should be recorded a	licening requirements see th		
SPECIMEN: Collect	tors No: W	'A Herb. Regional	Herb. District Her	rb. Other:	
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ Pl	hoto ☐ GIS data ⊠	☐ Field notes	Other:	
COPY SENT TO: Re	gional Office [	District Office	Other:		
			For how	- -	

Signed:

Role: Snr. Botanist

Submitter of Record: Angela Benkovic

Date: 19/06/2024



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TPI	FL Pop. No:	18j
OBSERVATION DATE:	25/10/2023	CONSE	RVATION STAT	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHE	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least near	est town/named locality, ar	d the distance and direc	tion to that pla	ce):		
Roe Hwy, adjacent to Pioneer	Park Bushland						
					Rese	erve No:	
DBCA DISTRICT: Perth Hills			alamunda		J	r present:	
	·	A coords provided, <b>Zone</b> is	<u> </u>	THOD USE			. —
GDA94 / MGA94 🖂		egMinSec UT		GPS □		ial GPS ⊠ N	•
AGD84 / AMG84 ☐ Lat	/ Northing: see	shapefile attached		. satellites:		Map used:	
WGS84 ☐ Long	g / Easting:			undary poly otured:	rgon	Map scale:	
Unknown 🗌	ZONE:			rtai oa.			
LAND TENURE:							
Nature reserve	Timber reserve	Private property	<i>,</i> 🗆	Rail reserve	e 🗌	Shire road	d reserve 🔲
National park 🔲	State forest	Pastoral lease		road reserv			n reserve 🗌
Conservation park	Water reserve	UCI	_ ☐ SLK/Pole _	to		S	Specify other:
AREA ASSESSMENT: Edge	e survey 📗 🏻 Pa	rtial survey 📗 🛮 Full	survey 🛛 Are	a observed	I (m²): <u>1</u>	.5ha	
EFFORT: Time s	spent surveying (mi	nutes): 2 hours	No. of minu	tes spent /	100 m <sup>2</sup> : _		
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate	Count me	ın	<u>idividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	o field manual	for list)		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	3	1	- Coodinigo.	4		Area of pop (m²	١٠
		<u> </u>		7		Note: Pls record cou	
Dead				<u> </u>		(not percentages) for	r database.
QUADRATS PRESENT:	No	Size	Data attached	<u>                                     </u>	Total area	of quadrats (m²)	:
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal	Vegetative ⊠ Fruit □	Flowerbud			ver 🛛	/
	ıre fruit 🗌		Dehisced fruit		Percentage	_	<u>6</u>
	Healthy ⊠	Moderate	Poor [	J	Senesc	ent 🔲	
COMMENT:							
THREATS - type, agent and	•				Curre		Potential Threat
Eg clearing, too frequent fire, weed, dis Rate current and potential threat i				e relevant.	impac (N-E)		Onset
Estimate time to potential impact:	•	<del>-</del>			` '		(S-L)
• weeds							
road						_	
• rubbbish							
						_	
•							
					<del> </del>	1	1



Version 1.4 March 2021

HABITAT INFORMATION	ON:						
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:		
Crest	Granite	(on soil surface; eg	Sand 🗵	Red □	Well drained ⊠		
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally		
Ridge □	Laterite	0.400/	Loam	Yellow □	inundated		
Outcrop	Ironstone	0-10%	Clay loam 🔲	White □	Permanently		
Slope	Limestone	10-30%	Light clay	Grey ⊠	inundated		
Flat ⊠	Quartz 🗌	30-50%	Peat □	Black	Tidal 🗌		
Open depression	Specify other:	50-100%	Specify other:	Specify other:			
Drainage line	, ,		, ,	, ,			
Closed depression							
Wetland □	Specific Landforr						
CONDITION OF SOIL:	(Refer to field manual for a Dry ⊠	additional values)  Moist	Waterlagged	Inundated			
	ыу 🖂	MOIST 🔲	Waterlogged	inundated 🗀			
VEGETATION CLASSIFICATION*:		iana and Eucalyptus ma					
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland	Xanthorrhoea preissii a	and Lambertia multiflora	var. darlingensis mid o	pen shrubland			
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)	Hibbertia hypericoides low shrubland						
ASSOCIATED	modernolatria podadociygia, boomboladad ladolotiatad ana badypogon obilqanonad doagolana, norbiana						
SPECIES: Other (non-dominant) spp							
Please record up to four of the	most representative vegetation	n layers (with up to three domin	ant species in each layer). Sti	ructural Formations should foll	low 2009 Australian Soil		
and Land Survey Field Handboo	k guidelines – refer to field ma	nual for further information and	structural formation table.				
CONDITION OF HABITAT COMMENT:	: Pristine □	Excellent	od ⊠ Good □	Degraded	oletely degraded		
<del></del>	st Fire: Season/Month:	Year: +10yrs	Fire Intensity: High	h   Medium   Low	No signs of fire ⊠		
FENCING:	Not required □	Present Replac	e / repair 🔲	Required Lengt	th req'd:		
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quan	tity req'd:		
OTHER COMMENTS: (				ed actions - include			
date. Also include detail	s of additional data avai	lable, and how to locate	it.)	-			
	cence is required. For further i	62000080-3 and TFL 2 nformation on authorisation and s/licences should be recorded a	licening requirements see th				
SPECIMEN: Collect	tors No: W	'A Herb. Regional	Herb. District Her	rb. Other:			
LODGEMENT: WA H	erb Lodgement No:						
ATTACHED: Map	☐ Mudmap ☐ Pl	hoto ☐ GIS data ⊠	☐ Field notes	Other:			
COPY SENT TO: Re	gional Office 🗌 🏻 🏻 [	District Office	Other:				
			Poshow	a .			

Signed:

Role: Snr. Botanist

Submitter of Record: Angela Benkovic



Version 1.4 March 2021

TAXON: Conospermun	n undulatum				TPF	L Pop. No:	18n
OBSERVATION DATE:	25/10/2023	CONSI	<b>ERVATION STAT</b>	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	<u>———</u> эр		<u></u>	PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHE	Pty Ltd	•		
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least nea	arest town/named locality, a	nd the distance and direc	tion to that pla	ce):		
Roe Hwy, near Dundas nature					-		
					Resei	ve No:	
DBCA DISTRICT: Perth Hills		LGA: City of K	alamunda	La	nd manager	present:	
	· ·	M coords provided, <b>Zone</b> is		THOD USE		_	_
GDA94 / MGA94 🖂	_	DegMinSec U		GPS □		al GPS ⊠ M	•
AGD84 / AMG84 🗌	/ Northing: see	e shapefile attached		. satellites:		Map used:	
WGS84 ☐ Long	g / Easting:		oor	undary poly otured:	gon	Map scale:	
Unknown 🗌	ZONE:			rtai ou.			
LAND TENURE:							
Nature reserve	Timber reserve	Private propert	ry 🗆	Rail reserve	e 🗆	Shire road	I reserve
National park 🔲	State forest	Pastoral leas		road reserve	_	Other Crown	
Conservation park	Water reserve	UC	L SLK/Pole _	to		S	pecify other:
AREA ASSESSMENT: Edge	e survey 📗 💮 Pa	artial survey 📗 🛮 Fu	ll survey ⊠ Are	a observed	(m²): <u>0.</u>	<u>5ha</u>	
AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☐ Area observed (m²): 0.5ha  EFFORT: Time spent surveying (minutes): 1 hours No. of minutes spent / 100 m²:							
EFFORI:	spenii surveying (m	inutes): <u>i nours</u>	No. of minu	tes spent / '	100 m²:		
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count me	thod: inc	 lividuals	
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate (Refer	· ·	thod: inc		
POP'N COUNT ACCURACY: WHAT COUNTED:	Actual ⊠	Extrapolation   Clumps	Estimate (Refer to Clonal stems (	Count me	thod: inc		
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	Actual 🖂  Plants 🖂  Mature:	Extrapolation   Clumps   Juveniles:	Estimate (Refer	Count me to field manual	ethod: ind	<u>lividuals</u>	١.
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive	Actual ⊠	Extrapolation   Clumps	Estimate (Refer to Clonal stems (	Count me	othod: inc	lividuals Area of pop (m²)	
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	Actual  Plants  Mature:	Clumps  Juveniles:  4	Estimate (Refer to (Refer	Count me o field manual  Totals:	ethod: inc	Area of pop (m²) Note: Pls record cour (not percentages) for	nt as numbers database.
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive	Actual 🖂  Plants 🖂  Mature:	Extrapolation   Clumps   Juveniles:	Estimate (Refer to Clonal stems (	Count me o field manual  Totals:	ethod: inc	lividuals  Area of pop (m²)  Note: Pls record cou	nt as numbers database.
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead	Actual  Plants  Mature:	Clumps  Juveniles:  4	Estimate (Refer to (Refer	Count me o field manual  Totals:	ethod: inc	Area of pop (m²) Note: Pls record cour (not percentages) for	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:	Actual  Plants  Mature:  14  No	Extrapolation   Clumps   Juveniles:   4  Size   Vegetative   Vegetative	Estimate (Refer to (Refer	Count me o field manual  Totals:  18	otal area o	Area of pop (m²)  Note: Pls record cour  (not percentages) for  f quadrats (m²):	nt as numbers · database. ·
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu	Actual  Plants  Mature:  14  No Clonal  ure fruit	Extrapolation   Clumps   Juveniles:   4  Size   Vegetative  Fruit   Fruit	Estimate (Refer to (Refer	Count me of field manual  Totals:  18	otal area of Percentage	Area of pop (m²)  Note: Pls record coul  (not percentages) for  f quadrats (m²):  er   in flower:%	nt as numbers · database. ·
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu	Actual  Plants  Mature:  14  No	Extrapolation   Clumps   Juveniles:   4  Size   Vegetative   Vegetative	Estimate (Refer to (Refer	Count me of field manual  Totals:  18	otal area o	Area of pop (m²)  Note: Pls record coul  (not percentages) for  f quadrats (m²):  er   in flower:%	nt as numbers · database. ·
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu	Actual  Plants  Mature:  14  No Clonal  ure fruit	Extrapolation   Clumps   Juveniles:   4  Size   Vegetative  Fruit   Fruit	Estimate (Refer to (Refer	Count me of field manual  Totals:  18	otal area of Percentage	Area of pop (m²)  Note: Pls record coul  (not percentages) for  f quadrats (m²):  er   in flower:%	nt as numbers · database. ·
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and	Actual  Plants  Mature:  14  No Clonal  Ine fruit  Healthy  supporting inform	Clumps	Estimate (Refer to (Refer	Count me to field manual  Totals:  18	otal area of Senesce  Curren	Area of pop (m²)  Note: Pls record coul (not percentages) for f quadrats (m²): er  in flower:%  nt  Potential	nt as numbers database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis	Actual  Plants  Mature:  14  No Clonal  Ine fruit  Healthy  supporting informations and the search are searched as a supporting information and search are searched as a supporting information	Clumps	Estimate	Count me to field manual  Totals:  18	for list) income for list)  Total area of Flow Percentage  Senesce  Currentimpact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²): er  in flower:%  nt  Potential Impact	nt as numbers r database. :
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and	Actual	Clumps	Estimate (Refer to (Refer	Count me to field manual  Totals:  18	otal area of Senesce  Curren	Area of pop (m²)  Note: Pls record coul (not percentages) for f quadrats (m²): er  in flower:%  nt  Potential	nt as numbers database.  Potential Threat
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: COMMENT: THREATS - type, agent and Eg clearing, too frequent fire, weed, dis Rate current and potential threat if	Actual	Clumps	Estimate (Refer to (Refer	Count me to field manual  Totals:  18	for list) income for list)  Total area of Flow Percentage  Senesce  Currentimpact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²): er  in flower:%  nt  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:	Actual	Clumps	Estimate (Refer to (Refer	Count me to field manual  Totals:  18	for list) income for list)  Total area of Flow Percentage  Senesce  Currentimpact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²): er  in flower:%  nt  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:  • Weeds	Actual	Clumps	Estimate (Refer to (Refer	Count me to field manual  Totals:  18	for list) income for list)  Total area of Flow Percentage  Senesce  Currentimpact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²): er  in flower:%  nt  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:  • weeds  road	Actual	Clumps	Estimate (Refer to (Refer	Count me to field manual  Totals:  18	for list) income for list)  Total area of Flow Percentage  Senesce  Currentimpact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²): er  in flower:%  nt  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:  • weeds  road	Actual	Clumps	Estimate (Refer to (Refer	Count me to field manual  Totals:  18	for list) income for list)  Total area of Flow Percentage  Senesce  Currentimpact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²): er  in flower:%  nt  Potential Impact	Potential Threat Onset



Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	<b>ROCK TYPE</b> :	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand 🗵	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge □	Laterite	0.400/ 🔯	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10% 🖾	Clay loam 🔲	White	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal 🗌
Flat ⊠	Quartz 🗌	30-50% □ 50-100% □	Peat	Black ☐	riddi 🗖
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression $\square$	Specific <b>Landform</b>	Flement:	_		
Wetland $\square$	(Refer to field manual for a		<u></u>		
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	Allocasuarina fraseria woodland	ana, Eucalyptus margin	ata subsp. marginata, l	Banksia menziesii and l	Banksia attenuata
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland	Adenanthos cygnorum	subsp. cygnorum and X	anthorrhoea preissii ta	ll to mid open shrublan	d
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)	Hibbertia hypericoide	s low shrubland			
ASSOCIATED	Burchardia congesta, P	atersonia occidentalis v	ar. occidentalis and Da	asypogon bromeliifolius	open herbland
SPECIES: Other (non-dominant) spp					
Please record up to four of the	most representative vegetation	layers (with up to three domination	ant species in each layer). Str	ructural Formations should foll	low 2009 Australian Soil
and Land Survey Field Handboo	k guidelines – refer to field man	ual for further information and	structural formation table.		
CONDITION OF HABITAT COMMENT:	: Pristine □ E	Excellent	od ⊠ Good □	Degraded ☐ Comp	oletely degraded
FIRE HISTORY: La	st Fire: Season/Month:	Year: +10yrs	Fire Intensity: High	h 🗌 Medium 🔲 Low 🗀	No signs of fire ⊠
FENCING:	Not required ☐	Present Replace	e / repair 🔲	Required  Lengt	th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quan	tity req'd:
OTHER COMMENTS: (				ed actions - include	
date. Also include detail	s of additional data avail	able, and how to locate	it.)	-	
	ON / LICENCE No: FB6 cence is required. For further in arried out under authorisations/	formation on authorisation and	l licening requirements see th		'
		A Herb. Regional			
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map		oto ☐ GIS data ⊠	了 Field notes □	Other:	
COPY SENT TO: Re	· <u> </u>	istrict Office	Other:		
			81 1		
			Por house	7	

Signed:

Role: Snr. Botanist

Submitter of Record: Angela Benkovic



Version 1.4 March 2021

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <a href="https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants">www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants</a>

TAXON: Conospermum	ı undulatum				TPF	L Pop. No:	18p
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STAT	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHE	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least near	est town/named locality, ar	d the distance and direc	tion to that pla	ce):		
Roe Hwy, near Dundas road n	ature reserve						
					Rese	rve No:	
DBCA DISTRICT: Perth Hills		LGA: City of Ka			ŭ	r present:	
	•	1 coords provided, <b>Zone</b> is		THOD USE			. –
GDA94 / MGA94 🖂	_	egMinSec UT		GPS □		al GPS ⊠ N	-
AGD84 / AMG84 ☐ Lat	/ Northing: see	shapefile attached		. satellites:		Map used:	
WGS84 ☐ Long	g / Easting:			undary poly otured:	gon	Map scale:	
Unknown 🗌	ZONE:			rai oa.			
LAND TENURE:							
Nature reserve ☐	Timber reserve	Private property	<i>,</i> 🗆	Rail reserve	e 🗌	Shire road	reserve 🗌
National park	State forest	Pastoral lease		road reserve	_	Other Crowr	_
Conservation park	Water reserve	UCI	SLK/Pole _	to		S	pecify other:
AREA ASSESSMENT: Edge	e survey 📗 🛮 Pai	tial survey 📗 🛮 Full	survey 🛛 Are	a observed	(m²): <u>1</u> 1	<u>na</u>	
EFFORT: Time s	pent surveying (mi	nutes): 2 hours	No. of minu	tes spent /	100 m²:		
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate	Count me	ın	<u>dividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	to field manual	for list)		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	35	16	Goodinigo.	51		Area of pop (m²	١٠
		10		01		Note: Pls record cou	
Dead				<u></u>		(not percentages) for	database.
QUADRATS PRESENT:	No	Size	Data attached	<u> </u>	otal area	of quadrats (m²)	<u> </u>
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal	Vegetative ⊠ Fruit □	Flowerbud			/er⊠	,
	re fruit		Dehisced fruit		Percentage	_	0
CONDITION OF PLANTS: 1-1	lealthy ⊠	Moderate	Poor [	J	Senesce	ent ∐	
COMMENT.							
THREATS - type, agent and	•				Currer		Potential Threat
Eg clearing, too frequent fire, weed, dis Rate current and potential threat i				e relevant.	(N-E)		Onset
Estimate time to potential impact:	•	<del>-</del>					(S-L)
• weeds							
road					T	_	
• rubbbish							
					<u> </u>	-	
•							
					<b>T</b>	_	

Sheet No.:\_

Record Entered in Database

Record entered by:\_



Version 1.4 March 2021

HABITAT INFORMATION	ON:						
LANDFORM:	<b>ROCK TYPE:</b>	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:		
Crest □	Granite □	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠		
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally		
Ridge ☐	Laterite	0.400/ 57	Loam	Yellow	inundated		
Outcrop	Ironstone □	0-10%	Clay loam	White	Permanently inundated ☐		
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal		
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	ridai 🗀		
Open depression	Specify other:	50-100%	Specify other:	Specify other:			
Drainage line							
Closed depression	Consider Landform	. Classaut.					
Wetland	Specific <b>Landform</b> (Refer to field manual for a						
CONDITION OF SOIL:	Dry 🛛	Moist	Waterlogged	Inundated			
VEGETATION CLASSIFICATION*:	1. Banksia menziesii, B	anksia attenuata and Al	locasuarina fraseriana	woodland			
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	Adenanthos cygnorum	subsp. cygnorum, Jacks	sonia floribunda and X	anthorrhoea preissii tall	to mid shrubland		
<ol> <li>Open shrubland (Hibbertia sp., Acacia spp.);</li> <li>Isolated clumps of sedges (M.tetragona)</li> </ol>	nd (cacia spp.); Patersonia occidentalis var. occidentalis, Dasypogon obliquifolius and Mesomelaena pseudostygia						
ASSOCIATED							
SPECIES: Other (non-dominant) spp							
` ' ' ' ' '	most representative vegetation <i>k</i> guidelines – refer to field man			ructural Formations should fol	llow 2009 Australian Soil		
CONDITION OF HABITAT	: Pristine ☐ E	Excellent  Very goo	od ⊠ Good □	Degraded ☐ Com	pletely degraded		
COMMENT:		, ,			. , ,		
FIRE HISTORY: La	st Fire: Season/Month:	Year: +10yrs	Fire Intensity: Hig	h 🗌 Medium 🔲 Low 🗀	No signs of fire ⊠		
FENCING:	Not required ☐	Present  Replace	e / repair 🔲	Required Leng	th req'd:		
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quar	ntity req'd:		
	Please include recomme s of additional data avail			ed actions - include			
date. 7 libe molade detail	o or additional data avail	able, and new to locate	,	-			
taken) then no authorisation/lie	ON/LICENCE No: FB6 cence is required. For further in arried out under authorisations/	formation on authorisation and	l licening requirements see the		· ·		
SPECIMEN: Collect	tors No: W	A Herb. 🔲 Regional I	Herb. District He	rb. 🗌 Other:			
LODGEMENT: WA H	erb Lodgement No:						
ATTACHED: Map	☐ Mudmap ☐ Ph	oto ☐ GIS data ⊠	Field notes □	Other:	_		
COPY SENT TO: Re	gional Office 🔲 🔻 🗅	istrict Office	Other:				
Pouls -							
Submitter of Record: And	gela Benkovic Role:	Snr. Botanist Signed	d:	Date: 24/0	6/2024		



Version 1.4 March 2021

TAXON: Conospermun	n undulatum				TPF	L Pop. No:	18q
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STAT	us: VU		New populat	ion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p	<u> </u>		PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd	•		
EMAIL: angela.benkovic@	@ghd.com						
DESCRIPTION OF LOCATIO	N (Provide at least near	est town/named locality, ar	d the distance and direc	tion to that pla	ce):		
Dundas road nature reserve							
						rve No:	
DBCA DISTRICT: Perth Hills		LGA: City of Ka			•	r present:	
	·	A coords provided, <b>Zone</b> is egMinSec UT	<u> </u>	THOD USE GPS □		al GPS ⊠ M	1ар <u>□</u>
GDA94 / MGA94 🖂	_	shapefile attached					•
AGD84 / AMG84 📋		Shapelile attached		satellites: undary poly		Map used:	
	g / Easting:		can	tured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:	_						
Nature reserve  ⊠ National park  □	Timber reserve  State forest	Private property Pastoral lease		Rail reserve		Shire road Other Crown	I reserve
Conservation park	Water reserve		SLK/Pole		_		pecify other:
· ·		🗆					
AREA ASSESSMENT: Edgi EFFORT: Time s	e survey	•	survey ⊠ Are No. of minut			<u>na</u>	
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count me	thod:		
			_	o field manual	ın	<u>dividuals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	İ	Ĩ		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	8			8		Area of pop (m²)	):
Dead						Note: Pls record cour (not percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	т	otal area	of quadrats (m²):	
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal	Vegetative ⊠	Flowerbud	=		ver ⊠	
Immati	ure fruit 🗌	Fruit 🗌	Dehisced fruit	]	Percentage	in flower:%	)
CONDITION OF PLANTS:	Healthy ⊠	Moderate	Poor		Senesce	ent 🗌	
COMMENT:							
THREATS - type, agent and	supporting inform	nation:			Currer		Potential
Eg clearing, too frequent fire, weed, dis				e relevant.	impac (N-E)	_	Threat Onset
Rate current and potential threat Estimate time to potential impact:					(,	ν= -,	(S-L)
• weeds	•		•				
					<b>—</b>	_	
•							
					<b> </b>	-	
•							
						_	



Version 1.4 March 2021

HABITAT INFORMATIO	DN:						
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:		
Crest	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠		
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally		
Ridge □	Laterite	o 400/ M	Loam	Yellow □	inundated		
Outcrop	Ironstone	0-10%	Clay loam 🔲	White □	Permanently		
Slope	Limestone	10-30%	Light clay	Grey ⊠	inundated 🗌		
Flat ⊠	Quartz 🗌	30-50%	Peat □	Black	Tidal □		
Open depression	Specify other:	50-100%	Specify other:	Specify other:			
Drainage line	, ,		. ,	, ,			
Closed depression							
Wetland □	Specific Landform						
CONDITION OF SOIL:	(Refer to field manual for a Dry ⊠	additional values)  Moist	Waterlogged □	Inundated			
	ыу 🖂	WOIST [	watenogged 🖂	iliulidated 🔟			
VEGETATION CLASSIFICATION*:		Banksia attenuata and A					
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland		subsp. cygnorum, Jack		<u> </u>			
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)	(Hibbertia sp., Acacia spp.); Patersonia occidentalis var. occidentalis, Dasypogon obliquifolius and Mesomelaena pseudostygia 3. Isolated clumps of open sedge/herbland						
ASSOCIATED SPECIES:							
Other (non-dominant) spp							
Please record up to four of the and Land Survey Field Handbook				ructural Formations should fol	low 2009 Australian Soil		
CONDITION OF HABITAT	_	Excellent		Degraded ☐ Com	pletely degraded		
COMMENT:	. Thathe	Executerit		Degraded 🖂 Com	pictory degraded		
	st Fire: Season/Month:	Year: +10yrs	Fire Intensity: High	h 🗌 Medium 🔲 Low 🗀	No signs of fire ⊠		
FENCING:	Not required □	Present Replace	e / repair 🔲	Required Lengt	th req'd:		
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quan	tity req'd:		
OTHER COMMENTS: (	Please include recomm	ended management acti	ons and/or implemente	nd actions - include			
date. Also include detail				a actions - include			
				- -			
FLORA AUTHORISATI	ON / LICENCE No: FR	62000080-3 and TEL 3	2324-0083 Note if only o	observing plants (i.e. no speci	mens or plant matieral is		
taken) then no authorisation/lid	ence is required. For further i	nformation on authorisation and s/licences should be recorded a	d licening requirements see th	e Threatened Flora and Wildl			
SPECIMEN: Collect	tors No: W	/A Herb. ☐ Regional	Herb. District Her	b. Other:			
LODGEMENT: WA H	erb Lodgement No:						
ATTACHED: Map [	☐ Mudmap ☐ Pl	hoto 🗌 🛮 GIS data 🗵	☐ Field notes ☐	Other:			
COPY SENT TO: Re	gional Office 🔲 💮 I	District Office	Other:				
			For bon	7			

Signed:

Role: Snr. Botanist

Submitter of Record: Angela Benkovic



Version 1.4 March 2021

TAXON: Conospermum	า undulatum				TPF	L Pop. No:	18r
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STAT	US: VU		New populat	ion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGAN	NISATION: GHE	Pty Ltd	<del>-</del>		
EMAIL: angela.benkovic@	ฏghd.com						
DESCRIPTION OF LOCATIO	N (Provide at least near	est town/named locality, an	d the distance and direc	tion to that pla	ce):		
Dundas road nature reserve							
						rve No:	
DBCA DISTRICT: Perth Hills		LGA: City of Ka			•	r present:	
	·	I coords provided, <b>Zone</b> is egMinSec UT	<u> </u>	THOD USE GPS □		al GPS ⊠ M	lap □
GDA94 / MGA94 🗌	•	shapefile attached		. satellites:		Map used:	•
AGD84 / AMG84		Shapeine attaches		. sateilites. undary poly			
WGS84 ☐ Long Unknown ☐	g / Easting:		con	otured:		Map scale:	
_	ZONE:						
LAND TENURE:		<b>-</b> · · · · ·		··		21.1	
Nature reserve ⊠ National park □	Timber reserve ☐ State forest ☐	Private property Pastoral lease		Rail reserve road reserve		Shire road Other Crown	reserve  reserve
Conservation park	Water reserve		<del></del>	to			pecify other:
AREA ASSESSMENT: Edge	S CURVOV □ Pau	tial curvoy 🖂 — Full	ourvov M Are	o observed	1 /m²\· 0	5ha	
-	e survey	•	No. of minu			<u> </u>	
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count me	thod:	<del></del> dividuals	
	_	_		o field manual	for list)	<u>uiviuuais</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	1	ĺ		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	17	3		20		Area of pop (m²)	
Dead						Note: Pls record cour (not percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	<u> </u>	otal area	of quadrats (m²):	
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal □ ure fruit □	Vegetative ⊠ Fruit □	Flowerbud	_		ver ⊠ in flower: %	
		_	Dehisced fruit		Percentage		)
CONDITION OF PLANTS: 1-1	Healthy 🛚	Moderate	Poor [	1	Senesce	ent 🗀	
						1	
THREATS - type, agent and	•				Currer		Potential Threat
Eg clearing, too frequent fire, weed, dis Rate current and potential threat i				e relevant.	(N-E)	_	Onset
Estimate time to potential impact:	S=Short (<12mths), M=N	Medium (<5yrs), L=Long (5	yrs+)				(S-L)
• weeds							
•							
•							
							·



Version 1.4 March 2021

HABITAT INFORMATIO	DN:						
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:		
Crest	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠		
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally		
Ridge □	Laterite	o 400/ M	Loam	Yellow □	inundated		
Outcrop	Ironstone	0-10%	Clay loam 🔲	White □	Permanently		
Slope	Limestone	10-30%	Light clay	Grey ⊠	inundated 🗌		
Flat ⊠	Quartz 🗌	30-50%	Peat □	Black	Tidal □		
Open depression	Specify other:	50-100%	Specify other:	Specify other:			
Drainage line	, ,		. ,	, ,			
Closed depression							
Wetland □	Specific Landform						
CONDITION OF SOIL:	(Refer to field manual for a Dry ⊠	additional values)  Moist	Waterlogged □	Inundated			
	ыу 🖂	WOIST [	watenogged 🖂	iliulidated 🔟			
VEGETATION CLASSIFICATION*:		Banksia attenuata and A					
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland		subsp. cygnorum, Jack		<u> </u>			
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)	(Hibbertia sp., Acacia spp.); Patersonia occidentalis var. occidentalis, Dasypogon obliquifolius and Mesomelaena pseudostygia 3. Isolated clumps of open sedge/herbland						
ASSOCIATED SPECIES:							
Other (non-dominant) spp							
Please record up to four of the and Land Survey Field Handbook				ructural Formations should fol	low 2009 Australian Soil		
CONDITION OF HABITAT	_	Excellent		Degraded ☐ Com	pletely degraded		
COMMENT:	. Thathe	Executerit		Degraded 🖂 Com	pictory degraded		
	st Fire: Season/Month:	Year: +10yrs	Fire Intensity: High	h 🗌 Medium 🔲 Low 🗀	No signs of fire ⊠		
FENCING:	Not required □	Present Replace	e / repair 🔲	Required Lengt	th req'd:		
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quan	tity req'd:		
OTHER COMMENTS: (	Please include recomm	ended management acti	ons and/or implemente	nd actions - include			
date. Also include detail				a actions - include			
				- -			
FLORA AUTHORISATI	ON / LICENCE No: FR	62000080-3 and TEL 3	2324-0083 Note if only o	observing plants (i.e. no speci	mens or plant matieral is		
taken) then no authorisation/lid	ence is required. For further i	nformation on authorisation and s/licences should be recorded a	d licening requirements see th	e Threatened Flora and Wildl			
SPECIMEN: Collect	tors No: W	/A Herb. ☐ Regional	Herb. District Her	b. Other:			
LODGEMENT: WA H	erb Lodgement No:						
ATTACHED: Map [	☐ Mudmap ☐ Pl	hoto 🗌 🛮 GIS data 🗵	☐ Field notes ☐	Other:			
COPY SENT TO: Re	gional Office 🔲 💮 I	District Office	Other:				
			For bon	7			

Signed:

Role: Snr. Botanist

Submitter of Record: Angela Benkovic



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TP	FL Pop. No:	18v
OBSERVATION DATE:	25/10/2023	CONSE	RVATION STAT	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	0			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHE	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least near	est town/named locality, ar	d the distance and direc	tion to that pla	ice):		
Roe Hwy adjacent to DFES tra	aining site						
					Rese	erve No:	
DBCA DISTRICT: Swan Coa		LGA: City of Ka			·	er present:	
	·	I coords provided, <b>Zone</b> is egMinSec UT	<u> </u>	<b>THOD USI</b> GPS □		ial GPS 🛛 🛚 N	4on □
GDA94 / MGA94 🖂	•	shapefile attached		· <u></u>			-
AGD84 / AMG84 📋		snapenie attached		. satellites: undary poly		Map used:	
	g / Easting:			otured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:							
<u> </u>	Timber reserve ☐ State forest ☐	Private property Pastoral lease		Rail reserv road reserv		Shire road Other Crowr	reserve
National park ☐ Conservation park ☐	Water reserve		SLK/Pole		· · · · · · · · · · · · · · · · · · ·		pecify other:
AREA ASSESSMENT: Edge EFFORT: Time s		·	survey ⊠ Are No. of minu		. , _	<u>ha</u>	
POP'N COUNT ACCURACY:	spent surveying (mi Actual ⊠	Extrapolation	Estimate	Count me	ethod:		
	, to to.o <u>~ ~</u>		_	o field manual	ır	<u>ndividuals</u>	
WHAT COUNTED:	Plants 🛛	Clumps	Clonal stems				
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	48	59	18	125		Area of pop (m²	):
Dead						Note: Pls record cou (not percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	<u> </u>	Total area	of quadrats (m²)	
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal	Vegetative ⊠	Flowerbud [	]	Flov	wer 🗵	
Immatu	re fruit	Fruit	Dehisced fruit	]	Percentage	e in flower:%	0
CONDITION OF PLANTS:	Healthy ⊠	Moderate	Poor [	]	Senesc	ent 🗌	
COMMENT:							
THREATS - type, agent and	supporting inform	ation:			Curre		Potential
Eg clearing, too frequent fire, weed, dis				e relevant.	impad (N-E	-	Threat Onset
Rate current and potential threat i Estimate time to potential impact:	•	<del>-</del>			(1,1,2)	, (2-2)	(S-L)
• weeds			•				
rubbish						_	
• road							
						_	
•							
						_	



Version 1.4 March 2021

HABITAT INFORMATION	ON:						
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:		
Crest □	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠		
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🖂	Seasonally		
Ridge ☐	Laterite	0.400/ 57	Loam	Yellow □	inundated		
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently ☐		
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal		
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	riuai 🗀		
Open depression	Specify other:	50-100%	Specify other:	Specify other:			
Drainage line							
Closed depression	0	El					
Wetland 🗌	Specific Landforn (Refer to field manual for a						
CONDITION OF SOIL:	Dry 🛛	Moist	Waterlogged □	Inundated			
VEGETATION CLASSIFICATION*:	1. Eucalyptus margir	nata subsp. marginata,		a and <i>Allocasuarina</i>	fraseriana tall		
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia);	open woodland	I Chamelaucium uncinati	ım tall onen shruhland				
<ol> <li>Open shrubland (Hibbertia sp., Acacia spp.);</li> <li>Isolated clumps of</li> </ol>		es and Stirlingia latifoli	·				
ASSOCIATED Austrostipa compressa, * Ehrharta calycina, * Sonchus oleraceus grass/ herbland							
SPECIES:							
Other (non-dominant) spp Please record up to four of the	most representative vegetation	n layers (with up to three domina	ant species in each layer). St	ructural Formations should fol	llow 2009 Australian Soil		
and Land Survey Field Handboo	k guidelines – refer to field mar	nual for further information and	structural formation table.				
CONDITION OF HABITAT COMMENT:	: Pristine	Excellent	od ☐ Good ⊠	Degraded	pletely degraded 🔲		
FIRE HISTORY: La	st Fire: Season/Month:	Year: <2yrs	Fire Intensity: Hig	h ☐ Medium ☐ Low 🗵	No signs of fire ☐		
FENCING:	Not required ☐	Present Replace	e / repair 🔲	Required Leng	th req'd:		
ROADSIDE MARKERS:	Not required ☐	Present Replace	e / reposition	Required  Quar	ntity req'd:		
		ended management acti ilable, and how to locate		ed actions - include			
			,				
	cence is required. For further in	62000080-3 and TFL 2 nformation on authorisation and s/licences should be recorded al	l licening requirements see th				
SPECIMEN: Collect	tors No: W	'A Herb. 🗌 Regional	Herb. District Her	rb. Other:			
LODGEMENT: WA H	erb Lodgement No:				_		
ATTACHED: Map	☐ Mudmap ☐ Pt	hoto 🗌 🛮 GIS data 🗵	Field notes	Other:			
COPY SENT TO: Re	gional Office 🔲 🏻 🏻 [	District Office	Other:				
			Por Com	-			

Signed:

Role: Snr. Botanist

Submitter of Record: Angela Benkovic



Version 1.4 March 2021

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <a href="https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants">www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants</a>

TAXON: Conospermum	n undulatum				TPF	L Pop. No:	18x
OBSERVATION DATE:	24/10/2023	CONSE	RVATION STAT	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGAI	NISATION: GHE	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least near	est town/named locality, ar	nd the distance and direc	tion to that pla	ce):		
Dundas Road adjacent to Dun	das Road nature R	Reserve					
					Rese	rve No:	
DBCA DISTRICT: Swan Coa		_ <u></u>	alamunda		·	present:	
	·	A coords provided, <b>Zone</b> is egMinSec UT	<u> </u>	E <b>THOD USE</b> GPS □		al GPS ⊠ M	lon □
GDA94 / MGA94 🖂	•	shapefile attached		<del></del>			•
AGD84 / AMG84 L		Shapelile attached		. satellites: undary poly		Map used:	
	g / Easting:			otured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:							
Nature reserve ☐ National park ☐	Timber reserve ☐ State forest ☐	Private property Pastoral lease		Rail reserve road reserve		Shire road Other Crown	I reserve
Conservation park	Water reserve			to	_		pecify other:
AREA ASSESSMENT: Edge EFFORT: Time s	•	•	l survey ⊠ Are No. of minu			<u>5ha</u>	
POP'N COUNT ACCURACY:	spent surveying (mi Actual ⊠	Extrapolation	Estimate	Count me	thod.		
	, 10100. <u>C</u>		<del>-</del>	to field manual	ine	<u>dividuals</u>	
WHAT COUNTED:	Plants 🗵	Clumps	Clonal stems		1		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	5			5		Area of pop (m²)	):
Dead						Note: Pls record cou (not percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	т 🗆 і		of quadrats (m²)	
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal	Vegetative ⊠	Flowerbud [	]	Flow	er ⊠	
Immatu	ıre fruit 🗌	Fruit 🗌	Dehisced fruit	]	Percentage	in flower:%	Ď
CONDITION OF PLANTS:	Healthy ⊠	Moderate □	Poor [	]	Senesce	ent 🗌	
COMMENT:							
THREATS - type, agent and	supporting inform	nation:			Currer		Potential
Eg clearing, too frequent fire, weed, dis				e relevant.	impac (N-E)	_	Threat Onset
Rate current and potential threat i Estimate time to potential impact:	•	<del>-</del>			(1, 2)	(2 2)	(S-L)
• weeds	, , , , , ,	, , , , , ,					
rubbish						_	<del></del> -
• road							
					<b> </b>	-	
•							
					-	-	

Sheet No.:\_

Record Entered in Database

Record entered by:\_



#### **Threatened and Priority** Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATIO	ON:				
LANDFORM:	<b>ROCK TYPE:</b>	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge ☐	Laterite	0.400/	Loam 🗌	Yellow	inundated 📙
Outcrop	Ironstone	0-10%	Clay loam 🔲	White □	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	riuai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression					
Wetland □	Specific Landform (Refer to field manual for ac				
CONDITION OF SOIL:	Dry 🛮	Moist	Waterlogged □	Inundated	
	-	—			ingii and Dankaia
VEGETATION CLASSIFICATION*: Eg: 1. Banksia woodland (B.	Allocasuarina frase attenuata woodland	епапа, Еисагуртиѕ та	arginata subsp. marg	ginata, Banksia menz	iesii and Banksia
attenuata, B. ilicifolia); 2. Open shrubland	Adenanthos cygnorum				
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)	Xanthorrhoea preissii shrubland	i, Lambertia multiflora	a var. darlingensis ar	nd Hibbertia hyperico	ides mid to low
ASSOCIATED SPECIES:	Dasypogon bromeliifoliu herb/sedgeland	us, Patersonia occidenta	alis var. occidentalis ar	nd Mesomelaena pseud	dostygia
Other (non-dominant) spp					
Please record up to four of the and Land Survey Field Handbook	most representative vegetation k guidelines – refer to field man			ructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT	: Pristine 🗌 E	Excellent	od 🛛 💮 Good 🗆	Degraded ☐ Com	pletely degraded
COMMENT:					
FIRE HISTORY: La	st Fire: Season/Month:	·	Fire Intensity: Hig		No signs of fire ⊠
FENCING:	Not required	•	e / repair 🔲		th req'd:
ROADSIDE MARKERS:	Not required ☐	Present Replace	e / reposition	Required  Quar	ntity req'd:
	Please include recomme			ed actions - include	
date. Also include detail	s of additional data avail	able, and now to locate	п.)		
taken) then no authorisation/lid	ON / LICENCE No: FB6 cence is required. For further in arried out under authorisations/	formation on authorisation and	d licening requirements see the		mens or plant matieral is life Licensing pages on
•		A Herb.  Regional			
	erb Lodgement No:	· ·			
ATTACHED: Map [		oto □ GIS data ⊠	☐ Field notes ☐	Other:	
, .	·	istrict Office	Other:		
13		.5			_
			Penhavie	7	
Submitter of Record: And	gela Benkovic Role:	Snr. Botanist Signe		Date: 24/0	6/2024

Please return completed form to Species And Communities Program DBCA, Locked Bag 104, BENTLEY DELIVERY CENTRE WA 6983 OR email to: flora.data@dbca.wa.gov.au



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TPFL	Pop. No:	19b 19c
OBSERVATION DATE:	14/11/2023	CONSE	RVATION STATE	JS: VU	N	lew populat	ion 🗌
OBSERVER/S: A.Ben	kovic and A.Sleer	<u> </u>			PHONE	62228361	
ROLE: Snr. Botanists		ORGAN	NISATION: GHD	Pty Ltd	_		
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):							
Welshpool road bushland					•		
					Reserve	No:	
DBCA DISTRICT: Perth Hills		<del> </del>	alamunda	Land	d manager pr	esent:	
	·	coords provided, <b>Zone</b> is		THOD USED			. –
GDA94/MGA94 🗆	-	egMinSec UT	_			GPS ⊠ M	•
AGD84 / AMG84 ☐	/ Nortning: see	shapefile attached		satellites:		Map used:	
	g / Easting:		oon	ndary polygo tured:	on □	Map scale:	
Unknown 🗌	ZONE:				_		
LAND TENURE:							
Nature reserve ⊠	Timber reserve	Private property	<i>,</i> 🗆	Rail reserve		Shire road	reserve $\square$
National park	State forest	Pastoral lease		road reserve	_	Other Crown	
Conservation park	Water reserve	UCI	SLK/Pole	to		5	pecify other:
AREA ASSESSMENT: Edge	e survey 🔲 🏻 Par	tial survey 📗 🛮 Full	survey 🛛 Area	a observed (r	m²): <u>3ha</u>		
	pent surveying (min	•	No. of minut	•		<u> </u>	
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate	Count meth	indiv	<u>iduals</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	neid manuai ioi	i list)		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	79	5		84	Are	ea of pop (m²)	):
						te: Pls record cou	· · · · · · · · · · · · · · · · · · ·
Dead			L	<u> </u>		t percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	☐ To	tal area of q	juadrats (m²):	<u> </u>
Summary Quad. Totals: Alive		<u> </u>				_	
REPRODUCTIVE STATE:	Clonal □ ıre fruit □	Vegetative ⊠ Fruit □	Flowerbud  Dehisced fruit	Pe	Flower ercentage in t		
	Healthy ⊠	Moderate □	Poor		Senescent		
COMMENT:	lealtry 🖂	Moderate	F001 🗀		Sellescelli	Ш	
					1	1	
THREATS - type, agent and	_		ota Omanife a sasta i		Current impact	Potential Impact	Potential Threat
Eg clearing, too frequent fire, weed, dis Rate current and potential threat i				relevant.	(N-E)	(L-E)	Onset
Estimate time to potential impact:	S=Short (<12mths), M=N	Medium (<5yrs), L=Long (5	yrs+)				(S-L)
• weeds							
•							
							<del></del>
•							



Version 1.4 March 2021

HABITAT INFORMATIO	DN:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy Ioam 🔲	Brown 🖂	Seasonally
Ridge □	Laterite	0.400/ 57	Loam 🗌	Yellow □	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White □	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat 🛛	Quartz 🗌	30-50%	Peat □	Black ☐	riuai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	0	- FI 1			
Wetland	Specific Landforr (Refer to field manual for a				
CONDITION OF SOIL:	Dry 🛛	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Banksia attenuata	open woodland			
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);	Lambertia multiflora va shrubland	ır. darlingensis, Eremaea	a pauciflora var. paucif	lora and Hibbertia hype	ricoides mid to low
<ol> <li>Open shrubland (Hibbertia sp., Acacia spp.);</li> <li>Isolated clumps of sedges (M.tetragona)</li> </ol>	Xanthorrhoea preiss shrubland	ii, Lambertia multiflora	a var. darlingensis ar	nd Hibbertia hyperico	ides mid to low
ASSOCIATED SPECIES:	Dasypogon bromeliifol	ius and Mesomelaena p	seudostygia herb/sedg	eland	
Other (non-dominant) spp					
Please record up to four of the and Land Survey Field Handbook		n layers (with up to three domina		ructural Formations should fo	llow 2009 Australian Soil
CONDITION OF HABITAT	_			Degraded ☐ Com	pletely degraded
COMMENT:	: Pristine ∐	Excellent  Very goo	od ⊠ Good ∐	Degraded 🔲 Com	pietely degraded
	st Fire: Season/Month:	Year: 3<5yrs	Fire Intensity: Hig	h  Medium  Low	No signs of fire ☐
FENCING:	Not required	Present Replace	e / repair 🔲	Required Leng	th req'd:
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quar	ntity req'd:
OTHER COMMENTS: (	Please include recomm	ended management acti	ons and/or implemente	ed actions - include	
date. Also include detail					
FLORA AUTHORISATI	ON / LICENCE No. EB	.62000080-3 and TEL 3	2324-0083 Note if only	observing plants (i.e. no speci	mens or plant matieral is
taken) then no authorisation/lid	ence is required. For further i	nformation on authorisation and	d licening requirements see the	ne Threatened Flora and Wild	
		s/licences should be recorded a 'A Herb.  Regional			
	erb Lodgement No:	/ regional	Florid. Dietriet Flori	ошоп <u>——</u>	=
		hoto ☐ GIS data ⊠	Tield notes □	Other:	
, .	- ' <u>-</u>	District Office ☐	Other:	Ouici	
COFT SENT TO. Re			Outel.		
			Pon house		

Signed:

RECORDS: Please forward to Flora Administrative Officer, Species and Communities Program.

Role: Snr. Botanist

Submitter of Record: Angela Benkovic



Version 1.4 March 2021

TAXON: Conospermun	n undulatum				TPFL	Pop. No:	19d
OBSERVATION DATE:	14/11/2023	CONSE	RVATION STAT	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Sleep				PHONE	62228361	
ROLE: Snr. Botanists		ORGAN	IISATION: GHE	O Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least neares	st town/named locality, an	d the distance and direc	ction to that plac	ce):		
Welshpool road bushland							
					Reserv	e No:	
DBCA DISTRICT: Perth Hills		LGA: City of Ka			nd manager p	resent:	
	RDINATES: (If UTM of Degrees ☐ Degrees ☐ Degrees	coords provided, <b>Zone</b> is a gMinSec		ETHOD USE		ODC ⊠ .	4
GDA94 / MGA94 🖂	/ Northing: see s			GPS		GPS ⊠ N	•
AGD84 / AMG84 📋	/ Northing. See S	maperile attached	<del></del>	. satellites: undary poly		Map used:	
	g / Easting:		001	otured:		Map scale:	
Unknown 🗌	ZONE:		-				
LAND TENURE:							
<u> </u>	Timber reserve	Private property		Rail reserve	_		reserve
National park ☐ Conservation park ☐	State forest  Water reserve	Pastoral lease UCL		road reserve to	_	Other Crown	pecify other:
							. ,
AREA ASSESSMENT: Edge EFFORT: Time s	•	•	•				
POP'N COUNT ACCURACY:	pent surveying (min Actual ⊠ F	utes): <u>∠ nours</u> Extrapolation □	Estimate	Count me	100 m²:		
TOT NOOM ACCOUNT	/totadi 🖂 🗀	Extrapolation [		to field manual	indi	<u>viduals</u>	
WHAT COUNTED:	Plants 🗵	Clumps	Clonal stems	1	•		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	11			11	Α	rea of pop (m²)	):
Dead						ote: Pls record cou ot percentages) for	
QUADRATS PRESENT:	No	Size	Data attached	d 🔲 T		quadrats (m²):	
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal	Vegetative ⊠	Flowerbud [	]	Flower	· 🛛	
Immatu	re fruit 🗌	Fruit 🗌	Dehisced fruit		Percentage in	flower:%	0
CONDITION OF PLANTS:	Healthy ⊠	Moderate	Poor [		Senescent	: 🗆	
COMMENT:							
THREATS - type, agent and	supporting informa	ation:			Current	Potential	Potential
Eg clearing, too frequent fire, weed, dis				re relevant.	impact (N-E)	Impact (L-E)	Threat Onset
Rate current and potential threat in Estimate time to potential impact:	•	. •			(14-2)	(L-L)	(S-L)
• weeds	, , , ,		,				
•							
•							
					┨		



Version 1.4 March 2021

HABITAT INFORMATION	ON:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite ☐	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛚	Seasonally
Ridge □	Laterite	0.400/ 57	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam	White □	Permanently ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat ⊠	Quartz 🗌	30-50%	Peat ☐	Black	Пап
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	Chasifia I andfar	∞ Floment:			
Wetland	Specific <b>Landfor</b> (Refer to field manual for				
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Banksia attenuata	a open woodland			
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland	Lambertia multiflora va shrubland	ar. darlingensis, Eremae	a pauciflora var. paucif	lora and Hibbertia hype	ericoides mid to low
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)	Xanthorrhoea preiss shrubland	sii, Lambertia multiflora	a var. darlingensis ar	nd Hibbertia hyperico	ides mid to low
ASSOCIATED	Dasypogon bromeliifol	ius and Mesomelaena p	seudostygia herb/sedg	eland	
SPECIES: Other (non-dominant) spp					
` ' ' -	most representative vegetation	n layers (with up to three domin	ant species in each layer). St	tructural Formations should fo	llow 2009 Australian Soil
nd Land Survey Field Handboo	k guidelines – refer to field ma	nual for further information and	structural formation table.		
CONDITION OF HABITAT COMMENT:	: Pristine	Excellent  Very go	od ⊠ Good □	Degraded	pletely degraded
FIRE HISTORY: La	st Fire: Season/Month:	Year: 3<5yrs	Fire Intensity: Hig	h 🗌 Medium 🔲 Low 🗆	☐ No signs of fire ☐
FENCING:	Not required	Present Replac	e / repair 🔲	Required  Leng	th req'd:
ROADSIDE MARKERS:	Not required	Present Replac	e / reposition	Required  Quar	ntity req'd:
		ended management acti ilable, and how to locate		ed actions - include	
FLORA AUTHORISATI	ON / LICENCE No: FE	362000080-3 and TFL	2324-0083 Note if only	observing plants (i.e. no speci	imens or plant matieral is
taken) then no authorisation/lid DBCA's website. Any actions of	cence is required. For further arried out under authorisation	information on authorisation and s/licences should be recorded a	d licening requirements see the lice	he Threatened Flora and Wild NTS section.	
	tors No: W	/A Herb. ☐ Regional	Herb. District He	rb. Other:	
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map [	☐ Mudmap ☐ P	hoto 🗌 GIS data 🛭	☐ Field notes ☐	Other:	
COPY SENT TO: Re	gional Office	District Office	Other:		
			Bon bon		

Signed:

RECORDS: Please forward to Flora Administrative Officer, Species and Communities Program.

Role: Snr. Botanist

Submitter of Record: Angela Benkovic



Version 1.4 March 2021

TAXON: Conospermum	n undulatum				TPF	L Pop. No:	22a
OBSERVATION DATE:	18/10/2023	CONSE	RVATION STAT	US: VU		New populat	tion 🗌
OBSERVER/S: A.Ben	kovic and A.Slee	p			PHONE	62228361	
ROLE: Snr. Botanists		ORGAI	NISATION: GHE	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATIO	<b>N</b> (Provide at least nea	rest town/named locality, ar	nd the distance and direc	ction to that pla	ce):		
Honey Rd							
					Rese	rve No:	
DBCA DISTRICT: Perth Hills		<del></del>	alamunda		Ū	r present:	
	·	M coords provided, <b>Zone</b> is DegMinSec UT	<u> </u>	ETHOD USE GPS 🗌		ial GPS 🛛 🛚 N	lan □
GDA94 / MGA94 🖂		shapefile attached		. satellites:		Map used:	=
AGD84 / AMG84 L		Shapelile attached		. sateilites. undary poly			
WGS84 ☐ Long Unknown ☐	g / Easting:			otured:		Map scale:	
OTIKIOWIT	ZONE:						
LAND TENURE:	_		_		_		_
Nature reserve ☐ National park ☐	Timber reserve  State forest	Private property Pastoral lease		Rail reserve road reserve		Shire road Other Crowr	reserve
Conservation park	Water reserve			to			pecify other:
ADEA ACCECCMENT. Edge	n aumana Da	rtial august 🗆 — Eul	Lauryoy M. Are	a abaamiad	/m²\; 1k	20	
AREA ASSESSMENT: Edge EFFORT: Time s	e survey	•	No. of minu			<u>na</u>	
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count me	thod.	dividuals	
	_	_		to field manual	for list)	<u>uividuais</u>	
WHAT COUNTED:	Plants ⊠	Clumps	Clonal stems	1	ĺ		
TOTAL POP'N STRUCTURE:	Mature:	Juveniles:	Seedlings:	Totals:			
Alive	1			1		Area of pop (m²)	· · · · · · · · · · · · · · · · · · ·
Dead						Note: Pls record cou (not percentages) for	
QUADRATS PRESENT:	No	Size	Data attache	<u> </u>	otal area	of quadrats (m²)	:
Summary Quad. Totals: Alive							
REPRODUCTIVE STATE:	Clonal	Vegetative ☐	Flowerbud	<del></del>		/er⊠	,
	ıre fruit 🗌	Fruit 🗆	Dehisced fruit		Percentage		0
CONDITION OF PLANTS: 1 COMMENT:	Healthy ⊠	Moderate	Poor [	J	Senesce	ent 🔲	
					T	T	
THREATS - type, agent and	• • •				Currer impac		Potential Threat
Eg clearing, too frequent fire, weed, dis Rate current and potential threat i				e relevant.	(N-E)		Onset
Estimate time to potential impact:	S=Short (<12mths), M=	:Medium (<5yrs), L=Long (5	yrs+)				(S-L)
• weeds							
road							
•							
•					_		
						_	



Version 1.4 March 2021

HABITAT INFORMATIO	N:				
LANDFORM:	ROCK TYPE:	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🖂	Seasonally
Ridge □	Laterite		Loam 🗌	Yellow □	inundated
Outcrop	Ironstone	0-10%	Clay loam	White	Permanently
Slope	Limestone	10-30%	Light clay ☐	Grey ⊠	inundated 🗌
· — Flat ⊠	Quartz $\square$	30-50%	Peat □	, — Black □	Tidal 🗌
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line	-p,		,	-p,	
Closed depression				-	
Wetland □	Specific Landforn				
_	(Refer to field manual for a	<u>'</u>	\Materiagged \	Inundated	
CONDITION OF SOIL:	Dry 🛚	Moist	Waterlogged	Inundated 📙	
VEGETATION CLASSIFICATION*: _	Roadside vegetat	ion			
Eg: <b>1</b> . Banksia woodland (B. attenuata, B. ilicifolia);					
2. Open shrubland (Hibbertia sp., Acacia spp.);					
3. Isolated clumps of sedges (M.tetragona)					
ASSOCIATED					
SPECIES:					
Other (non-dominant) spp	most representative vegetation	a lavora (with up to throo domin	vent aposice in each layer). St	trustural Formations should fo	llow 2000 Australian Sail
Please record up to four of the read that the read the read the read that the read that the read that the read tha				ructural Formations should to	IIOW 2009 Australian Soli
CONDITION OF HABITAT:	Pristine	Excellent	od 🗌 Good 🗎	Degraded ☐ Com	pletely degraded
COMMENT:					
FIRE HISTORY: Las	st Fire: Season/Month:	Year:	Fire Intensity: Hig	h   Medium   Low	No signs of fire ☐
FENCING:	Not required	Present Replac	e / repair 🔲	Required  Leng	th req'd:
ROADSIDE MARKERS:	Not required	Present Replac	ce / reposition	Required  Quar	ntity req'd:
OTHER COMMENTS: (I				ed actions - include	
date. Also include details	s of additional data ava	ilable, and how to locate	· it.)		
FLORA AUTHORISATION taken) then no authorisation/lic DBCA's website. Any actions ca	ence is required. For further i	nformation on authorisation an	d licening requirements see the		
•		/A Herb. ☐ Regional		_	
LODGEMENT: WA He	erb Lodgement No:				
ATTACHED: Map [	☐ Mudmap ☐ Pl	hoto 🗌 🛮 GIS data 🛭	☐ Field notes ☐	Other:	
COPY SENT TO: Reg	<u> </u>	District Office	Other:		
			AL N	-	
			Denhowe		0/0004
Submitter of Record: Ang	<u>jela Benkovic</u> Role:	Snr. Botanist Signe	ed:	Date: 24/0	6/2024



Version 1.4 March 2021

Please complete as much of the form as possible, with emphasis on those sections bordered in black. For information on how to complete the form please refer to the Threatened & Priority Flora Report Form (TPRF) manual on the DBCA website at <a href="https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants">www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants</a>

	ndulatum				TPF	<b>FL Pop. No</b> : 2	23b
ODCEDVEDIC: A Desilem	7/10/2023	CONSE	RVATION STAT	US: VU		New populati	ion 🗌
OBSERVER/S: A.Benkov	vic and A.Sleep				PHONE	62228361	
ROLE: Snr. Botanists		ORGAN	IISATION: GHE	O Pty Ltd			
<b>EMAIL</b> : angela.benkovic@gh	hd.com						
DESCRIPTION OF LOCATION (F	Provide at least neares	st town/named locality, and	d the distance and direc	ction to that pla	ice):		
Near cnr of Roe hwy and Adelaide	le St						
					Rese	rve No:	
DBCA DISTRICT: Swan Coastal		LGA: City of Sw			Ū	present:	
	·	coords provided, <b>Zone</b> is a gMinSec	·	E <b>THOD US</b> E GPS □		al GPS ⊠ M	lan 🗆
$GDA94 / MGA94 \square$		hapefile attached		<del></del>			•
AGD84 / AMG84 L		napelile attached		. satellites: undary poly		Map used:	
_	Easting:			otured:		Map scale:	
Unknown 🗌	ZONE:						
LAND TENURE:			<u> </u>				
<u> </u>	nber reserve	Private property		Rail reserv			reserve
· =	State forest  ater reserve	Pastoral lease UCL	_	A road reservent	<del></del>	Other Crown Sr	reserve pecify other:
·							· · <b>,</b> - · · · · · ·
AREA ASSESSMENT: Edge su	•	•	•			<u>1a</u>	
EFFORT: Time sper POP'N COUNT ACCURACY:	nt surveying (minu	ites): <u>1 hours</u> extrapolation	No. of minu Estimate ☐	ites spent / Count me	·		
POP N COUNT ACCURACT.	Actual 🔼 🗈	XII apolatioi I	_	to field manual	ine	dividuals	
WHAT COUNTED:				to field filafidal	ioi iist)		
WHAT COUNTED: Pla	lants 🛛	Clumps	Clonal stems	to held mandar	ioi iist)		
1	lants ⊠ <b>/lature</b> :	Clumps   Juveniles:		Totals:	TOT IIST)		
1	/lature:	-	Clonal stems	1		Area of pop (m²):	:
TOTAL POP'N STRUCTURE:	/lature:	-	Clonal stems	Totals:		Note: Pls record coun	nt as numbers
TOTAL POP'N STRUCTURE:  Alive  Dead	Mature:	Juveniles:	Clonal stems  Seedlings:	Totals:		Note: Pls record coun (not percentages) for	nt as numbers database.
TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  No	Mature:	-	Clonal stems	Totals:		Note: Pls record coun	nt as numbers database.
TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive	<b>Mature:</b>	Juveniles: Size	Clonal stems  Seedlings:	Totals:	Fotal area o	Note: Pls record coun (not percentages) for	nt as numbers database.
TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive	<b>//ature:</b> Do	Juveniles:	Clonal stems  Seedlings:  Data attached	Totals:	Fotal area o	Note: Pls record coun (not percentages) for of quadrats (m²):	nt as numbers database.
TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immature for	<b>//ature:</b> Do	Juveniles:  Size	Clonal stems  Seedlings:  Data attacher	Totals:	Flow	Note: Pls record coun (not percentages) for of quadrats (m²):  ver ⊠ in flower:%	nt as numbers database.
TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immature for	Aature:	Size Vegetative Fruit	Clonal stems  Seedlings:  Data attacher  Flowerbud [ Dehisced fruit [	Totals:	Flow Percentage	Note: Pls record coun (not percentages) for of quadrats (m²):  ver ⊠ in flower:%	nt as numbers database.
TOTAL POP'N STRUCTURE:  Alive 1 Dead  QUADRATS PRESENT: No Summary Quad. Totals: Alive REPRODUCTIVE STATE: Clo Immature for  CONDITION OF PLANTS: Healt COMMENT:	Mature:  D  Donal □  fruit □	Size  Vegetative Fruit  Moderate	Clonal stems  Seedlings:  Data attacher  Flowerbud [ Dehisced fruit [	Totals:	Flow Percentage	Note: Pls record coun (not percentages) for of quadrats (m²):  ver  in flower:%  ent	nt as numbers database.
TOTAL POP'N STRUCTURE:  Alive 1 Dead  QUADRATS PRESENT: No Summary Quad. Totals: Alive REPRODUCTIVE STATE: Clor Immature fr	Alature:  Donal ☐  fruit ☐  Ithy ☒	Size Vegetative   Fruit   Moderate   tion:	Clonal stems  Seedlings:  Data attacher  Flowerbud [ Dehisced fruit [ Poor [	Totals:	Flow Percentage Senesce Currer impac	Note: Pls record coun (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	nt as numbers database.  Potential Threat
Alive 1 Dead  QUADRATS PRESENT: No Summary Quad. Totals: Alive REPRODUCTIVE STATE: Clo Immature fr  CONDITION OF PLANTS: Healt COMMENT:  THREATS - type, agent and sup Eg clearing, too frequent fire, weed, disease Rate current and potential threat impar	Alature:  Do  Donal	Juveniles:  Size  Vegetative   Fruit   Moderate   Moderate   Ition: al for list of threats & agen Medium, H=High, E=Extre	Clonal stems Seedlings:  Data attached  Flowerbud Dehisced fruit Poor Dehisced fruit Seedlings:	Totals:	Flow Percentage Senesce	Note: Pls record coun (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	nt as numbers database.
Alive 1 Dead  QUADRATS PRESENT: No Summary Quad. Totals: Alive REPRODUCTIVE STATE: Clor Immature fi  CONDITION OF PLANTS: Healt COMMENT:  THREATS - type, agent and sup Eg clearing, too frequent fire, weed, disease Rate current and potential threat impact Estimate time to potential impact: S=S	Alature:  Do  Donal	Juveniles:  Size  Vegetative   Fruit   Moderate   Moderate   Ition: al for list of threats & agen Medium, H=High, E=Extre	Clonal stems Seedlings:  Data attached  Flowerbud Dehisced fruit Poor Dehisced fruit Seedlings:	Totals:	Flow Percentage Senesce Currer impac	Note: Pls record coun (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset
Alive 1 Dead  QUADRATS PRESENT: No Summary Quad. Totals: Alive REPRODUCTIVE STATE: Clor Immature fr  CONDITION OF PLANTS: Healt COMMENT:  THREATS - type, agent and sup Eg clearing, too frequent fire, weed, disease Rate current and potential threat impar Estimate time to potential impact: S=S  • weeds	Alature:  Do  Donal	Juveniles:  Size  Vegetative   Fruit   Moderate   Moderate   Ition: al for list of threats & agen Medium, H=High, E=Extre	Clonal stems Seedlings:  Data attached  Flowerbud Dehisced fruit Poor Dehisced fruit Seedlings:	Totals:	Flow Percentage Senesce Currer impac	Note: Pls record coun (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset
Alive 1 Dead  QUADRATS PRESENT: No Summary Quad. Totals: Alive REPRODUCTIVE STATE: Clor Immature fi  CONDITION OF PLANTS: Healt COMMENT:  THREATS - type, agent and sup Eg clearing, too frequent fire, weed, disease Rate current and potential threat impact Estimate time to potential impact: S=S	Alature:  Do  Donal	Juveniles:  Size  Vegetative   Fruit   Moderate   Moderate   Ition: al for list of threats & agen Medium, H=High, E=Extre	Clonal stems Seedlings:  Data attached  Flowerbud Dehisced fruit Poor Dehisced fruit Seedlings:	Totals:	Flow Percentage Senesce Currer impac	Note: Pls record coun (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset
Alive 1 Dead  QUADRATS PRESENT: No Summary Quad. Totals: Alive REPRODUCTIVE STATE: Clor Immature fr  CONDITION OF PLANTS: Healt COMMENT:  THREATS - type, agent and sup Eg clearing, too frequent fire, weed, disease Rate current and potential threat impar Estimate time to potential impact: S=S  • weeds	Alature:  Do  Donal	Juveniles:  Size  Vegetative   Fruit   Moderate   Moderate   Ition: al for list of threats & agen Medium, H=High, E=Extre	Clonal stems Seedlings:  Data attached  Flowerbud Dehisced fruit Poor Dehisced fruit Seedlings:	Totals:	Flow Percentage Senesce Currer impac	Note: Pls record coun (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset
Alive 1 Dead  QUADRATS PRESENT: No Summary Quad. Totals: Alive REPRODUCTIVE STATE: Clor Immature fr  CONDITION OF PLANTS: Healt COMMENT:  THREATS - type, agent and sup Eg clearing, too frequent fire, weed, disease Rate current and potential threat impar Estimate time to potential impact: S=S  • weeds	Alature:  Do  Donal	Juveniles:  Size  Vegetative   Fruit   Moderate   Moderate   Ition: al for list of threats & agen Medium, H=High, E=Extre	Clonal stems Seedlings:  Data attached  Flowerbud Dehisced fruit Poor Dehisced fruit Seedlings:	Totals:	Flow Percentage Senesce Currer impac	Note: Pls record coun (not percentages) for of quadrats (m²):  ver  in flower:%  ent  Potential Impact	Potential Threat Onset

Sheet No.:\_

Record Entered in Database

Record entered by:\_



Version 1.4 March 2021

LANDFORM:     ROCK TYPE:     LOOSE ROCK:     SOIL TYPE:     SOIL COLOUR:     DRAINAGE:       Crest ☐     Granite ☐     (on soil surface; eg gravel, quartz fields)     Sand ☐     Red ☐     Well drained ☐       Hill ☐     Dolerite ☐     Sandy loam ☐     Brown ☐     Seasonally inundated ☐       Ridge ☐     Laterite ☐     0-10% ☐     Clay loam ☐     White ☐     Permanently inundated ☐       Outcrop ☐     Limestone ☐     30-50% ☐     Light clay ☐     Grey ☐     Tidal ☐       Peat ☐     Black ☐       Open depression ☐     Specify other:     Specify other:     Specify other:	-
Hill Dolerite Gravel, quartz fields)  Sandy loam Brown Seasonally  Ridge Laterite O-10% Clay loam Mhite Permanently  Slope Limestone Martz fields  Sandy loam Martz fields  Clay loam Mhite Permanently  inundated Mhite Grey Martz fields  Flat Quartz Martz fields  Sandy loam Martz fields  Clay loam Martz fields  Flat Martz Martz fields  Sandy loam Martz fields  Clay loam Martz fields  Flat Martz Martz fields  Seasonally  inundated Martz fields  Permanently  inundated Martz fields  Flat Martz Martz fields  Seasonally  Flat Martz Martz fields  Flat Martz Martz fields  Sandy loam Martz fields  Flat Martz Martz fields  Sandy loam Martz Martz Martz fields  Flat Martz Martz Martz fields  Flat Martz Martz Martz fields  Flat Martz Martz Martz Martz fields  Flat Martz M	-
Hill	] 
Outcrop	] ]
Outcrop	 
Slope ☐ Limestone ☐ 30-50% ☐ Light clay ☐ Grey ☐ Tidal ☐ Flat ☐ Quartz ☐ Peat ☐ Black ☐	1
30-50% ☐ Peat ☐ Black ☐ 50-100% ☐	ļ
Open depression Specify other: Specify other: Specify other:	
Drainage line	
Closed depression	
Specific <b>Landform</b> Element:	
CONDITION OF SOIL: Dry ☑ Moist ☐ Waterlogged ☐ Inundated ☐	
VEGETATION CLASSIFICATION*:  1. Allocasuarina fraseriana, Banksia menziesii open woodland	
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland  Jacksonia floribunda mid open shrubland  2. Open shrubland	
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)  *Ehrharta calycina and * Briza maxima closed grassland	
ASSOCIATED SPECIES:	
Other (non-dominant) spp	
Please record up to four of the most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 Australian Scand Land Survey Field Handbook guidelines – refer to field manual for further information and structural formation table.	il
CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☒ Degraded ☒ Completely degraded ☐	
COMMENT:	
FIRE HISTORY: Last Fire: Season/Month: Year: 10+ yrs Fire Intensity: High  Medium  Low  No signs of fire	]
FENCING: Not required Present Replace / repair Required Length req'd: Length req'd:	
ROADSIDE MARKERS: Not required  Present Replace / reposition Required Quantity req'd:	
<b>OTHER COMMENTS:</b> (Please include recommended management actions and/or implemented actions - include date. Also include details of additional data available, and how to locate it.)	
	-
FLORA AUTHORISATION / LICENCE No: FB62000080-3 and TFL 2324-0083 Note if only observing plants (i.e. no specimens or plant matieral taken) then no authorisation/licence is required. For further information on authorisation and licening requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.	
SPECIMEN: Collectors No: WA Herb. Regional Herb. District Herb. Other:	
LODGEMENT: WA Herb Lodgement No:	_
ATTACHED: Map  Mudmap Photo GIS data Field notes Other:	
COPY SENT TO: Regional Office District Office Other:	
Benhouse-	
Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed: Date: 24/06/2024	



Version 1.4 March 2021

TAXON: Conospermum	undulatum				TPFI	Pop. No:	23c
OBSERVATION DATE:	17/10/2023	CONSI	ERVATION STATE	JS: VU		New populat	tion 🗌
OBSERVER/S: A.Benl	covic and A.Slee	<u>———</u> эр			PHONE	62228361	
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd			
EMAIL: angela.benkovic@	ghd.com						
DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):							
Near cnr of Roe hwy and Grea					-		
					Reser	ve No:	
DBCA DISTRICT: Swan Coas	stal	LGA: City of S	wan	Lar	nd manager	present:	
	·	M coords provided, <b>Zone</b> is	📥	HOD USE			. —
GDA94 / MGA94 🖂	_	DegMinSec U		PS 🗌		IGPS ⊠ N	•
AGD84 / AMG84	/ Northing: see	e shapefile attached		satellites: _		Map used:	
WGS84 ☐ Long	յ / Easting։		cont	ndary poly( ured:	gon	Map scale:	
Unknown 🗌	ZONE:			aroa.			
LAND TENURE:							
Nature reserve ☐	Timber reserve	Private propert	ty 🗆	Rail reserve	. 🗆	Shire road	d reserve 🔲
National park 🔲	State forest	Pastoral leas		oad reserve	_	Other Crown	
Conservation park	Water reserve	UC	CL SLK/Pole	to		S	specify other:
AREA ASSESSMENT: Edge	survey 📗 Pa	artial survey 📗 🛮 Fu	II survey ⊠ Area	observed	(m²): <u>5ha</u>	<u>a</u>	
EFFORT: Time s	nont curvovina (m	.:			00 2.		
EFFUKI. IIME S	peni surveying (n	ninutes): 4 hours	No. of minute	es spent / 1	00 m²:		
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count me	thod: ind	<del></del> ividuals	
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate (Refer to	•	thod: ind		
POP'N COUNT ACCURACY: WHAT COUNTED:	Actual ⊠	Extrapolation   Clumps	Estimate	Count me	thod: ind		
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	Actual ⊠ Plants ⊠ Mature:	Extrapolation	Estimate (Refer to	Count me field manual f	thod: ind	ividuals	١٠
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive	Actual ⊠	Extrapolation   Clumps	Estimate	Count me	thod: ind	ividuals Area of pop (m²)	
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	Actual ⊠ Plants ⊠ Mature:	Clumps  Juveniles:	Estimate (Refer to Clonal stems (Seedlings:	Totals:	thod: ind	ividuals	nt as numbers
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead	Actual ⊠ Plants ⊠ Mature:	Extrapolation   Clumps	Estimate	Count me field manual f Totals:	thod: ind	ividuals  Area of pop (m²) lote: Pls record cou	nt as numbers r database.
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead	Actual  Plants  Mature:	Clumps  Juveniles:	Estimate (Refer to Clonal stems (Seedlings:	Count me field manual f Totals:	thod: ind	ividuals  Area of pop (m²) lote: Pls record counot percentages) for	nt as numbers r database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:	Actual  Plants  Mature:  1  No	Extrapolation   Clumps   Juveniles:  Size   Vegetative	Estimate	Totals:  1	thod: ind	ividuals  Area of pop (m²) lote: Pls record counot percentages) for cquadrats (m²)	nt as numbers r database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu	Actual  Plants  Mature:  1  No Clonal  re fruit	Extrapolation   Clumps   Juveniles:  Size   Vegetative   Fruit   Fruit	Estimate	Totals:  1	thod: ind	ividuals  Area of pop (m²)  lote: Pls record counot percentages) for  quadrats (m²)  er 🏻	nt as numbers r database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:	Actual  Plants  Mature:  1  No	Extrapolation   Clumps   Juveniles:  Size   Vegetative	Estimate	Totals:  1	thod: ind	ividuals  Area of pop (m²)  lote: Pls record counot percentages) for  quadrats (m²)  er 🏻	nt as numbers r database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu	Actual  Plants  Mature:  1  No Clonal  re fruit	Extrapolation   Clumps   Juveniles:  Size   Vegetative   Fruit   Fruit	Estimate	Totals:  1	thod: ind	ividuals  Area of pop (m²)  lote: Pls record counot percentages) for  quadrats (m²)  er 🏻	nt as numbers r database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and seemed and seemed according to the country of the c	Actual  Plants  Mature:  1  No Clonal  re fruit  lealthy  supporting inform	Clumps	Estimate	Totals:  1	thod: ind	ividuals  Area of pop (m²) lote: Pls record counct percentages) for in quadrats (m²).  Potential	nt as numbers r database.
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H  COMMENT:  THREATS - type, agent and s  Eg clearing, too frequent fire, weed, dis	Actual  Plants  Mature:  1  No Clonal  re fruit  lealthy  supporting information in the composition of the composition in	Clumps	Estimate	Totals:  1	thod: ind  for list)  A  N  Otal area of  Flower  Percentage in  Senescer  Current impact	Area of pop (m²) lote: Pls record counct percentages) for figural fractions and flower:  Potential Impact	nt as numbers r database. :
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and seemed and seemed according to the country of the c	Actual  Plants  Mature:  1  No Clonal  re fruit  lealthy  supporting information in the supporting information in the supporting in	Clumps	Estimate	Totals:  1	thod: ind	ividuals  Area of pop (m²) lote: Pls record counct percentages) for in quadrats (m²).  Potential	nt as numbers r database. :
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H  COMMENT:  THREATS - type, agent and s  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat in	Actual  Plants  Mature:  1  No Clonal  re fruit  lealthy  supporting information in the supporting information in the supporting in	Clumps	Estimate	Totals:  1	thod: ind  for list)  A  N  Otal area of  Flower  Percentage in  Senescer  Current impact	Area of pop (m²) lote: Pls record counct percentages) for figural fractions and flower:  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and some state current and potential threat in Estimate time to potential impact:	Actual  Plants  Mature:  1  No Clonal  re fruit  lealthy  supporting information in the supporting information in the supporting in	Clumps	Estimate	Totals:  1	thod: ind  for list)  A  N  Otal area of  Flower  Percentage in  Senescer  Current impact	Area of pop (m²) lote: Pls record counct percentages) for figural fractions and flower:  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and seed to be a courrent and potential threat in Estimate time to potential impact:  • Weeds	Actual  Plants  Mature:  1  No Clonal  re fruit  lealthy  supporting information in the supporting information in the supporting in	Clumps	Estimate	Totals:  1	thod: ind  for list)  A  N  Otal area of  Flower  Percentage in  Senescer  Current impact	Area of pop (m²) lote: Pls record counct percentages) for figural fractions and flower:  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H COMMENT:  THREATS - type, agent and s Eg clearing, too frequent fire, weed, dis Rate current and potential threat ir Estimate time to potential impact:  • weeds  road	Actual  Plants  Mature:  1  No Clonal  re fruit  lealthy  supporting information in the supporting information in the supporting in	Clumps	Estimate	Totals:  1	thod: ind  for list)  A  N  Otal area of  Flower  Percentage in  Senescer  Current impact	Area of pop (m²) lote: Pls record counct percentages) for figural fractions and flower:  Potential Impact	Potential Threat Onset
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS: H COMMENT:  THREATS - type, agent and s Eg clearing, too frequent fire, weed, dis Rate current and potential threat ir Estimate time to potential impact:  • weeds  road	Actual  Plants  Mature:  1  No Clonal  re fruit  lealthy  supporting information in the supporting information in the supporting in	Clumps	Estimate	Totals:  1	thod: ind  for list)  A  N  Otal area of  Flower  Percentage in  Senescer  Current impact	Area of pop (m²) lote: Pls record counct percentages) for figural fractions and flower:  Potential Impact	Potential Threat Onset



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HABITAT INFORMATION	ON:				
LANDFORM:	<b>ROCK TYPE</b> :	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:
Crest □	Granite	(on soil surface; eg	Sand 🛚	Red □	Well drained ⊠
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam 🔲	Brown 🛛	Seasonally
Ridge ☐	Laterite	0.400/ 🔯	Loam 🗌	Yellow	inundated
Outcrop	Ironstone	0-10%	Clay loam 🔲	White	Permanently inundated ☐
Slope □	Limestone	10-30%	Light clay ☐	Grey ⊠	Tidal
Flat ⊠	Quartz 🗌	30-50%	Peat ☐	Black ☐	ridai 🗀
Open depression	Specify other:	50-100%	Specify other:	Specify other:	
Drainage line					
Closed depression	Consider Landform	. Class aut.			
Wetland □	Specific Landform (Refer to field manual for a				
CONDITION OF SOIL:	Dry ⊠	Moist	Waterlogged	Inundated	
VEGETATION CLASSIFICATION*:	1. Allocasuarina frase	eriana, Banksia menz	iesii and Banksia att	enuata open woodlar	nd
Eg: 1. Banksia woodland (B. attenuata, B. ilicifolia); 2. Open shrubland	Allocasuarina humilis a	nd Xanthorrhoea preiss	ii open shrubland		
(Hibbertia sp., Acacia spp.); 3. Isolated clumps of sedges (M.tetragona)	Desmocladus flexuosus	s, Dasypogon bromeliifo	olius and *Ehrharta caly	ycina herb/grassland	
ASSOCIATED SPECIES:					
Other (non-dominant) spp					
	most representative vegetation k guidelines – refer to field man			tructural Formations should fol	low 2009 Australian Soil
CONDITION OF HABITAT	: Pristine ☐ E	Excellent	od ⊠ Good □	Degraded ☐ Com <sub> </sub>	pletely degraded
COMMENT:					
FIRE HISTORY: La	st Fire: Season/Month:	Year: 10+ yrs	Fire Intensity: Hig	h 🗌 Medium 🔲 Low 🗀	No signs of fire ☐
FENCING:	Not required	Present Replac	e / repair 🔲		th req'd:
ROADSIDE MARKERS:	Not required	Present Replac	e / reposition	Required  Quan	tity req'd:
	Please include recomme			ed actions - include	
date. Also include detail	ls of additional data avail	able, and now to locate	π.)	-	
taken) then no authorisation/lie	ON / LICENCE No: FB6 cence is required. For further in carried out under authorisations/	formation on authorisation and	d licening requirements see the		·
SPECIMEN: Collect	ctors No: W/	A Herb. Regional	Herb. District He	rb. Other:	
LODGEMENT: WA H	erb Lodgement No:				
ATTACHED: Map	☐ Mudmap ☐ Ph	oto ☐ GIS data 区	☐ Field notes ☐	Other:	
COPY SENT TO: Re	gional Office 🔲 🔻 🗅	istrict Office	Other:		
			Ø n		
			( Duhaine		
Submitter of Record: And	gela Benkovic Role:	Snr. Botanist Signe	d:	Date: 24/0	6/2024



Version 1.4 March 2021

TAXON: Conospermun		TPFL Pop. No: 30a			30a					
OBSERVATION DATE: 18/10/2023			CONSERVATION STATUS: VU		New population					
OBSERVER/S: A.Ben	kovic and A.Slee	<u>=</u>			PHONE	62228361				
ROLE: Snr. Botanists		ORGA	NISATION: GHD	Pty Ltd						
EMAIL: angela.benkovic@	ghd.com									
DESCRIPTION OF LOCATION (Provide at least nearest town/named locality, and the distance and direction to that place):										
Tonkin Hwy north of Kelvin Rd										
					Reser	ve No:				
DBCA DISTRICT: Swan Coa	stal	LGA: City of G	osnells	Lar	nd manager	present:				
	·			HOD USED:						
GDA94 / MGA94 🖂	_				Differential GPS ⊠ Map □					
AGD84 / AMG84	/ Northing: see	e shapefile attached		satellites: _		Map used:				
WGS84 ☐ Long	g / Easting:		cont	ndary polyg ured:	gon	Map scale:				
Unknown 🗌	ZONE:			aroa.						
LAND TENURE:										
Nature reserve	Timber reserve	Private propert	ty 🗆	Rail reserve		Shire road	reserve 🗌			
National park 🔲	State forest	Pastoral leas		oad reserve	_	Other Crown	<del></del>			
Conservation park  Water reserve  UCL  SLK/Pole to Specify other:										
AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☑ Area observed (m²): 4ha										
EFFORT: Time spent surveying (minutes): 4 hours No. of minutes spent / 100 m <sup>2</sup> :										
EFFORI: Time s	spent surveying (ii	ilnutes): <u>4 nours</u>	No. of minute	es spent / 1	00 III					
POP'N COUNT ACCURACY:		Extrapolation	Estimate	Count met	thod: ind	<del></del> ividuals				
POP'N COUNT ACCURACY:	Actual ⊠	Extrapolation	Estimate (Refer to	-	thod: ind					
POP'N COUNT ACCURACY: WHAT COUNTED:	Actual ⊠ Plants ⊠	Extrapolation   Clumps	Estimate	Count met	thod: ind					
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	Actual ⊠ Plants ⊠ Mature:	Clumps  Juveniles:	Estimate (Refer to	Count met field manual f	thod: ind	ividuals	١٠			
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive	Actual ⊠ Plants ⊠	Extrapolation   Clumps	Estimate	Count met	thod: ind	<u>ividuals</u> Area of pop (m²)				
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE:	Actual ⊠ Plants ⊠ Mature:	Clumps  Juveniles:	Estimate	Count met field manual for Totals:	thod: ind	ividuals  Area of pop (m²)  lote: Pls record couloot percentages) for	nt as numbers database.			
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive	Actual ⊠ Plants ⊠ Mature:	Clumps  Juveniles:	Estimate	Count met field manual for Totals:	thod: ind	ividuals  Area of pop (m²) lote: Pls record coul	nt as numbers database.			
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead	Actual  Plants  Mature:	Clumps  Juveniles:	Estimate	Count met field manual for Totals:	thod: ind	ividuals  Area of pop (m²)  lote: Pls record couloot percentages) for	nt as numbers database.			
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:	Actual  Plants  Mature:  9  No	Extrapolation   Clumps   Juveniles:  1  Size   Vegetative   Vegetative	Estimate  (Refer to (Refer to Clonal stems  Seedlings:	Count met field manual for Totals:  10	thod: ind	ividuals  Area of pop (m²)  lote: Pls record count percentages) for incomplete incomplet	nt as numbers r database.			
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immate	Actual  Plants  Mature:  9  No Clonal  ure fruit	Extrapolation   Clumps   Juveniles:  1  Size   Vegetative  Fruit   Fruit	Estimate	Count met field manual for Totals:  10	thod: ind or list)  A  otal area of  Flowerecentage in	ividuals  Area of pop (m²)  lote: Pls record coul not percentages) for  quadrats (m²):  er 🏻	nt as numbers r database.			
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu	Actual  Plants  Mature:  9  No	Extrapolation   Clumps   Juveniles:  1  Size   Vegetative   Vegetative	Estimate  (Refer to (Refer to Clonal stems  Seedlings:	Count met field manual for Totals:  10	thod: ind	ividuals  Area of pop (m²)  lote: Pls record coul not percentages) for  quadrats (m²):  er 🏻	nt as numbers r database.			
POP'N COUNT ACCURACY: WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immate	Actual  Plants  Mature:  9  No Clonal  ure fruit	Extrapolation   Clumps   Juveniles:  1  Size   Vegetative  Fruit   Fruit	Estimate	Count met field manual for Totals:  10	thod: ind or list)  A  otal area of  Flowerecentage in	ividuals  Area of pop (m²)  lote: Pls record coul not percentages) for  quadrats (m²):  er 🏻	nt as numbers r database.			
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and	Actual  Plants  Mature:  9  No Clonal  ure fruit  Healthy  supporting inform	Clumps	Estimate	Count met field manual for Totals:  10  Totals:	thod: ind or list)  A N (i) Otal area of Percentage in Senescer  Current	Area of pop (m²)  Note: Pls record count percentages) for figuration (m²):  From Indower:	nt as numbers database.			
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis	Actual	Clumps	Estimate	Count met field manual for Totals:  10  Totals:	thod: ind or list)  A N (i) Otal area of Flower Percentage in Senescer  Current impact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²):  or  n flower:%  Potential Impact	nt as numbers r database. :			
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and	Actual	Clumps	Estimate	Count met field manual for Totals:  10  Totals:	thod: ind or list)  A N (i) Otal area of Percentage in Senescer  Current	Area of pop (m²)  Note: Pls record count percentages) for figuration (m²):  From Indower:	nt as numbers database.  Potential Threat			
WHAT COUNTED: TOTAL POP'N STRUCTURE: Alive Dead QUADRATS PRESENT: Summary Quad. Totals: Alive REPRODUCTIVE STATE: Immatu CONDITION OF PLANTS: COMMENT: THREATS - type, agent and Eg clearing, too frequent fire, weed, dis Rate current and potential threat if	Actual	Clumps	Estimate	Count met field manual for Totals:  10  Totals:	thod: ind or list)  A N (i) Otal area of Flower Percentage in Senescer  Current impact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²):  or  n flower:%  Potential Impact	Potential Threat Onset			
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:	Actual	Clumps	Estimate	Count met field manual for Totals:  10  Totals:	thod: ind or list)  A N (i) Otal area of Flower Percentage in Senescer  Current impact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²):  or  n flower:%  Potential Impact	Potential Threat Onset			
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:  • Weeds	Actual	Clumps	Estimate	Count met field manual for Totals:  10  Totals:	thod: ind or list)  A N (i) Otal area of Flower Percentage in Senescer  Current impact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²):  or   n flower:%  Potential Impact	Potential Threat Onset			
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:  • weeds  road	Actual	Clumps	Estimate	Count met field manual for Totals:  10  Totals:	thod: ind or list)  A N (i) Otal area of Flower Percentage in Senescer  Current impact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²):  or   n flower:%  Potential Impact	Potential Threat Onset			
POP'N COUNT ACCURACY:  WHAT COUNTED:  TOTAL POP'N STRUCTURE:  Alive  Dead  QUADRATS PRESENT:  Summary Quad. Totals: Alive  REPRODUCTIVE STATE:  Immatu  CONDITION OF PLANTS:  COMMENT:  THREATS - type, agent and  Eg clearing, too frequent fire, weed, dis  Rate current and potential threat is  Estimate time to potential impact:  • weeds  road	Actual	Clumps	Estimate	Count met field manual for Totals:  10  Totals:	thod: ind or list)  A N (i) Otal area of Flower Percentage in Senescer  Current impact	Area of pop (m²)  Note: Pls record coul not percentages) for f quadrats (m²):  or   n flower:%  Potential Impact	Potential Threat Onset			



Version 1.4 March 2021

HABITAT INFORMATION	HABITAT INFORMATION:										
LANDFORM:	<b>ROCK TYPE:</b>	LOOSE ROCK:	SOIL TYPE:	SOIL COLOUR:	DRAINAGE:						
Crest □	Granite ☐	(on soil surface; eg	Sand ⊠	Red □	Well drained ⊠						
Hill 🗌	Dolerite	gravel, quartz fields)	Sandy loam	Brown 🛛	Seasonally						
Ridge □	Laterite		Loam	Yellow □	inundated						
Outcrop	Ironstone	0-10%	Clay loam 🔲	White □	Permanently						
Slope	Limestone	10-30%	Light clay	Grey ⊠	inundated 🔲						
Flat ⊠	Quartz 🗌	30-50%	Peat □	Black	Tidal □						
Open depression	Specify other:	50-100%	Specify other:	Specify other:							
Drainage line ☐	, ,		, ,	, ,							
Closed depression											
Wetland □	Specific Landform										
CONDITION OF SOIL:	(Refer to field manual for a Dry ⊠	Moist	Waterlogged □	Inundated							
	-	<u>—</u>		_							
VEGETATION CLASSIFICATION*: Eg: 1. Banksia woodland (B.	ICATION*: trees										
attenuata, B. ilicifolia);  2. Open shrubland (Hibbertia sp., Acacia spp.);	* Gaudium laevigatum,	Calothamnus quadrifidu	us and Xanthorrhoea p	reissii tall to mid shrubl	and						
3. Isolated clumps of sedges (M.tetragona)	* Ehrharta calycina, * L	ysimachia arvensis and	Mesomelaena pseudo	stygia grass/sedgeland	<u> </u>						
ASSOCIATED SPECIES:											
Other (non-dominant) spp	most representative vegetation	lavers (with up to three domina	ant species in each layer). St	ructural Formations should fo	llow 2009 Australian Soil						
and Land Survey Field Handboo				dotarar i ormations snould to	now 2000 Australian Con						
CONDITION OF HABITAT	: Pristine 🗌 E	Excellent	od ☐ Good ⊠	Degraded ☐ Com	pletely degraded						
COMMENT:											
	st Fire: Season/Month:		Fire Intensity: Hig		No signs of fire ☐						
FENCING:	Not required		e / repair 🔲		th req'd:						
ROADSIDE MARKERS:	Not required	Present Replace	e / reposition	Required  Quar	ntity req'd:						
	Please include recomme s of additional data avail			ed actions - include							
date. Also include detail	s of additional data avail	able, and now to locate	п.)								
<b>FLORA AUTHORISATION / LICENCE No:</b> FB62000080-3 and TFL 2324-0083 Note if only observing plants (i.e. no specimens or plant matieral is taken) then no authorisation/licence is required. For further information on authorisation and licening requirements see the Threatened Flora and Wildlife Licensing pages on DBCA's website. Any actions carried out under authorisations/licences should be recorded above in the OTHER COMMENTS section.											
SPECIMEN: Collect	ctors No: W/	A Herb. Regional	Herb. District Her	b. Other:							
LODGEMENT: WA H	erb Lodgement No:										
ATTACHED: Map	☐ Mudmap ☐ Ph	oto ☐ GIS data ⊠	Field notes	Other:							
COPY SENT TO: Re	gional Office 🔲 🔻 🗅	istrict Office	Other:								
			81 2								
Fourth -											
Submitter of Record: An	gela Benkovic Role	Snr. Botanist Signe	d:	Date: 24/0	6/2024						
	<u> </u>	Dotainot		Dato. 24/0	J J						



→ The Power of Commitment