Population Survey

Conospermum undulatum

Main Roads

18 July 2025

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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	Adequate information is available for the survey area, this includes: – Vegetation complex mapping (Heddle et al. 1980, Mattiske and Havel 1998 and Webb et al. 2016) – Previous reports (Department of Environment and Conservation (DEC) 2009, Woodman Environmental Consulting 2021, Western Environmental 2022 & 2023) – Historical data: DBCA Threatened and Priority Flora Database and WA Herbarium Database (*C. undulatum* records) and Main Roads Flora Database (*C. undulatum* records)
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 *C. undulatum* 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 *C. undulatum* 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 adequate)	Nil	The vascular flora of the survey area was sampled in accordance with EPA (2016). 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: – Senior Botanist, Angela Benkovic (flora licence no. FB62000080-3), has more than 18 years' experience leading and conducting vegetation and flora surveys – Senior Botanist, Alex Sleep (flora licence no. FB62000557,), has more than 15 years' experience leading and conducting vegetation and flora surveys.

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	a					1,592 (2005)	1,592
1	b					362 (2002)	362
1	c					508 (1998)	508
1	d					11 (2002)	11
1	e					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	a					405 (2016)	405
3	a					1 (2008)	1
4	a					62 (1997)	62
4	b					89 (2008)	89
4	c					0 (1997)	0
4	d					41 (2008)	41
4	e					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	l					20 (2006)	20
4	m					7 (2006)	7
4	n					103 (2005)	103
4	o					161 (2005)	161
4	p					152 (2005)	152
4	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	a					2 (2008)	2
6	a					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	a					0 (1997)	0
8	a					4 (2001)	4
8	b					4 (2005)	4
9	a					0 (2006)	0
9	b					14 (2014)	14
10	a, b, d, f, g & h		639	75		457 (2000)-(2013)	714
10	c		15			10 (2006)	15
10	e		106	5		10 (2006)	111
11	a					0 (2005)	0
11	b					7 (2006)	7
11	c					100 (2005)	100
11	d					175 (2005)	175
11	e					12 (2006)	12
11	f					1 (2005)	1
12	a					72 (2005)	72
13	a		431		3	655 (2006)	434
13	Part of a		9				9
13	b					10 (1997)	10
13	c					0 (1997)	0
14	a					0 (2005)	0
14	b					1 (2005)	1
15	a					0 (2005)	0
16	a					337 (2020)	337
16	b					80 (2006)	80
16	c					209 (2006)	209
16	d					120 (2006)	120
16	e					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	l					10 (2006)	10
16	m					31 (2006)	31
16	n					2 (2020)	2
16	o					15 (2009)	15
16	p					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	a					1,659 (2013)	1,659
18	b					0 (1997)	0
18	c					97 (2006)	97
18	d					15 (2006)	15
18	e					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	o					416 (2006)	416
18	p					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	x					20 (2018)	20
18	y					21 (2020)	21
19	a					1 (2001)	1
19	b					63 (2005)	63
19	c					25 (2005)	25
19	d					12 (2005)	12
19	e					7 (2005)	7
20	a					28 (2000)	28
20	b					5 (2005)	5
21	a					1 (2003)	1
22	a					1 (2003)	1
22	b					3 (2003)	3
23	a					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	c					2 (2009)	2
24	a					1 (2004)	1
24	b					200 (2005)	200
24	c					49 (2019)	49
25	a					16 (2009)	16
26	a					1 (2005)	1
27	a					12 (2006)	12
28	a					4 (2006)	4
29	a					1 (2010)	1
29	b					6 (2019)	6
30	a		13			2 (2011)	13
31	a					1 (2007)	1
32	a					2 (2016)	2
32	b					1 (2016)	1
33	a					1 (2010)	1
34	a					25 (2014)	25
35	a					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).

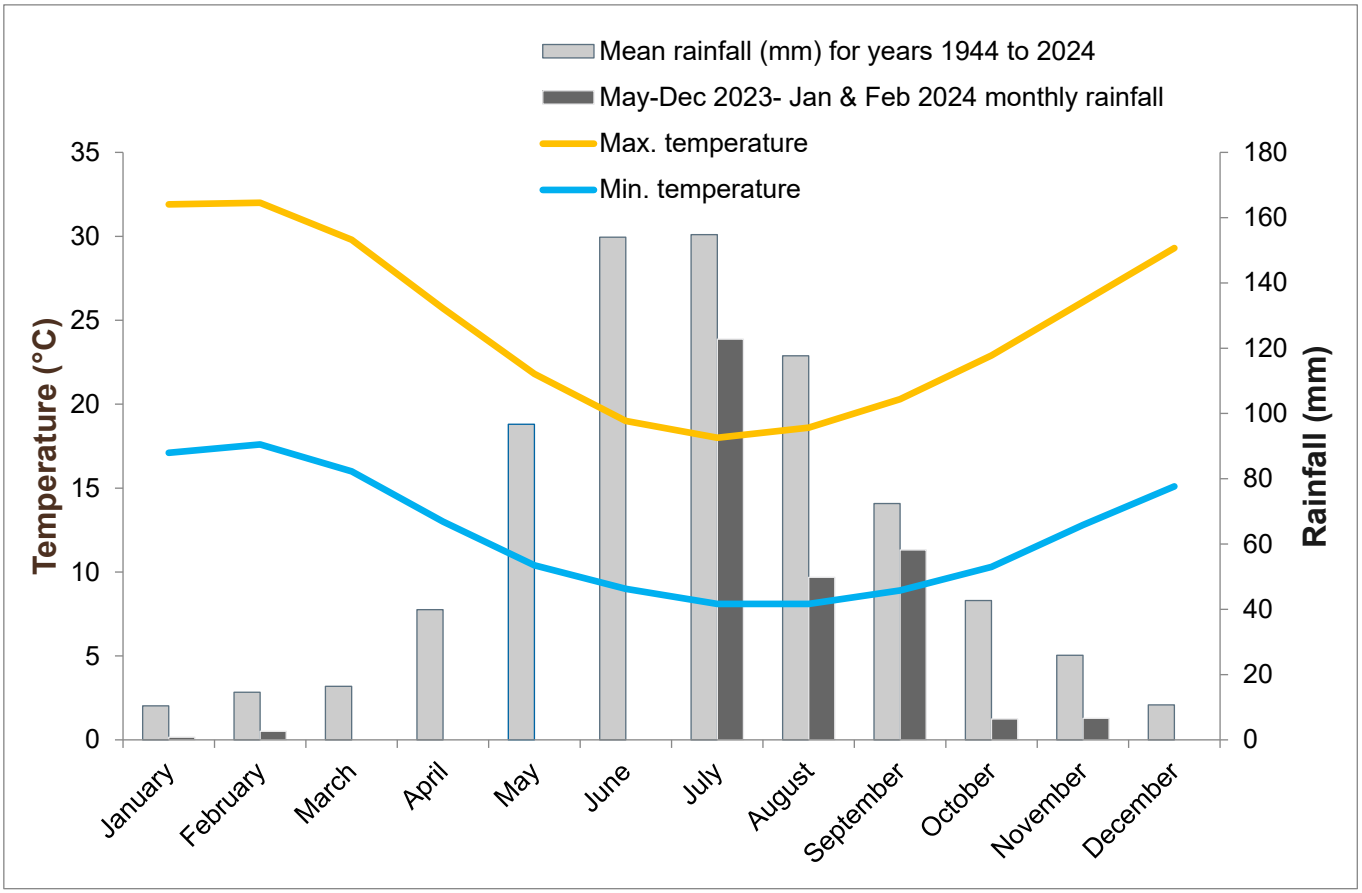

Plate 2 *Average climatic statistics for Perth Airport station site number 009021 (BOM 2024)*

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
212Bs__S8	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*
213Fo__Ff1	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
213Fo__Ff2	Foot and low slopes < 10%.Well drained gravelly yellow or brown duplex soils with sandy topsoil. Woodland of *E. marginata, C. calophylla* and some *B. grandis*
213Fo__Ff3	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*
213Fo__Ff8	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
213Pj__Gf1	Very gently undulating plain. Moderately well drained yellow duplex or gradational soils with sand to sandy loam topsoil. Woodland of *E. wandoo and C. calophylla*
213Pj__Gf3	Level to very gently sloping plain. Poorly drained mottled yellow earths with loamy topsoil. Low woodland of *Melaleuc*a spp., and *E. rudis*. *Casuarina obesa* on salt affected areas
213Pj__Gf4	Level to very gently inclined alluvial fans. Variable imperfectly drained soils with layers of sand, sandy loam, clay, grit and weathered granitic detritus. *C. calophylla. E. rudis* & *Melaleuca* spp. along streams. Casuarina on salt land
213Pj__Gf5	Incised drainage channels with poorly drained gradational mottled yellow earths. Shrubland of Melaleucas and other low shrubs
213Pj__Gf6	Seasonally inundated swamps with very poorly drained uniform non-cracking clays
213Pj__Gf7	Minor rises with deep rapidly drained brownish, siliceous or bleached sands underlain by mottled yellow clay. Low woodland of *B. prionotes* and some tall *C.. calophylla* with *E. rudis* along streamlines
213Pj__Gf9	Minor sandy rises (aeolian deposits) with moderately deep well drained sands overlying gravelly mottled clay
213Pj__Mgs1	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
213Pj__S10	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	a	1592	Maida Vale Reserve	Bush Forever 316 Recreation / Conservation
1	b	362	Gooseberry Hill Road Bushland	Bush Forever 466 Nature Reserve
1	c	508	Gooseberry Hill Road Bushland	Bush Forever 466 Nature Reserve
1	e	57	Maida Vale Reserve	Bush Forever 316 Recreation / Conservation
1	i	131	Maida Vale Reserve	Bush Forever 316 Recreation / Conservation
2	a	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	a	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	e	111	Hartfield Park (West of Tonkin Highway)	Bush Forever Site 320 Nature Reserve
13	a	434	Clifford Street Reserve	Bush Forever Site 53
16	a	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	a	1659	Dundas Road Bushland	Bush Forever Site 319 Nature Reserve
18	d	15	Dundas Road Bushland	Bush Forever Site 319 Nature Reserve
18	e	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	y	21	Bougainvillea Avenue Bushland	Bush Forever Site 401 Nature Reserve
19	b	63	Welshpool Road Bushland	Bush Forever Site 50 Nature Reserve
19	c	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	c	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 sources)	Extant	61	4,494
	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	c					508 (1998)	508	816
1	i					131 (2011)	131	102
1	k					4 (2020)	4	8
2	a					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	l					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	a					2 (2008)	2	0
7	a					0 (1997)	0	0
9	a					0 (2006)	0	0
10	c		15			10 (2006)	15	9
13	a		431		3	655 (2006)	434	371
13	Part of a		9				9	8
13	b					10 (1997)	10	0
13	c					0 (1997)	0	0
14	a					0 (2005)	0	0
14	b					1 (2005)	1	5
15	a					0 (2005)	0	0
16	a					337 (2020)	337	192
16	j					17 (2005)	17	8
16	l					10 (2006)	10	22
16	m					31 (2006)	31	64
16	n					2 (2020)	2	0
17	a					94 (2006)	94	166
18	a + o					1659 (2013) + 416 (2006)	2,075	1,388
18	b					0 (1997)	0	0
18	c					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	p					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	x					20 (2018)	20	5
19	b +c					63 (2005) + 25 (2005)	88	84
19	d					12 (2005)	12	11
19	e					7 (2005)	7	0
20	a					28 (2000)	28	0
21	a					1 (2003)	1	0
22	a					1 (2003)	1	1
23	a					25 (2009)	25	0
23	b					3 (2009)	3	1
23	c					2 (2009)	2	1
26	a					1 (2005)	1	0
29	a					1 (2010)	1	0
30	a		13			2 (2011)	13	10
32	a					2 (2016)	2	0
32	b					1 (2016)	1	0
33	a					1 (2010)	1	0
34	a					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).

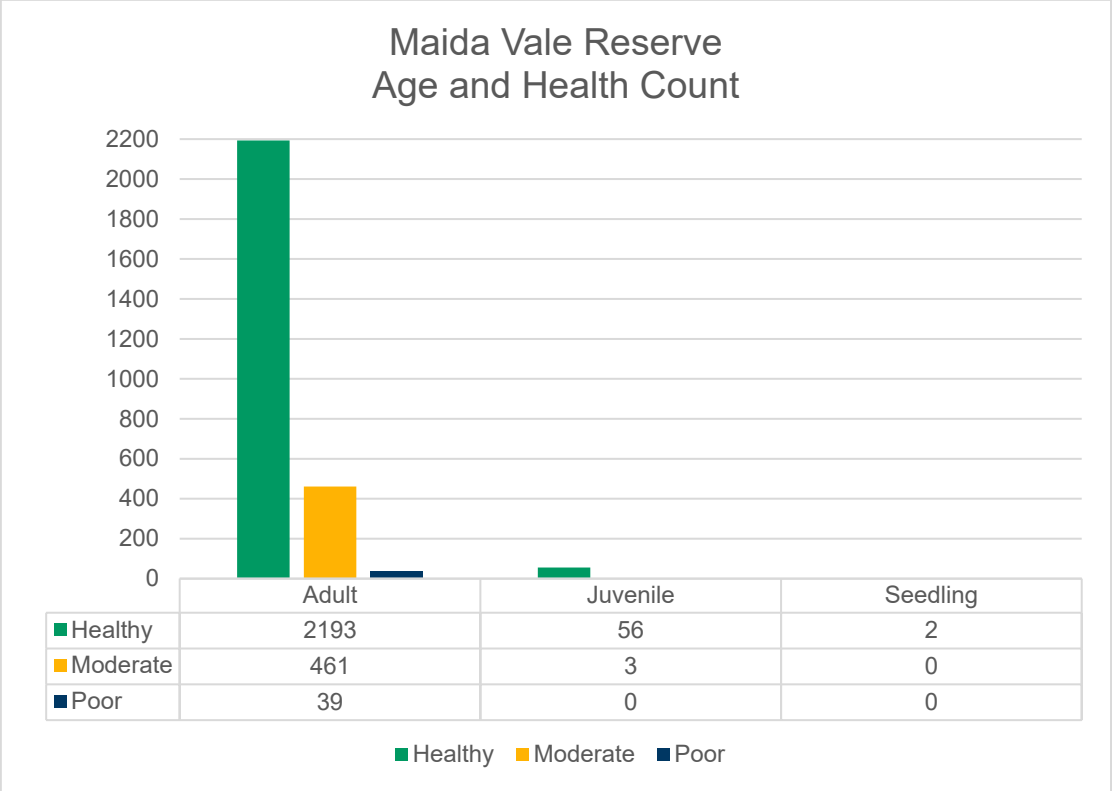

Plate 3 ***Maida Vale Reserve Conospermum undulatum population 1a and 1e - age and health***

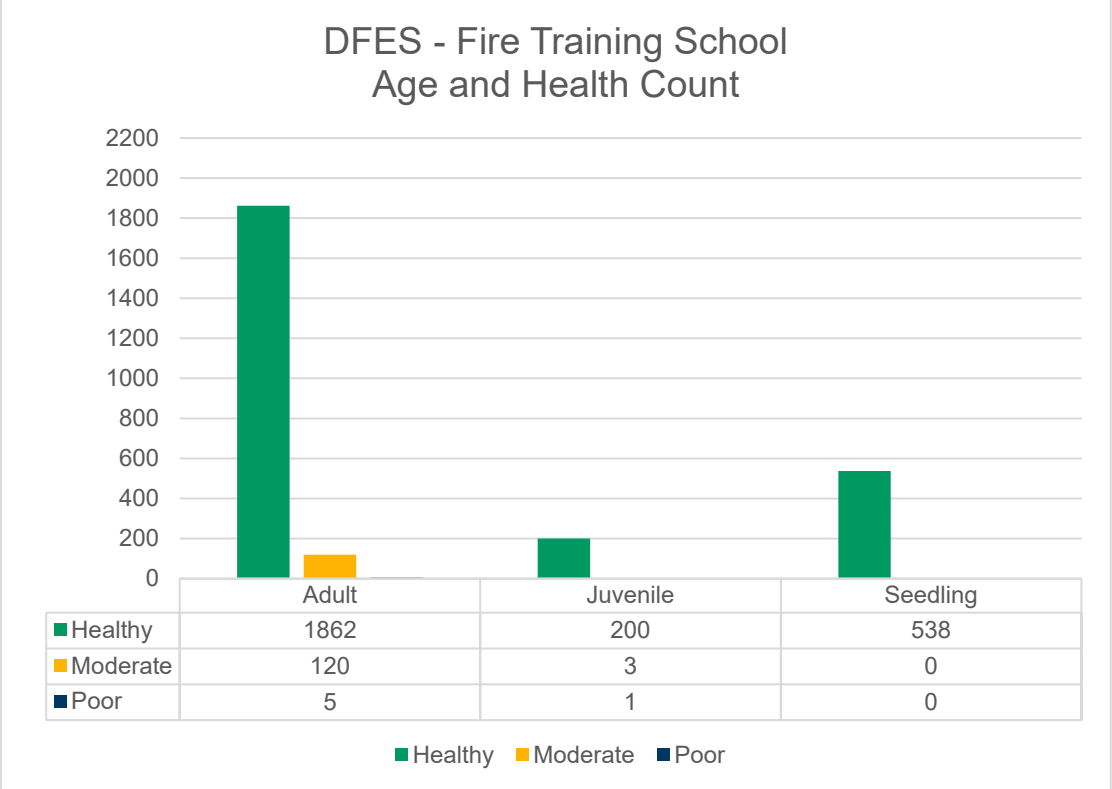

Plate 4 ***DFES Fire Training School Conospermum undulatum population 18g -age and health***

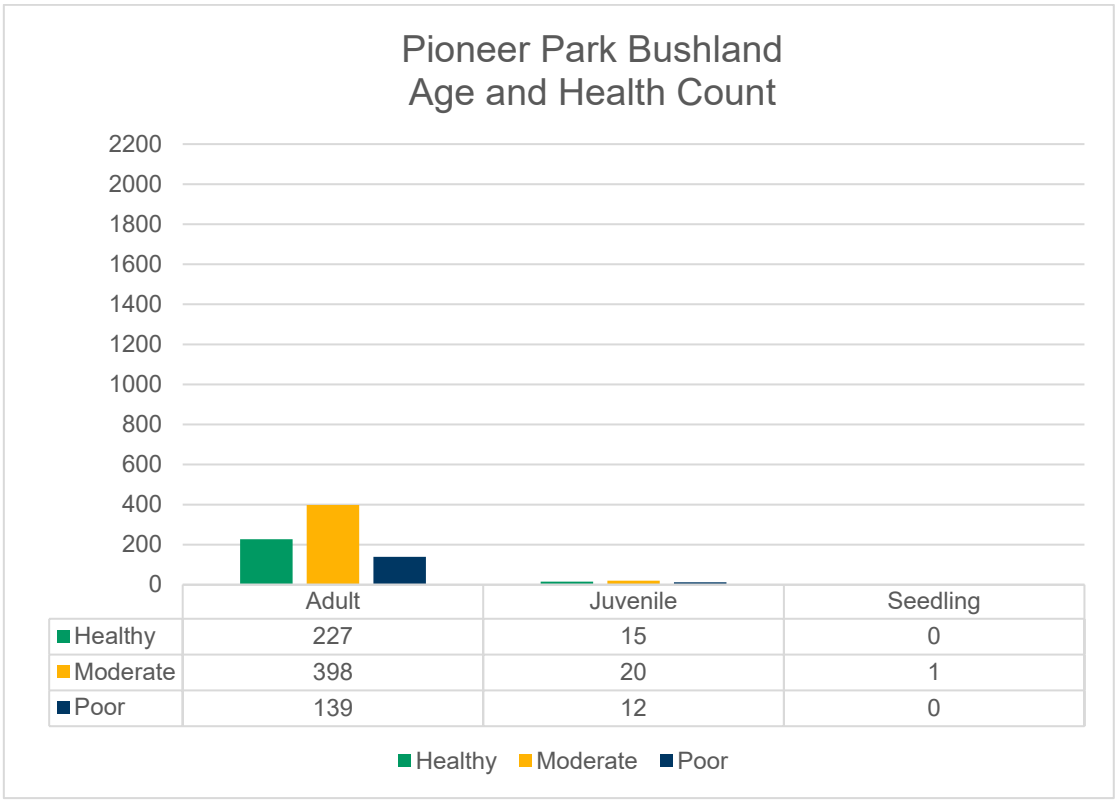

Plate 5 *Pioneer Park Bushland Conospermum undulatum population 18i and 18 k- age and health*

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).

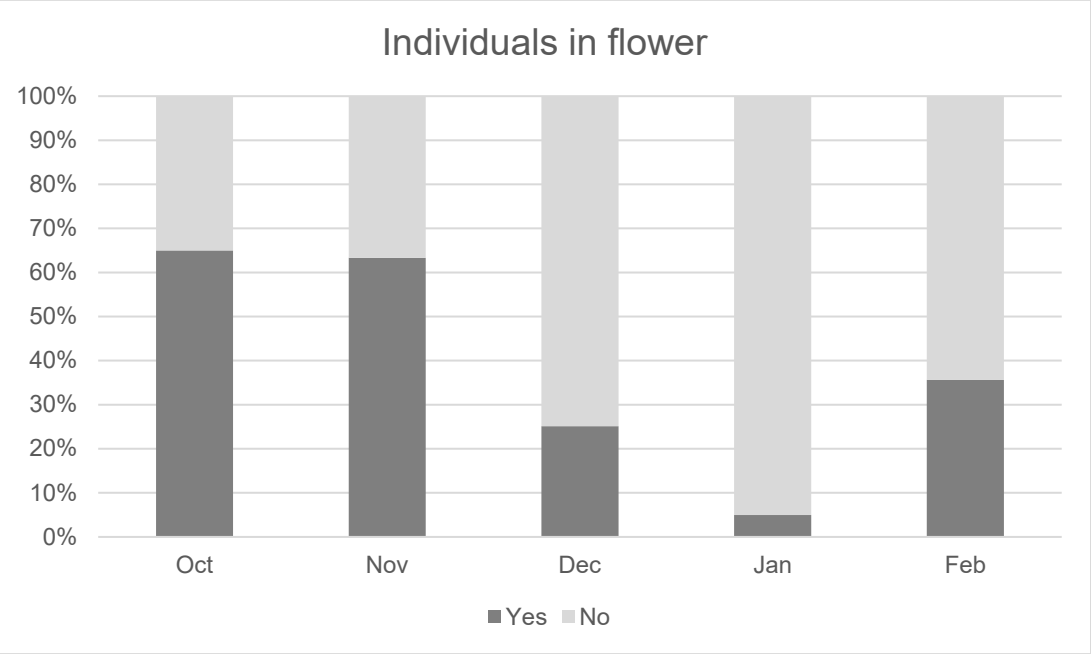

Plate 6 *Proportion of individuals in flower at the time of the survey (October 2023 – February 2024)*

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).

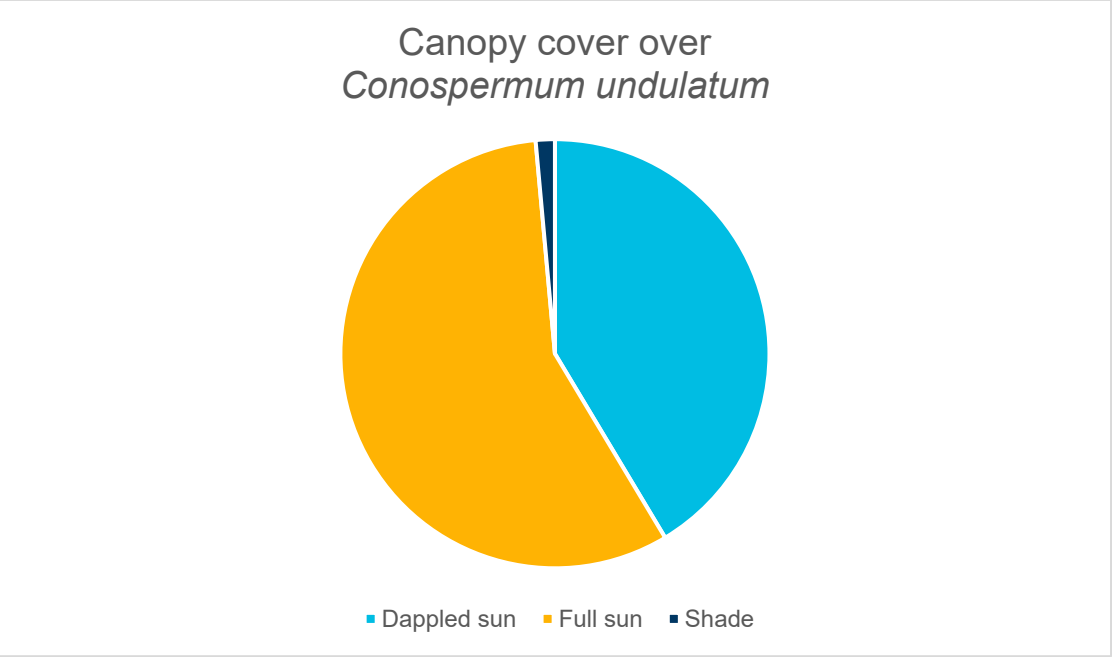

Plate 7 *Recorded canopy cover over Conospermum undulatum individuals*

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, l & 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 l, 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
16l	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 National Park		Welshpool Rd Bushland		Clifford St Bushland		Bougainvillea Avenue Bushland		Pioneer Park Bushland		Sultana Road		Dundas Road Nature Reserve		Hawkesvale Reserve		Maida Vale Reserve	
	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 National Park		Welshpool Rd east bushland		Clifford street bushland		Department of Ag site Forrestfield		Pioneer Park		Sultana Road		Dundas Road Nature Reserve		Hawkesvale Reserve		Maidavale Reserve	
	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)	Korung National Park		Welshpool Rd east bushland		Clifford street bushland		Department of Ag site Forrestfield		Pioneer Park		Sultana Road		Dundas Road Nature Reserve		Hawkesvale Reserve		Maida Vale Reserve	
	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 menziesi*i (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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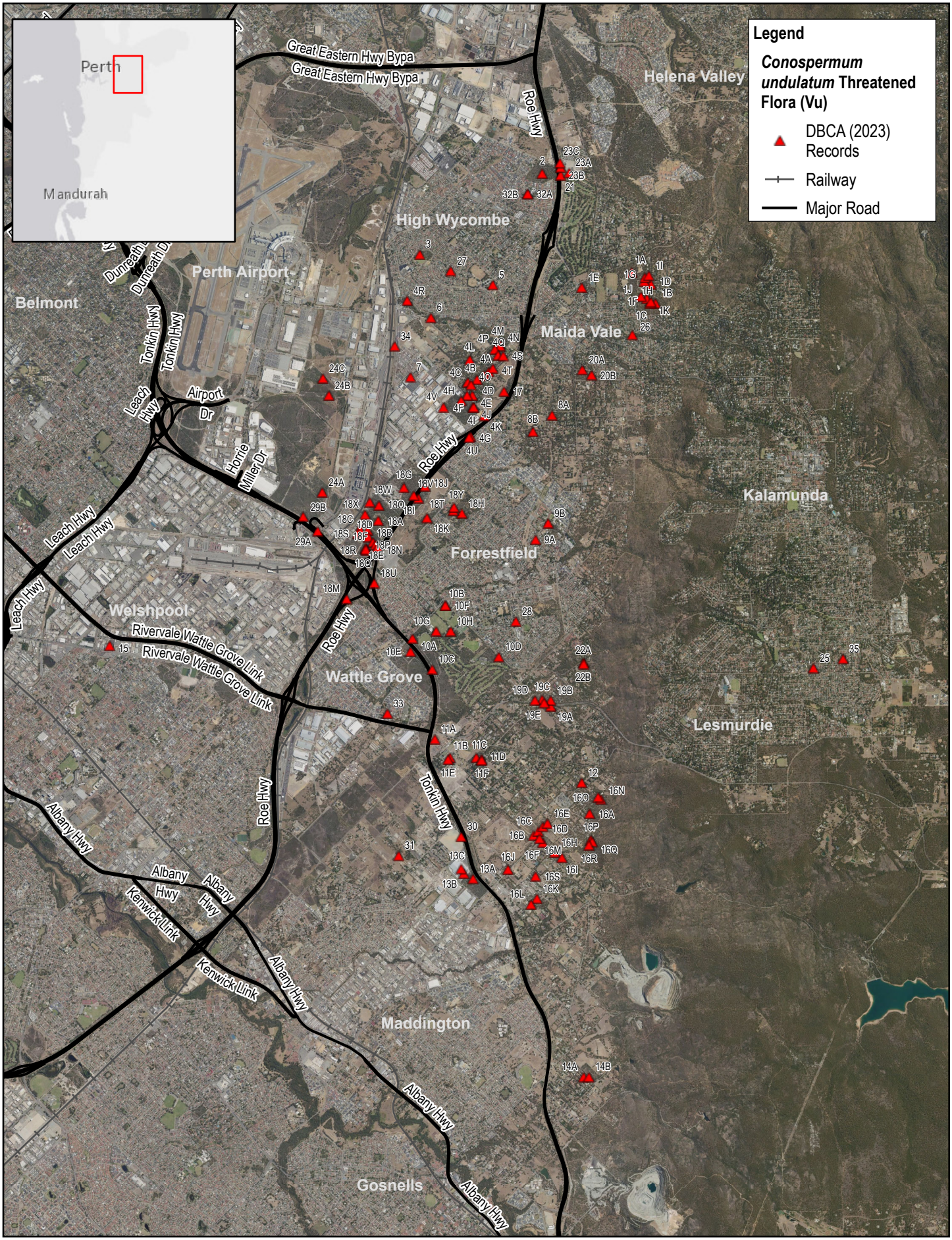
Appendices

Appendix A

Figures



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Kilometers

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Site Location

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

FIGURE 1

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World Light Gray Reference: Esri, HERE
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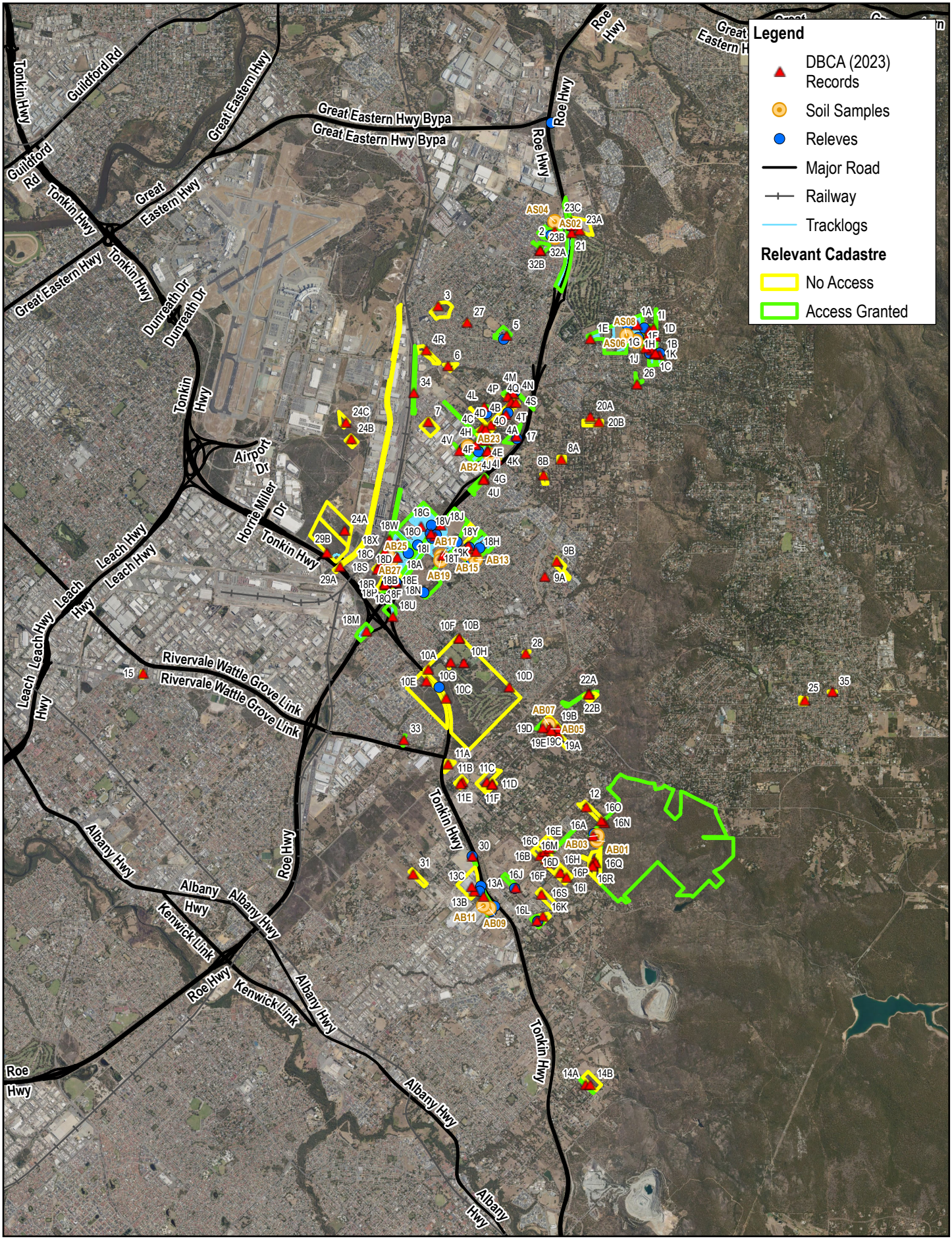

Paper Size ISO A4

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Kilometers

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Survey Effort

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

Page 1 of 4

FIGURE 2

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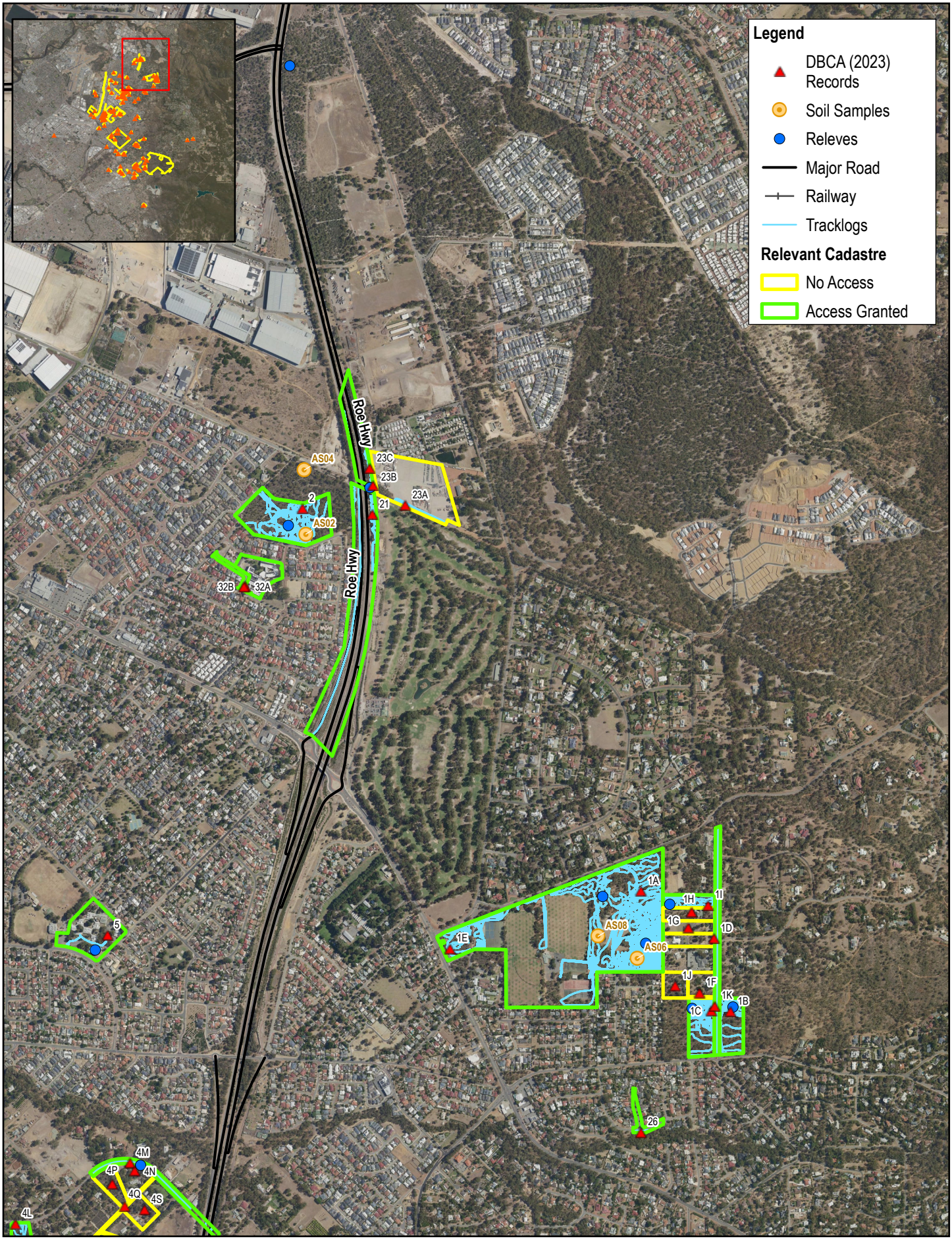

Paper Size ISO A4

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Kilometers

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

Survey Effort

FIGURE 2

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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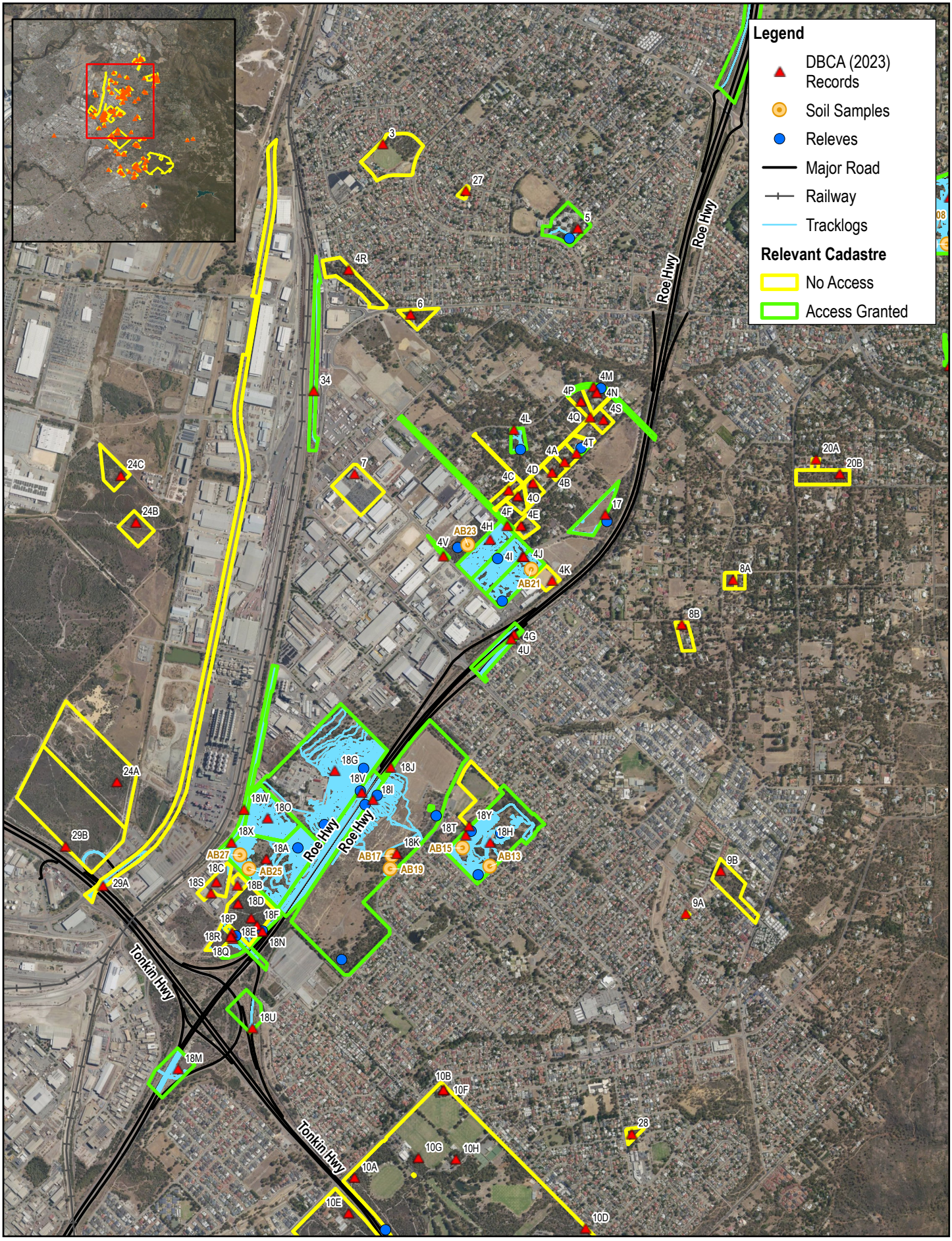

Paper Size ISO A4

0 0.2 0.4 0.6 0.8

Kilometers

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

Survey Effort

FIGURE 2

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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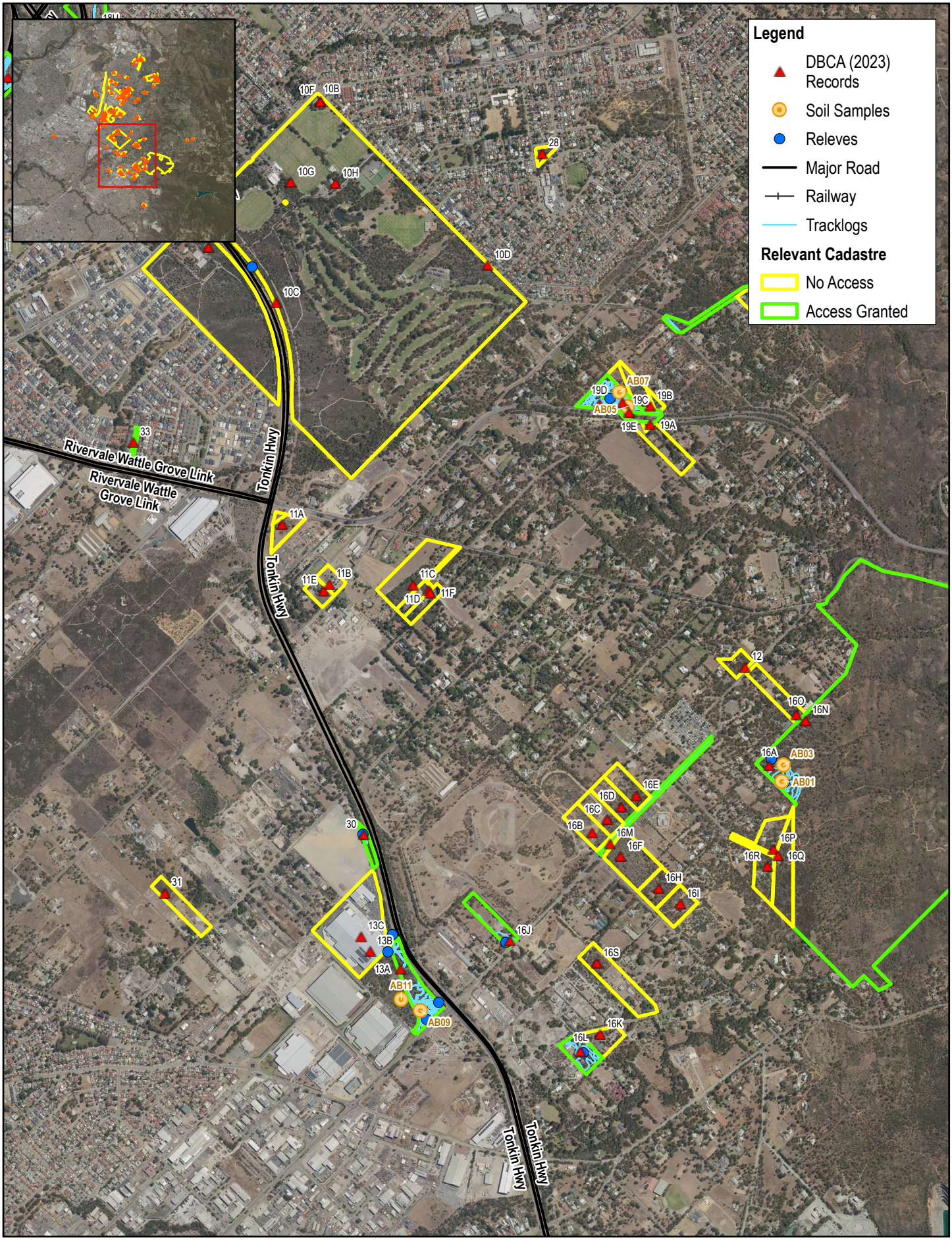

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Kilometers

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Survey Effort

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

FIGURE 2

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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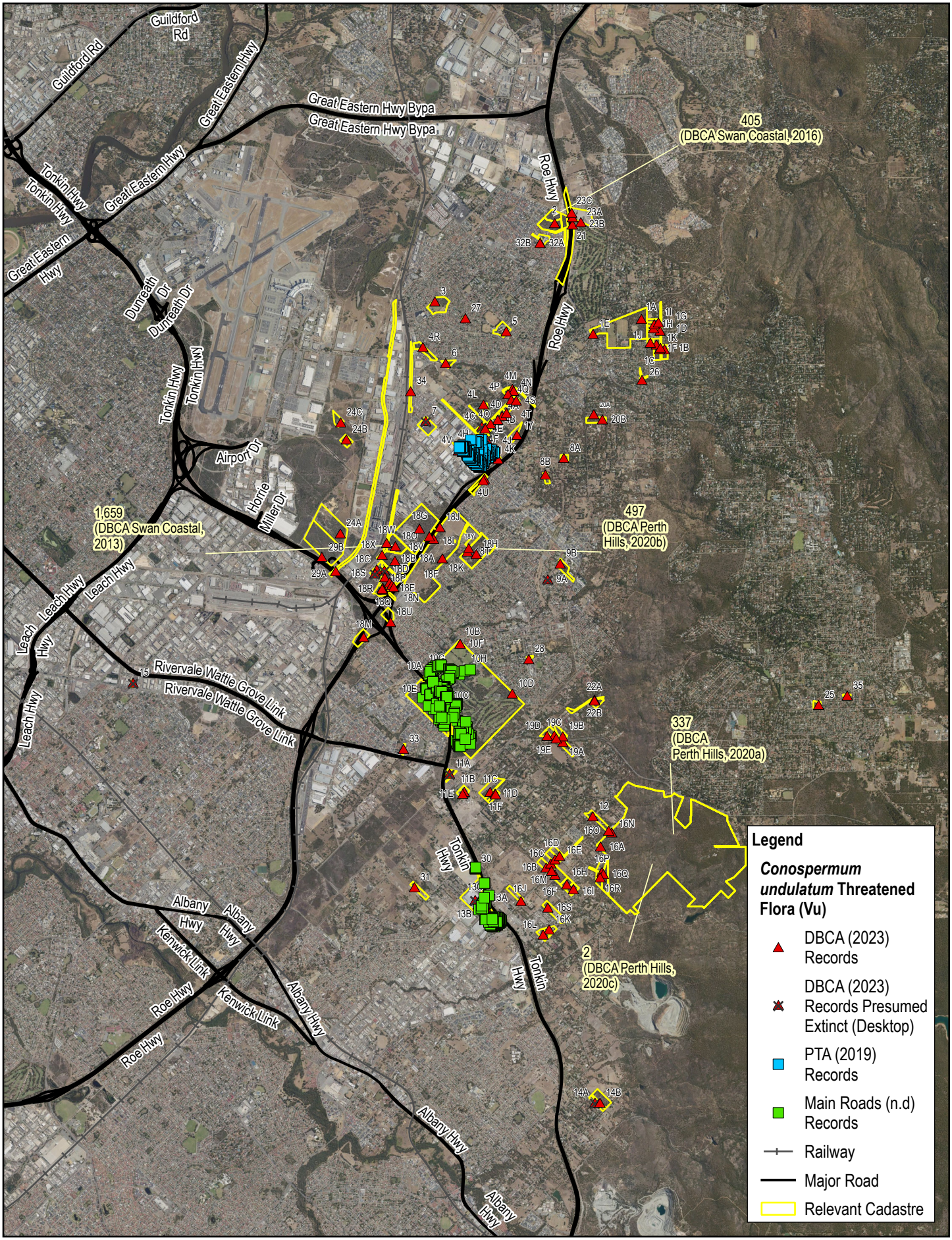

Paper Size ISO A4

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Meters

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Historic Records

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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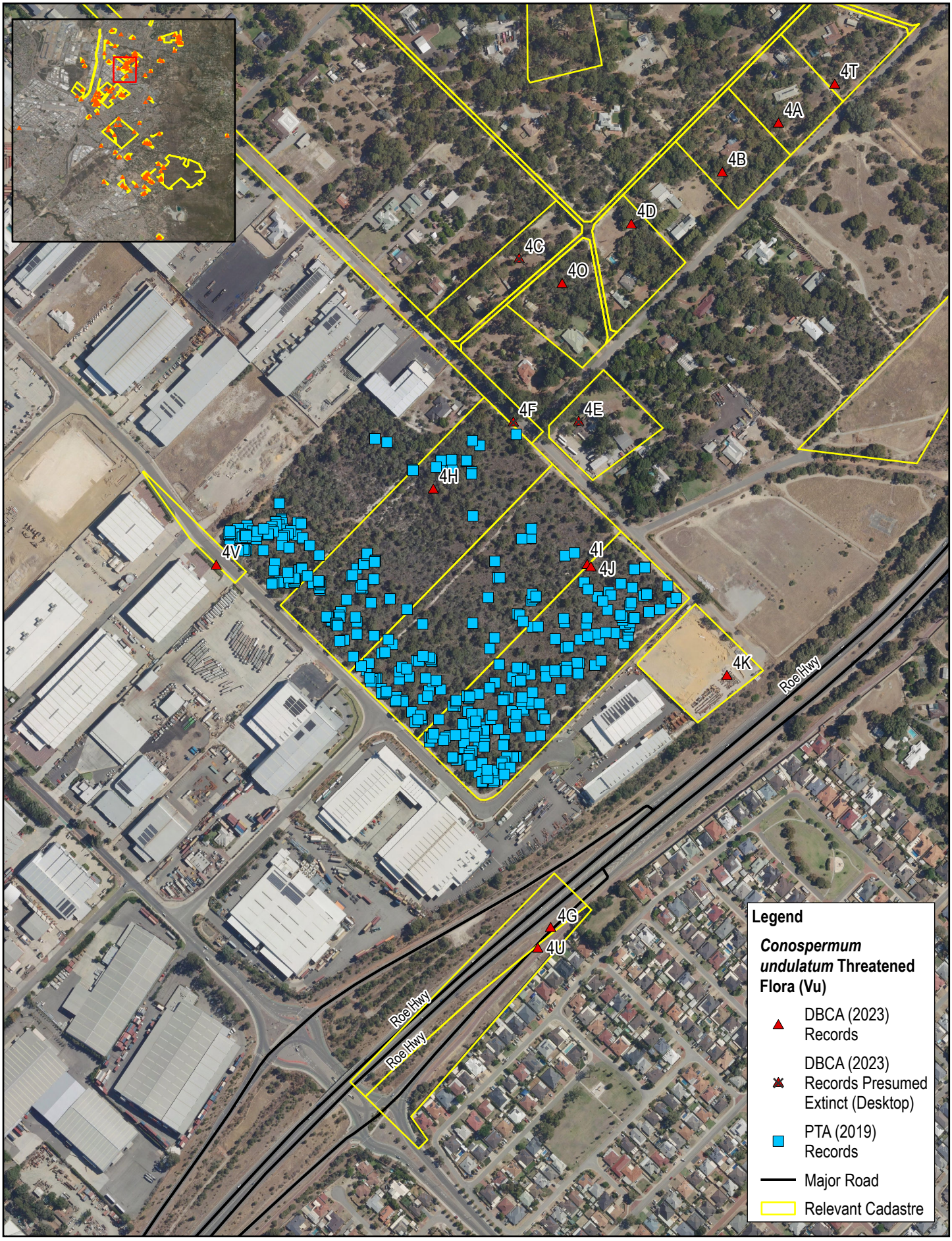

Paper Size ISO A4

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Meters

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Historic Records

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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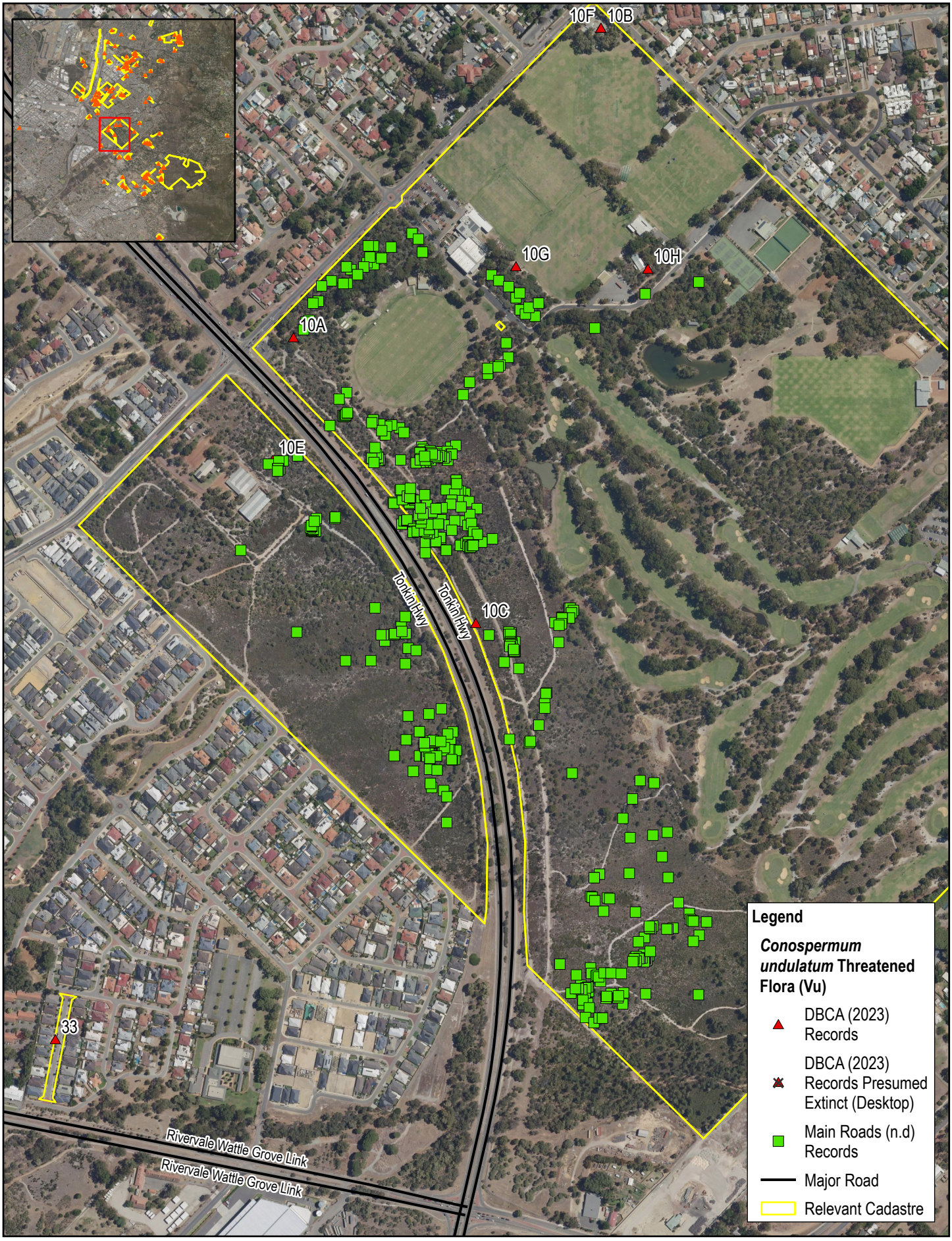

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Meters

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Historic Records

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

FIGURE 3

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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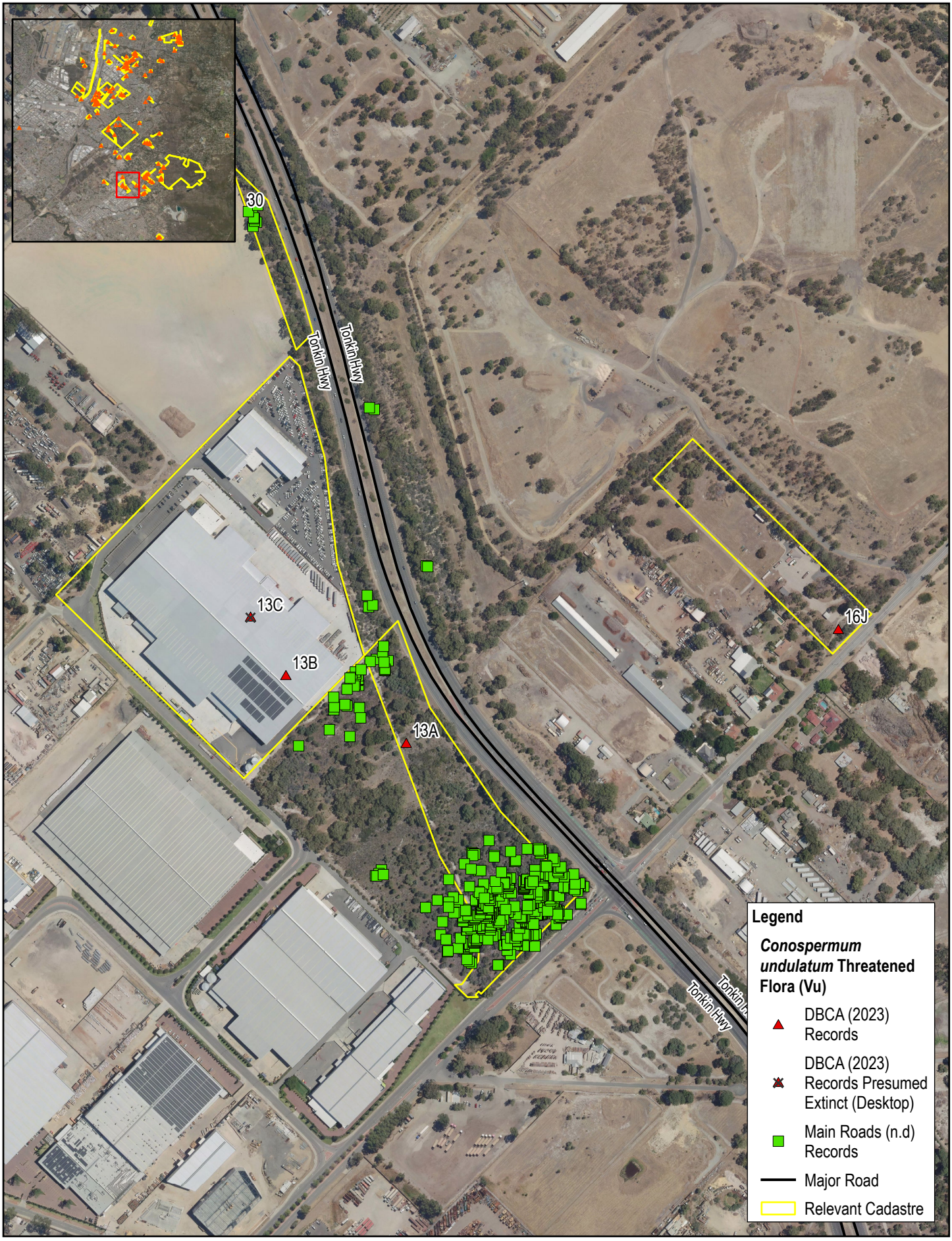

Paper Size ISO A4

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Meters

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Historic Records

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

FIGURE 3

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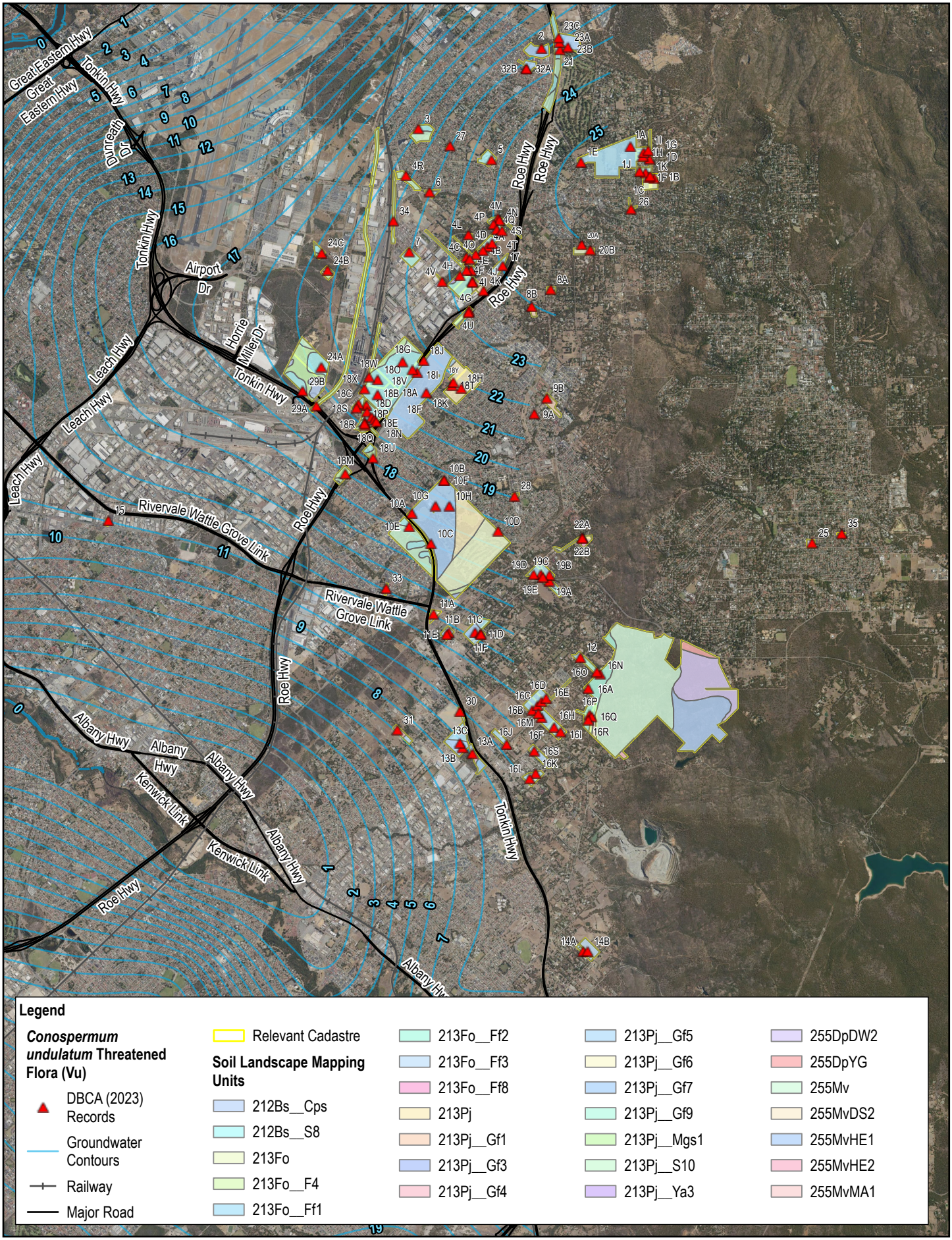

Legend

***Conospermum undulatum* Threatened Flora (Vu)**

- DBCA (2023) Records
- Groundwater Contours
- Railway
- Major Road
- Relevant Cadastre

Soil Landscape Mapping Units

- 212Bs__Cps
- 212Bs__S8
- 213Fo
- 213Fo__F4
- 213Fo__Ff1
- 213Fo__Ff2
- 213Fo__Ff3
- 213Fo__Ff8
- 213Pj
- 213Pj__Gf1
- 213Pj__Gf3
- 213Pj__Gf4
- 213Pj__Gf5
- 213Pj__Gf6
- 213Pj__Gf7
- 213Pj__Gf9
- 213Pj__Mgs1
- 213Pj__S10
- 213Pj__Ya3
- 255DpDW2
- 255DpYG
- 255Mv
- 255MvDS2
- 255MvHE1
- 255MvHE2
- 255MvMA1

Paper Size ISO A4

0 0.5 1 1.5 2

Kilometers

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

Soil Mapping and Groundwater Contours

FIGURE 4

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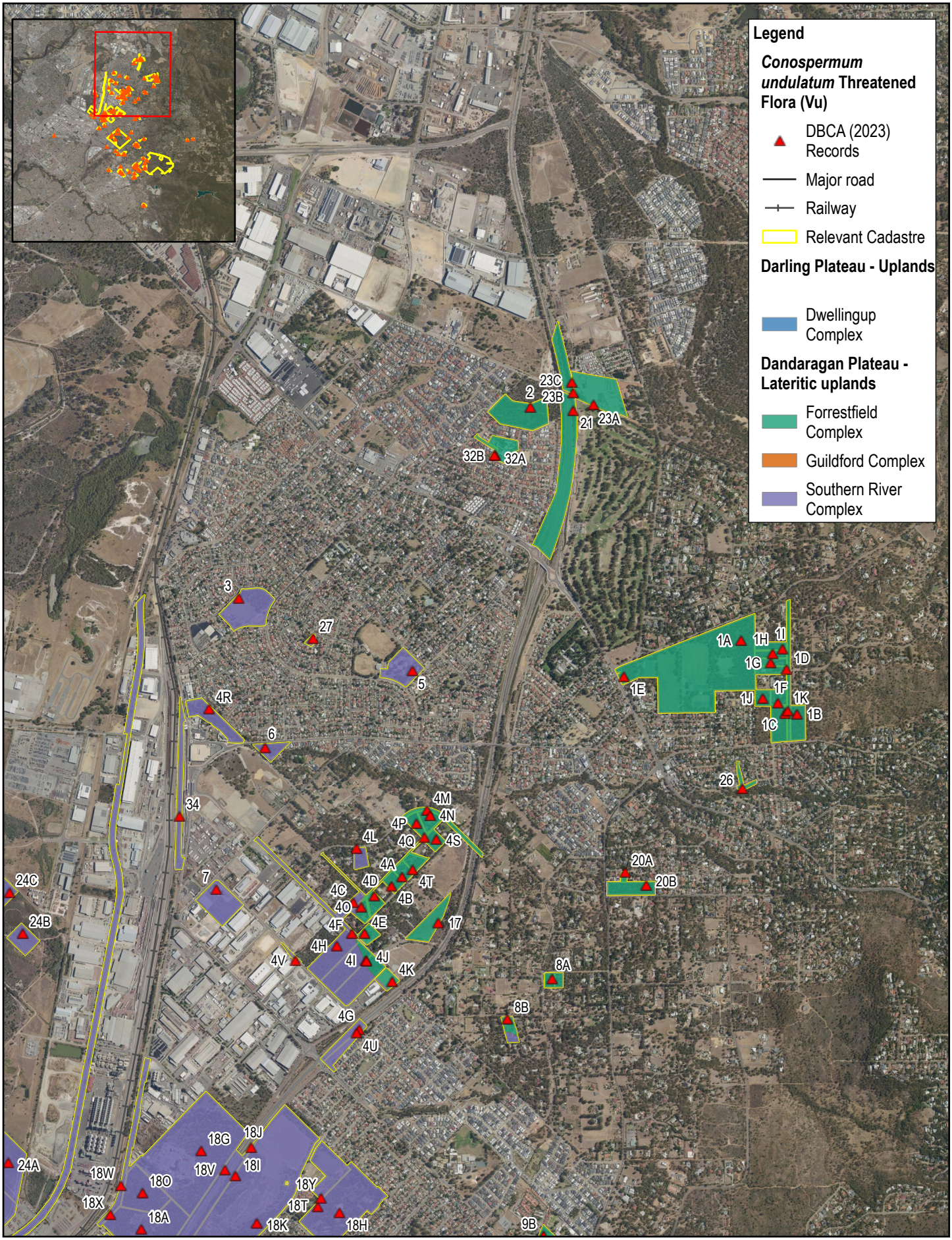

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Kilometers

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Broad Vegetation Types

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

FIGURE 5

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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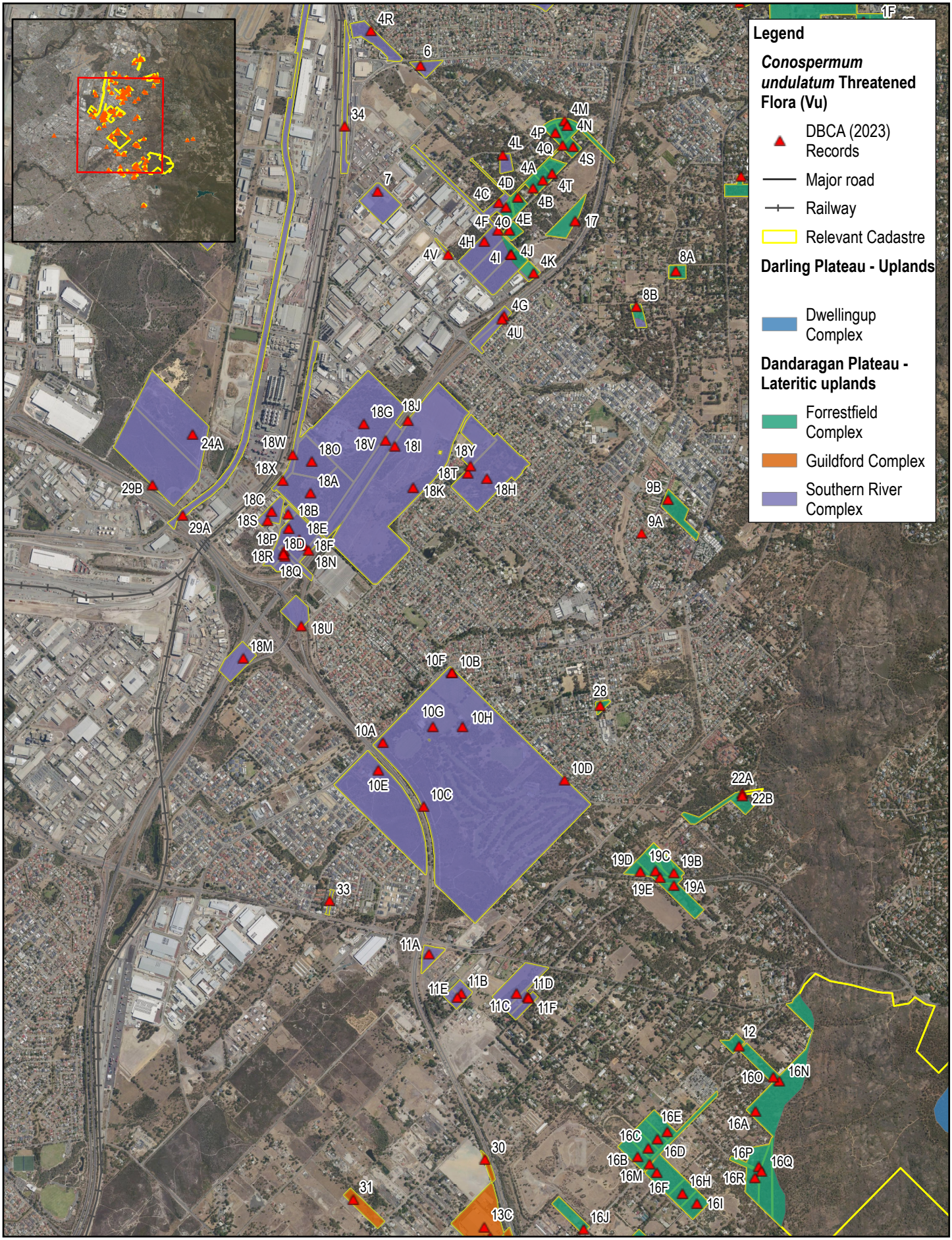

Paper Size ISO A4

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Kilometers

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Broad Vegetation Types

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

FIGURE 5

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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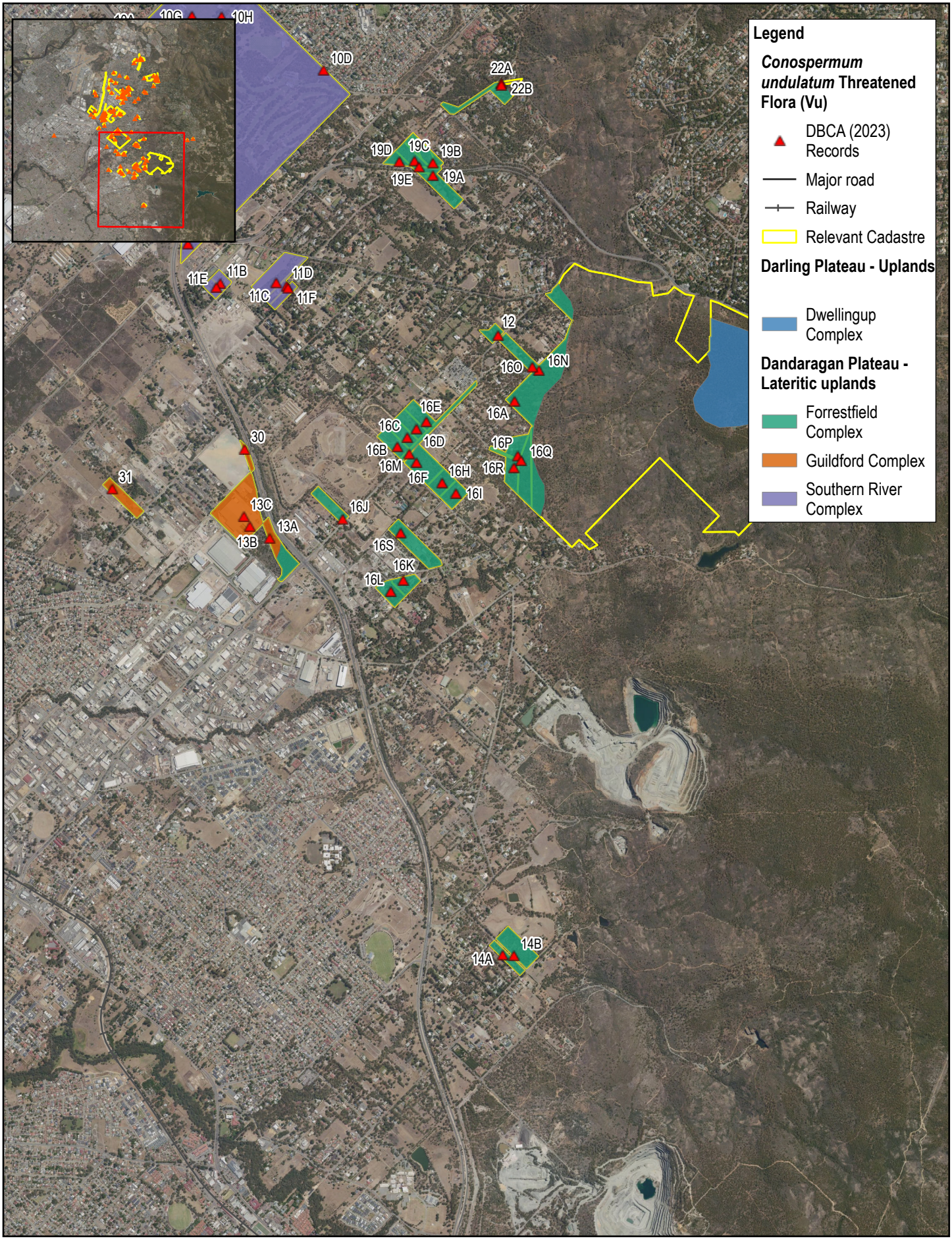

Paper Size ISO A4

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Kilometers

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

Broad Vegetation Types

FIGURE 5

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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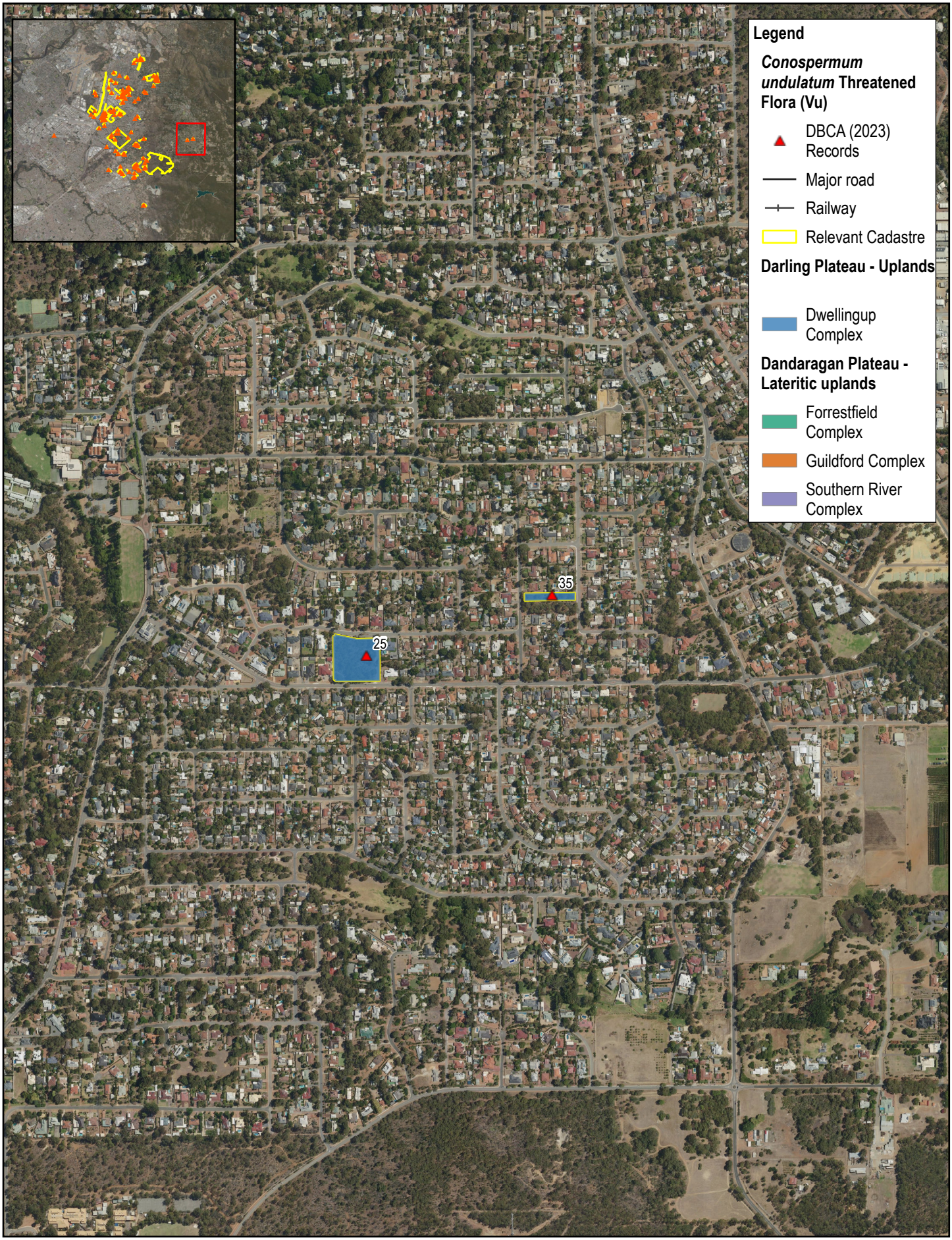

Paper Size ISO A4

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Kilometers

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

Broad Vegetation Types

FIGURE 5

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
Print date: 14 Jul 2025 - 09:43

Data source: WANow: Landgate / SLIP. Created by: rjarrold

Paper Size ISO A4

0 0.1 0.2

Kilometers

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

N

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

Broad Vegetation Types

Project No. **12621820**
Revision No. **0**
Date **14/07/2025**

FIGURE 5

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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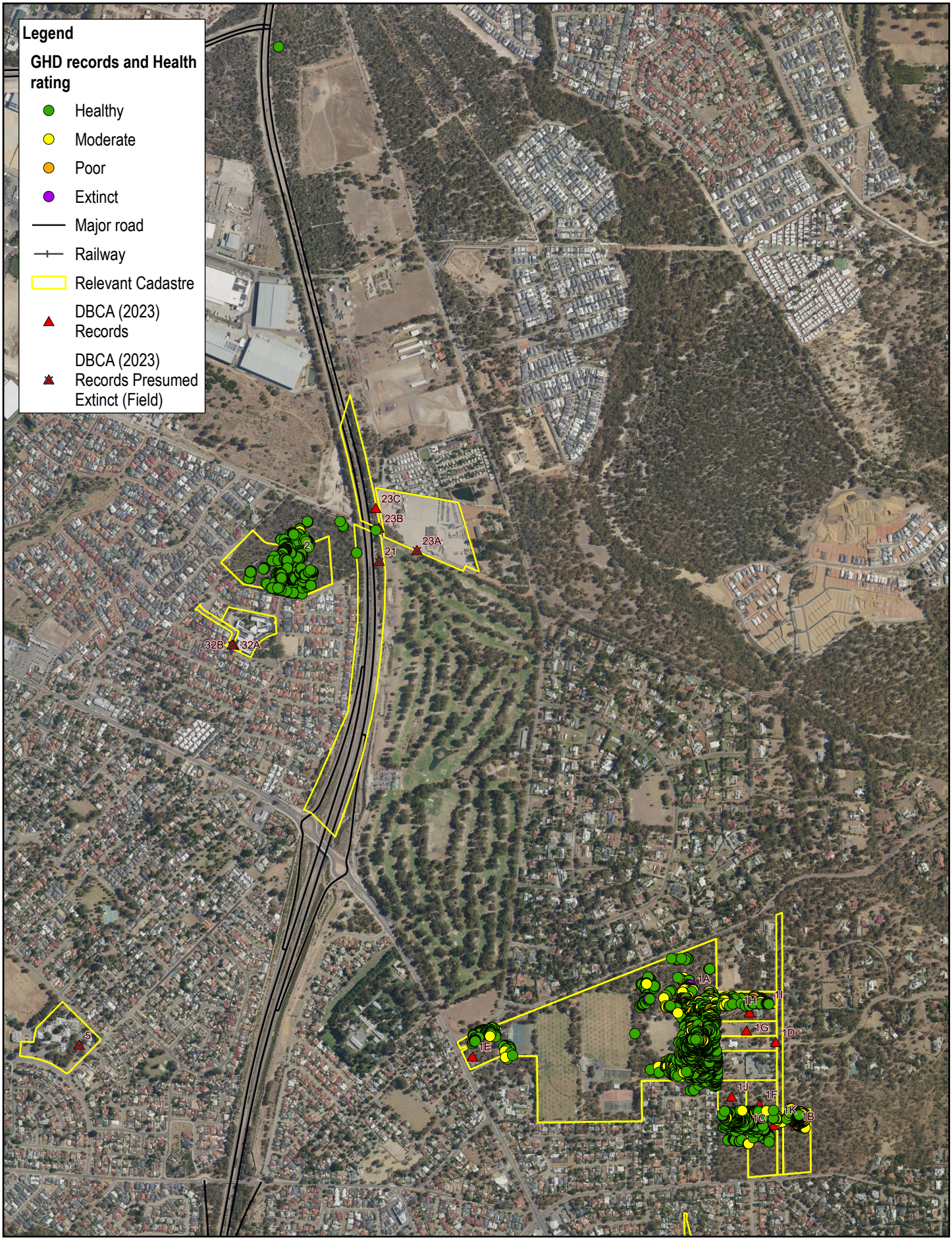

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Kilometers

N

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

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

GHD *Conospermum undulatum* Population Records

Project No. **12621820**
Revision No. **0**
Date **16/07/2025**

FIGURE 6

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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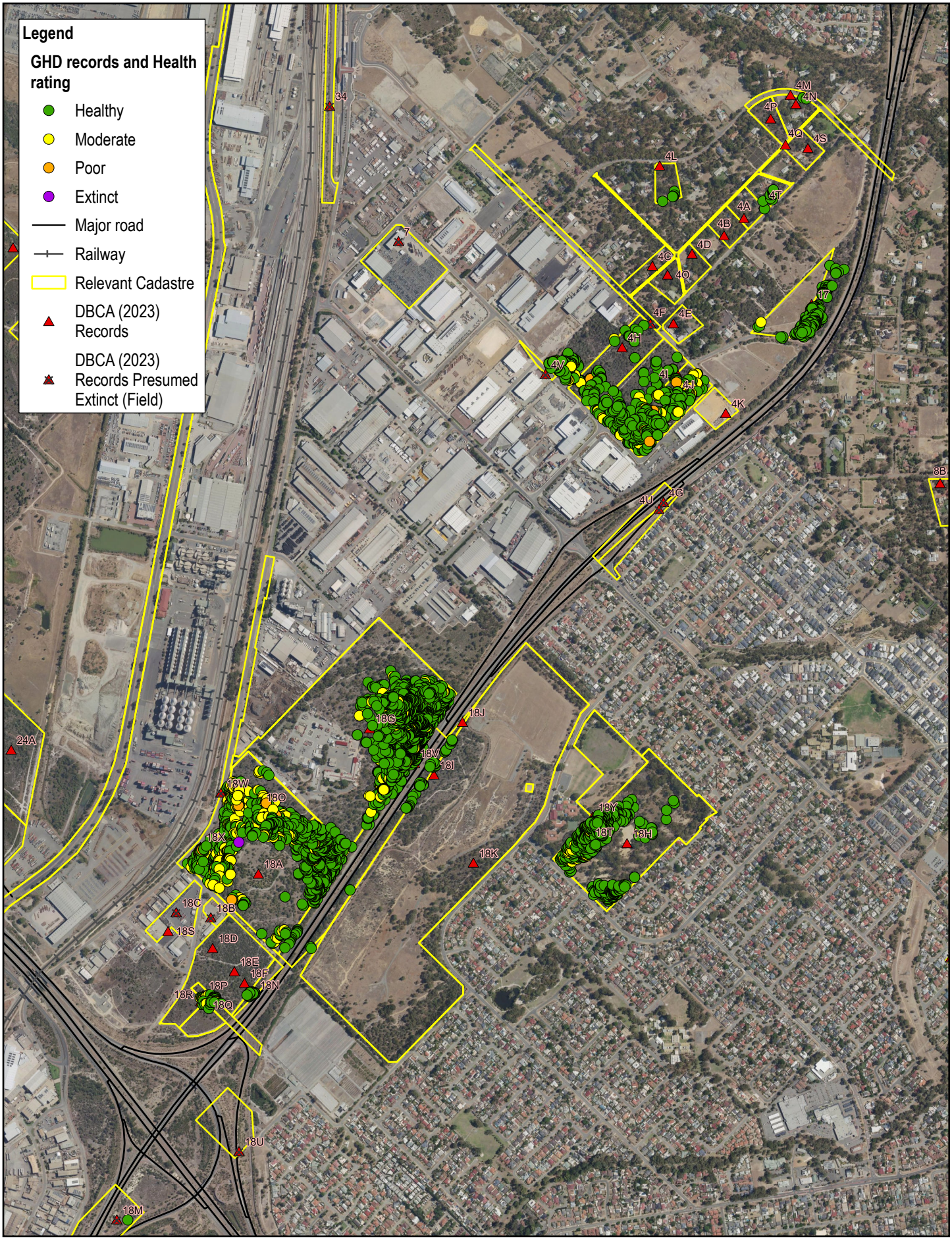

Paper Size ISO A4

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Kilometers

N

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

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

GHD *Conospermum undulatum* Population Records

Project No. **12621820**
Revision No. **0**
Date **16/07/2025**

Page 2 of 3

FIGURE 6

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
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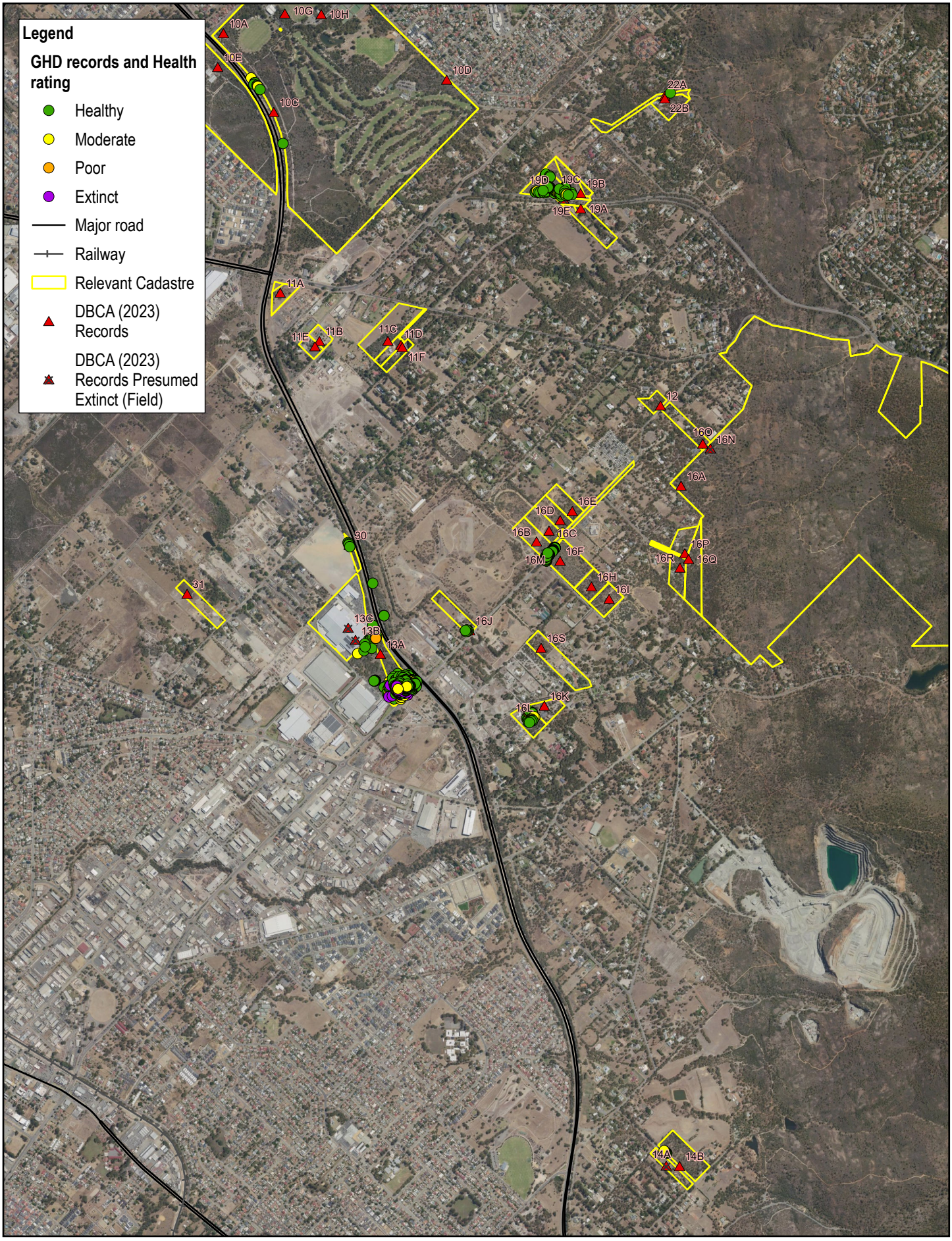

Paper Size ISO A4

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Kilometers

N

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

GHD

Main Roads WA
PC107-16 SR861 *Conospermum undulatum* population survey

GHD *Conospermum undulatum* Population Records

Project No. **12621820**
Revision No. **0**
Date **16/07/2025**

Page 3 of 3

FIGURE 6

\\ghdnet\ghd\AU\Perth\Projects\61\12621820\GIS\Maps\Working\12621820_Figures\12621820_Figures.aprx
Print date: 16 Jul 2025 - 15:34

Data source: WANow: Landgate / SLIP. Created by: rjarrold

Appendix B

Desktop Assessment Summary

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

Pop. No.	Sub-Pop.	Data Source[1]	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex[2]	Landforms (DPIRD 064)	Soil type code (DPIRD 027)	Hydrology (DWER-095)	Land_ID
1	a		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	c		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	e		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	K		4 (2020)	4	Healthy (2020)	Watsonia Rd	Road	City of Kalamunda (CoK)	NA	Forrestfield Complex	Forrestfield System	213Fo		3584114
2	a		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	a		1 (2008)	1		Fleming Reserve	Public Recreation and Conservation	DPLH	R 39218	Southern River Complex	Bassendean System	212Bs_S8	9	2014660
4	a		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	c		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	e		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	CoK	NA	Southern River Complex	Pinjarra System	213Pj_Gf9	9<10	3581382

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

Pop. No.	Sub-Pop.	Data Source[1]	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex[2]	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 [1]	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 [1]	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 [1]	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
4	k		1 (1997)	1		170 Sultana Road West	Private Property	NA	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf1	17<18	3460009
4	l		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	o		161 (2005)	161		12 Brand Road	Environmental Conservation or Local Natural Areas	DPLH	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	12<13	1627227
4	p		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
4	v		7 (2008)	7		Nadine Cl	Road	CoK	NA	Forrestfield Complex	Pinjarra System	213Pj_Gf9	8	4282985
5	a		2 (2008)	2		Newburn Rd	School	Dept. Education		Southern River Complex	Bassendean System	212Bs_S8	17	1670678
6	a		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	a		0 (1997)	0		141 Milner Rd	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf9	9	4314319
8	a		4 (2001)	4		28 Kent Rd	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff2	28	1273796

Pop. No.	Sub-Pop.	Data Source[1]	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex[2]	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	a		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^{2} + 75^{3}) = 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	e	(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	c	15 [2]	10 (2006)	15		Tonkin Hwy	Road Reserve	CoK	NA	Southern River Complex	Pinjarra System	213Pj_S10	8	4545200
11	a		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	c		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
11	e		12 (2006)	12		38 Brentwood Road	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf7	12	1292165
11	f		1 (2005)	1		40 Crystal Brook Road	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_Gf7	17	3801577
12	a		72 (2005)	72		46 Kelvin Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		30052155
13	a	(431^{2} +3^{4}) = 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^{2}		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	c		0 (1997)	0		Clifford Street	Private Property	NA	NA	Guildford Complex	Pinjarra System	213Pj_Gf7	13<15	4433342
14	a		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	a		0 (2005)	0		Welshpool Rd	Private Property	NA	NA	Southern River Complex	Pinjarra System	213Pj_S10	2	4426102
16	a		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[1]	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex[2]	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	c		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	e		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	l		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	o		15 (2009)	15		39 Kelvin Road	Private Property	NA	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff2		1170424
16	p		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	CoK	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1	16	1198292
18	a		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	c		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	e		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[1]	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex[2]	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	o		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	p		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	x		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[1]	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex[2]	Landforms (DPIRD 064)	Soil type code (DPIRD 027)	Hydrology (DWER-095)	Land_ID
18	y		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	a		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	c		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	e		7 (2005)	7		Welshpool Rd East	Road	CoK	NA	Forrestfield Complex	Forrestfield System	213Fo_Ff1		3626712
20	a		28 (2000)	28		6 Irwin Pl	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	a		1 (2003)	1		Roe Hwy	Road	City of Swan (CoS)	NA	Forrestfield Complex	Bassendean System	212Bs_S8	14	30163133
22	a		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	a		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	c		2 (2009)	2		Roe Hwy	Road	CoS	NA	Forrestfield Complex	Bassendean System	212Bs_S8	17	4524293
24	a		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	c		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	a		16 (2009)	16		John McLarty Park	Environmental Conservation or Local Natural Areas	DPLH	R 50011	Dwellingup Complex	Darling Plateau System	255DpDW2		3803437
26	a		1 (2005)	1		Berry Dr	Road	CoK	NA	Forrestfield Complex	Forrestfield System	213Fo		3865124
27	a		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	a		4 (2006)	4		Edinburgh Rd	Environmental Conservation or Local Natural Areas	DPLH	R 27566	Forrestfield Complex	Forrestfield System	213Fo	18	3069113
29	a		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[1]	DBCA Count (Year)	Total Pop. Est.	Reported Health (date)	Reserve Name / Location	Land Purpose	Vested With	Reserve No.	Vegetation Complex[2]	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	a	13 [2]	2 (2011)	13	Healthy (2011)	Tonkin Hwy	Road	CoG	NA	Guildford Complex	Forrestfield System	213Fo_Ff1	17	3638352
31	a		1 (2007)	1		60 Victoria Road	Private Land	NA	NA	Guildford Complex	Pinjarra System	213Pj_Gf4	6	1183451
32	a		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	a		1 (2010)	1		Monarch Wy	Road	CoK	NA	Southern River Complex	Pinjarra System	213Pj_Gf3	4	4002920
34	a		25 (2014)	25	Healthy (2014)	Dundas Rd	Road	CoK	NA	Southern River Complex	Pinjarra System	213Pj_S10	8	30163133
35	a		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[1]	Reserve Name / Location	Land Purpose	Vested With[2]	Reserve No.	Land_id	Pi_parcel
1	a+e	2715	A - 2654	Maida Vale Reserve	Bush Forever 316 Recreation / Conservation	DPLH	R 14088	2012790 2015050	P217852 11583 P211747 8558
			J - 59						
			S - 2						
1	part of a+e	23	A - 23	Maida Vale Reserve	Bush Forever 316 Recreation / Conservation	DPLH	R 38489	2014203 3077090	P009593 10485 R 38489
			J - 0						
			S - 0						
1	part of a+e	4	A - 4	Maida Vale Reserve	Bush Forever 316 Recreation / Conservation	DPLH	R 33262	3073037 2012661	P217852 8361 R 33262
			J - 0						
			S - 0						
1	part of a+e	12	A - 12	Ridge Hill Road	Road	CoK	NA	3588472	P ROAD
			J - 0						
			S - 0						
1	b	336	A - 331	Gooseberry Hill Road Bushland	Bush Forever 466 Nature Reserve	DPLH	R 30200	1418457 1246792	D050909 50 P004326 9
			J - 0						
			S - 5						
1	c	816	A - 618	Gooseberry Hill Road Bushland	Bush Forever 466 Nature Reserve	DPLH	R 30200	1418458 1418460	P004326 8 P004326 7
			J - 5						
			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 Recreation / Conservation	DPLH	R 49122	3689700 1306793	R 49122 D087143 202
			J - 0						
			S - 0						
1	j	No Access		91 Watsonia Road	Private Property	NA	NA	1281701	D071916 500

Pop No	Sub pop	GHD count	Age[1]	Reserve Name / Location	Land Purpose	Vested With[2]	Reserve No.	Land_id	Pi_parcel
1	k	8	A - 6 J - 2 S - 0	Watsonia Road	Road	CoK	NA	3584114	P ROAD
2	a	582	A - 562 J - 20 S - 0	Hawkesvale Nature Reserve	Bush Forever 122 Conservation Flora and Fauna	DBCA	R 49079	3035012 3270335 3274441 3665857	P030106 604 P035010 605 P035537 606 R 49079
3	a	No Access		Fleming Reserve	Public Recreation and Conservation	DPLH	R 39218	2014660	P188672 11072
4	a	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	c	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	e	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 J - 1 S - 0	Sultana Road West Bushland	Bush Forever 123 Environmental Conservation or Local Natural Areas	DPLH	NA	1424999 3935978	P004684 497 P068948 223
4	i	99	A - 99 J - 0 S - 0	Sultana Road West Bushland	Bush Forever 123 Environmental Conservation or Local Natural Areas	DPLH	NA	1425000	P004684 498
4	j	268	A - 263 J - 5 S - 0	Sultana Road West Bushland	Bush Forever 123 Environmental Conservation or Local Natural Areas	DPLH	NA	4352195	P412330 309

Pop No	Sub pop	GHD count	Age[1]	Reserve Name / Location	Land Purpose	Vested With[2]	Reserve No.	Land_id	Pi_parcel
4	k	No Access		170 Sultana Road West	Private Property	NA	NA	3460009	P041342 50
4	l	6	A - 6 J - 0 S - 0	43 Brae Road	Private Property	NA	NA	1627261	P013419 71
4	m	2	A - 2 J - 0 S - 0	Brae Road	Road	CoK	NA	3581376	P ROAD
4	n	No Access		79 Brae Road	Private Property	NA	NA	1627251	P013418 79
4	o	No Access		12 Brand Road	Environmental Conservation or Local Natural Areas	DPLH	NA	1627227	P013417 33
4	p	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 J - 0 S - 0	62 Brand Road	Property leased	DPLH	NA	1627226	P013417 28
4	u	Extinct		Roe Hwy	Road	CoK	NA	4170064	P ROAD
4	v	Extinct		Nadine Cl	Road	CoK	NA	4282985	P ROAD
5	a	Extinct		Newburn Road	School	Dept. Education	NA	1670678	P015568 570
6	a	No Access		231 Maida Vale Road	Private Property Bush Forever Site 45	NA	NA	2008173	P249016 1353
7	a	Extinct		141 Milner Road	Private Property	NA	NA	4314319	P410460 810
8	a	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[1]	Reserve Name / Location	Land Purpose	Vested With[2]	Reserve No.	Land_id	Pi_parcel
9	a	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	c	9	A - 8 J - 1 S - 0	Tonkin Hwy	Road	CoK	NA	4309291	P007066 300
10	e	No Access		Hartfield Park (West of Tonkin Highway)	Bush Forever Site 320 Nature Reserve	DPLH	R 17098	3447603	P044636 3001
11	a	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	c	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	e	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	a	No Access		46 Kelvin Road	Private Property	NA	NA	30052155	P417511 89
13	a	371	A - 365 J - 6 S - 0	Clifford Street Reserve	Bush Forever Site 53 Nature Reserve	Main Roads	NA	3430688 1270146 1270147 1273363	P043927 9008 D064926 110 D064926 109 D066992 2
13	Part of a	8	A - 8 J - 0 S - 0	Kelvin Rd	Road	CoG	NA	3430690	P ROAD
13	b	Extinct		Clifford Street	Private Property	NA	NA	4433342	P413054 810
13	c	Extinct		Clifford Street	Private Property	NA	NA	4433342	P413054 810
14	a	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[1]	Reserve Name / Location	Land Purpose	Vested With[2]	Reserve No.	Land_id	Pi_parcel
			J - 0						
			S - 0						
15	a	Extinct		Welshpool Rd	Private Property	NA	NA	4426102	P415208 701
16	a	192	A - 192	Korung National Park	Conservation, National Park, Class A Nature Reserve	DBCA	R 47881	3553995	R 47881
			J - 0						
			S - 0						
16	b	No Access		Kelvin Rd	General Rural	CoG	NA	1418584	P004336 11
16	c	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	e	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	l	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 3626780	P ROAD
			J - 2						
			S - 0						
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[1]	Reserve Name / Location	Land Purpose	Vested With[2]	Reserve No.	Land_id	Pi_parcel
16	o	No Access		39 Kelvin Road	Private Property	NA	NA	1170424	D006077 5
16	p	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	a	163	A - 163 J - 0 S - 0	Smokebush Pl	Vacant Land/ Road Reserve	CoK	NA	1198292 3562708	D024292 18 D033847 50
17	part of 17	3	A - 3 J - 0 S - 0	Smokebush Pl	Road	CoK	NA	3151706	P ROAD
18	a+o	1388	A - 1180 J - 189 S - 19	Dundas Road Bushland	Bush Forever Site 319 Nature Reserve	DBCA	R 37997	3076696 2014624 2014045	R 37997 P216933 11026 P215367 10276
18	b	Extinct		20 Bedford Crescent	Private Property	NA	NA	4047945	P073351 888
18	c	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	e	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 J - 204 S - 538	Dundas Rd	Bush Forever Site 319 Nature Reserve	DFES - Fire Training School	R 37260	2014031	P215367 10261
18	h + t +y	597	A - 590 J - 7 S - 0	Bougainvillea Avenue Bushland	Bush Forever Site 401 Nature Reserve	Agriculture Protection Board Of WA / DBCA	R 29815	2015228	P218305 11858

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

Pop No	Sub pop	GHD count	Age[1]	Reserve Name / Location	Land Purpose	Vested With[2]	Reserve No.	Land_id	Pi_parcel
18	w	Extinct		Dundas Rd	Road	CoK	NA	3822649	P ROAD
18	x	5	A - 5	Dundas Rd	Road	CoK	NA	3822649	P ROAD
			J - 0						
			S - 0						
19	a	No Access		Welshpool Rd East	Easement	DPLH	NA	4041939	P074447 200
19	b + c	84	A - 79	Welshpool Road Bushland	Bush Forever Site 50 Nature Reserve	DPLH	NA	3802668	P061853 2
			J - 5						
			S - 0						
19	d	11	A - 11	Welshpool Road Bushland	Bush Forever Site 50 Nature Reserve	DPLH	NA	3736242	P057971 501
			J - 0						
			S - 0						
19	e	Extinct		Welshpool Road East	Road	CoK	NA	3626712	P ROAD
20	a	Extinct		6 Irwin Pl	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	a	Extinct		Roe Hwy	Road	CoK	NA	30163133	P420319 5
22	a	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	a	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	c	1	A - 1	Roe Hwy	Road	CoS	NA	3549010	P ROAD
			J - 0						
			S - 0						

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

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

1 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.	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)
1	a					1,592	2005		1,592	Surveyed						Extant	
1	e					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
1	c					508	1998		508	Surveyed	816	618	5	193	GHD	Extant	816
1	d					11	2002		11	No Access					DBCA	Extant	11
1	f					33	2005		33	No Access					DBCA	Extant	33
1	g					1	2006		1	No Access					DBCA	Extant	1
1	h					80	2002		80	No Access					DBCA	Extant	80
1	i					131	2011		131	Surveyed	102	102	0	0	DBCA	Extant	102
1	j					1	1998		1	No Access					DBCA	Extant	1
1	k					4	2020		4	Surveyed	8	6	2	0	GHD	Extant	8
2	a					405	2016		405	Surveyed	582	562	20	0	GHD	Extant	582
3	a					1	2008		1	No Access					DBCA	Extant	1
4	a					62	1997		62	No Access					DBCA	Extant	62
4	b					89	2008		89	No Access					DBCA	Extant	89
4	c					0	1997	Extinct	0	No Access					DBCA	Extinct	0
4	d					41	2008		41	No Access					DBCA	Extant	41
4	e					0	2006	Extinct	0	No Access					DBCA	Extinct	0
4	f					0	2006	Extinct	0	Surveyed	0				GHD	Extinct	0
4	g					16	2008		16	Surveyed	0				GHD	Extinct	0
4	h	152				76	2006		152	Surveyed	212	211	1	0	GHD	Extant	212
4	i	76				1	1997		76	Surveyed	99	99	0	0	GHD	Extant	99
4	j	187				1	1997		187	Surveyed	268	263	5	0	GHD	Extant	268
4	k					1	1997		1	No Access					DBCA	Extant	1
4	l					20	2006		20	Surveyed	6	6	0	0	GHD	Extant	6
4	m					7	2006		7	Surveyed	2	2	0	0	GHD	Extant	2
4	n					103	2005		103	No Access					DBCA	Extant	103
4	o					161	2005		161	No Access					DBCA	Extant	161
4	p					152	2005		152	No Access					DBCA	Extant	152
4	q					120	2005		120	No Access					DBCA	Extant	120
4	r					14	2008		14	No Access					DBCA	Extant	14
4	s					72	2008		72	No Access					DBCA	Extant	72
4	t					1	2005		1	Surveyed	17	17	0	0	GHD	Extant	17
4	u					4	2008		4	Surveyed	0				GHD	Extinct	0
4	v					7	2008		7	Surveyed	0				GHD	Extinct	0
5	a					2	2008		2	Surveyed	0				GHD	Extinct	0
6	a					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	a					0	1997	Extinct	0	Surveyed					GHD	Extinct	0
8	a					4	2001		4	No Access					DBCA	Extant	4
8	b					4	2005		4	No Access					DBCA	Extant	4
9	a					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	c		15			10	2006		15	Surveyed	9	8	1	0	GHD	Extant	9
10	e		106	5		10	2006		111	No Access					Woodman	Extant	111
11	a					0	2005	Extinct	0	No Access					DBCA	Extinct	0
11	b					7	2006		7	No Access					DBCA	Extant	7
11	c					100	2005		100	No Access					DBCA	Extant	100
11	d					175	2005		175	No Access					DBCA	Extant	175
11	e					12	2006		12	No Access					DBCA	Extant	12
11	f					1	2005		1	No Access					DBCA	Extant	1
12	a					72	2005		72	No Access					DBCA	Extant	72
13	a		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	c					0	1997	Extinct	0	Surveyed					DBCA	Extinct	0
14	a					0	2005	Extinct	0	Surveyed	0				GHD	Extinct	0
14	b					1	2005		1	Surveyed	5	5	0	0	GHD	Extant	5
15	a					0	2005	Extinct	0	Surveyed					DBCA	Extinct	0
16	a					337	2020		337	Surveyed	192	192	0	0	GHD	Extant	192
16	b					80	2006		80	No Access					DBCA	Extant	80
16	c					209	2006		209	No Access					DBCA	Extant	209
16	d					120	2006		120	No Access					DBCA	Extant	120
16	e					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	l					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	o					15	2009		15	No Access					DBCA	Extant	15
16	p					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	a					94	2006		94	Surveyed	166	166	0	0	GHD	Extant	166
18	a					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	c					97	2006		97	Surveyed	0				GHD	Extinct	0
18	d					15	2006		15	No Access					DBCA	Extant	15
18	e					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	o					416	2006		416	Surveyed						Extant	
18	p					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	y					21	2020		21	Surveyed						Extant	
19	a					1	2001		1	No Access					DBCA	Extant	1
19	b					63	2005		63	Surveyed						Extant	
19	c					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	e					7	2005		7	Surveyed	0				GHD	Extinct	0
20	a					28	2000		28	Surveyed	0				GHD	Extinct	0
20	b					5	2005		5	No Access					DBCA	Extant	5
21	a					1	2003		1	Surveyed	0				GHD	Extinct	0
22	a					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	a					25	2009		25	Surveyed	0				GHD	Extinct	0
23	b					3	2009		3	Surveyed	1	1	0	0	GHD	Extant	1
23	c					2	2009		2	Surveyed	1	1	0	0	GHD	Extant	1
24	a					1	2004		1	No Access					DBCA	Extant	1
24	b					200	2005		200	No Access					DBCA	Extant	200
24	c					49	2019		49	No Access					DBCA	Extant	49
25	a					16	2009		16	No Access					DBCA	Extant	16
26	a					1	2005		1	Surveyed	0				GHD	Extinct	0
27	a					12	2006		12	No Access					DBCA	Extant	12
28	a					4	2006		4	No Access					DBCA	Extant	4
29	a					1	2010		1	Surveyed	0				GHD	Extinct	0
29	b					6	2019		6	No Access					DBCA	Extant	6
30	a		13			2	2011		13	Surveyed	10	9	1	0	GHD	Extant	10
31	a					1	2007		1	No Access					DBCA	Extant	1
32	a					2	2016		2	Surveyed	0				GHD	Extinct	0
32	b					1	2016		1	Surveyed	0				GHD	Extinct	0
33	a					1	2010		1	Surveyed	0				GHD	Extinct	0
34	a					25	2014		25	Surveyed	0				GHD	Extinct	0
35	a					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	Status	Species	ConR01	ConR02	ConR03	ConR04	ConR05	ConR06	ConR07	ConR08	ConR09	ConR10	ConR11	ConR12	ConR13	ConR14	ConR15	ConR16	ConR17	ConR18	ConR19	ConR20	ConR21	ConR22	ConR23	ConR24	ConR25	ConR26	ConR27	ConR28	ConR29	ConR30	ConR31	ConR32	ConR33	ConR34	ConR35	ConR36	ConR37	ConR38	ConR39	ConR40
Anarthriaceae		*Lyginia barbata*														X		X			X		X												X							
Asparagaceae		*Lomandra caespitosa*				X																																				
Asteraceae	*	*Sonchus oleraceus*																						X																		
Asteraceae	*	*Ursinia anthemoides*	X			X						X						X				X				X				X											X	
Asteraceae		*Hyalosperma cotula*																							X																	
Casuarinaceae	*	*Casuarina* sp.																																		X						
Casuarinaceae		*Allocasuarina fraseriana*	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X			X	X	X	X	X	
Casuarinaceae		*Allocasuarina humilis*		X	X						X					X		X		X	X	X	X				X		X		X		X	X	X						
Colchicaceae		*Burchardia congesta*					X					X									X																					
Cupressaceae		*Callitris acuminata*																						X																		
Cyperaceae		*Ammothryon grandiflorum*																	X																							
Cyperaceae		*Cyathochaeta avenacea*																X				X						X						X								
Cyperaceae		*Cyathochaeta equitans*					X																				X					X		X								
Cyperaceae		*Lepidosperma* sp.													X						X												X									
Cyperaceae		*Mesomelaena pseudostygia*		X	X	X	X	X		X					X	X	X		X	X	X					X		X			X	X	X	X	X	X	X			X		X
Cyperaceae		*Mesomelaena tetragona*											X																						X				X			
Cyperaceae		*Schoenus* sp.											X								X				X																
Dasypogonaceae		*Dasypogon bromeliifolius*		X			X					X	X				X	X	X	X		X			X		X	X				X									
Dasypogonaceae		*Dasypogon obliquifolius*								X													X													X		X			
Dasypogonaceae		*Kingia australis*															X																			X					
Dilleniaceae		*Hibbertia hypericoides*			X		X	X	X		X	X			X		X	X	X	X	X	X		X		X		X		X	X			X		X	X		X		X
Fabaceae	*	*Acacia iteaphylla*	X																																						
Fabaceae		*Acacia pulchella*																																							X
Fabaceae		*Acacia saligna*				X																																		
Fabaceae		*Bossiaea eriocarpa*																			X				X						X								X		
Fabaceae		*Bossiaea ornata*																																					X		
Fabaceae		*Daviesia nudiflora* subsp. *nudiflora*					X																			X				X				X			X		X		
Fabaceae		*Gastrolobium capitatum*					X																																		
Fabaceae		*Gompholobium confertum*							X																										X						
Fabaceae		*Gompholobium tomentosum*																								X			X												
Fabaceae		*Jacksonia floribunda*				X				X																X				X		X				X				
Fabaceae		*Jacksonia sternbergiana*	X										X												X																
Fabaceae		*Labichea punctata*																			X				X						X										
Goodeniaceae		*Dampiera linearis*																								X				X											
Goodeniaceae		*Scaevola repens* var. *repens*																						X			X						X								
Haemodoraceae		*Anigozanthos humilis* subsp. *humilis*																																X								
Haemodoraceae		*Anigozanthos manglesii* subsp. *manglesii*					X												X						X		X			X						X	X		X		
Haemodoraceae		*Conostylis aurea*																			X		X																		
Haemodoraceae		*Haemodorum laxum*						X																X																	
Haemodoraceae		*Haemodorum spicatum*																						X																X		
Hemerocallidaceae		*Caesia micrantha*													X																											
Hemerocallidaceae		*Johnsonia pubescens* subsp. *pubescens*															X																									

Family	Status	Species	ConR01	ConR02	ConR03	ConR04	ConR05	ConR06	ConR07	ConR08	ConR09	ConR10	ConR11	ConR12	ConR13	ConR14	ConR15	ConR16	ConR17	ConR18	ConR19	ConR20	ConR21	ConR22	ConR23	ConR24	ConR25	ConR26	ConR27	ConR28	ConR29	ConR30	ConR31	ConR32	ConR33	ConR34	ConR35	ConR36	ConR37	ConR38	ConR39	ConR40
Iridaceae	*	*Freesia alba × leichtlinii*						X																																	
Iridaceae	*	*Gladiolus caryophyllaceus*		X	X		X					X		X										X				X			X		X		X		X		X
Iridaceae	*	*Watsonia marginata*											X																												
Iridaceae	*	*Watsonia meriana* var. *bulbillifera*						X										X																							
Iridaceae		*Patersonia occidentalis* var. *occidentalis*				X				X		X				X					X		X					X			X					X				
Loranthaceae		*Nuytsia floribunda*									X						X	X				X	X	X		X	X									X					
Myrtaceae	*	*Gaudium laevigatum*											X	X		X		X		X																X					
Myrtaceae		*Banksia menziesii*																					X																		
Myrtaceae		*Calothamnus quadrifidus*												X					X																	X					
Myrtaceae		*Chamelaucium uncinatum*												X		X				X				X																	
Myrtaceae		*Corymbia calophylla*														X								X	X															X	
Myrtaceae		*Eremaea pauciflora* var. *pauciflora*															X			X		X																		
Myrtaceae		*Eucalyptus marginata* subsp. *marginata*	X		X		X	X	X		X	X			X	X		X	X	X	X			X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X
Myrtaceae		*Eucalyptus todtiana*				X							X																												
Myrtaceae		*Eucalyptus wandoo*			X																																				
Myrtaceae		*Hypocalymma angustifolium*																																							X	
Myrtaceae		*Hypocalymma robustum*															X																								
Myrtaceae		*Kunzea glabrescens*												X																											
Myrtaceae		*Melaleuca seriata*															X						X				X		X		X		X								
Myrtaceae		*Scholtzia involucrata*									X																														
Myrtaceae		*Verticordia densiflora* var. *densiflora*															X																								
Poaceae	*	*Aira caryophyllea*					X																																		
Poaceae	*	*Avena barbata*																				X																			
Poaceae	*	*Briza maxima*	X	X	X	X														X						X									X						
Poaceae	*	*Ehrharta calycina*	X			X		X				X		X		X		X	X	X		X		X	X	X					X	X		X		X					X
Poaceae	*	*Ehrharta longiflora*		X																																					
Poaceae	*	*Eragrostis curvula*			X																											X				X					
Poaceae	*	*Holcus lanatus*						X																																	
Poaceae	*	Poaceae sp.																																						X	
Poaceae	*	*Vulpia* sp.												X																											
Poaceae		*Amphipogon turbinatus*																																X		X					
Poaceae		*Austrostipa compressa*																						X																	
Poaceae		*Austrostipa flavescens*																	X																						
Poaceae		*Rytidosperma* sp.																																						X	
Primulaceae	*	*Lysimachia arvensis*														X																									
Proteaceae	T	*Conospermum undulatum*							X				X		X		X		X						X		X										X		X	X	X
Proteaceae		*Adenanthos cygnorum* subsp. *cygnorum*								X	X	X				X		X	X			X	X					X		X		X				X		X			
Proteaceae		*Banksia attenuata*		X						X		X					X		X	X								X		X		X	X	X						
Proteaceae		*Banksia dallanneyi*	X		X			X	X		X																									X			X		X
Proteaceae		*Banksia grandis*																												X							X				
Proteaceae		*Banksia menziesii*		X		X				X	X	X								X	X	X				X	X	X	X	X	X	X								
Proteaceae		*Banksia nivea*																	X		X				X											X					
Proteaceae		*Banksia sessilis*															X																								

Family	Status	Species	ConR01	ConR02	ConR03	ConR04	ConR05	ConR06	ConR07	ConR08	ConR09	ConR10	ConR11	ConR12	ConR13	ConR14	ConR15	ConR16	ConR17	ConR18	ConR19	ConR20	ConR21	ConR22	ConR23	ConR24	ConR25	ConR26	ConR27	ConR28	ConR29	ConR30	ConR31	ConR32	ConR33	ConR34	ConR35	ConR36	ConR37	ConR38	ConR39	ConR40
Proteaceae		*Banksia sphaerocarpa*																														X										
Proteaceae		*Grevillea bipinnatifida*																																							X	
Proteaceae		*Hakea conchifolia*																						X			X															
Proteaceae		*Hakea lissocarpha*	X																																						
Proteaceae		*Hakea ruscifolia*													X																							X				
Proteaceae		*Lambertia multiflora* var. *darlingensis*			X			X	X						X		X			X	X					X	X	X		X		X	X	X	X	X					
Proteaceae		*Persoonia elliptica*																																				X				
Proteaceae		*Petrophile linearis*																																	X				X			
Proteaceae		*Stirlingia latifolia*		X							X					X					X		X	X	X					X		X				X			X	
Proteaceae		*Synaphea spinulosa* subsp. *spinulosa*																												X											
Proteaceae		*Xylomelum occidentale*																										X						X				X			
Restionaceae		*Alexgeorgea nitens*											X							X									X											
Restionaceae		*Desmocladus fasciculatus*			X		X																	X		X						X	X			X	X			
Restionaceae		*Desmocladus flexuosus*		X				X										X				X	X																	X
Xanthorrhoeaceae		*Xanthorrhoea ?brunonis*																									X													
Xanthorrhoeaceae		*Xanthorrhoea gracilis*																																		X					
Xanthorrhoeaceae		*Xanthorrhoea preissii*	X	X	X	X	X	X	X	X	X	X	X		X	X		X		X		X		X	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X
Zamiaceae		*Macrozamia riedlei*	X																																						

Table C.5 Soil sample t-test

Sample	Location	*C. udulatum* presence	+1180µm	+150µm	+19.0mm	+2.36mm	+300µm	+37.5mm	+4.75mm	+425µm	+600µm	+75.0mm	+75µm	+9.5mm	Ammonia as N	Clay (<2 µm)	Cobbles (>6cm)	Gravel (>2mm)	Moisture Content	Nitrate as N (Sol.)	Nitrite + Nitrate as N (Sol.)	Nitrite as N (Sol.)	Reactive Phosphorus as P	Sand (0.06-2.00 mm)	Silt (2-60 µm)	Soil Particle Density (Clay/Silt/Sand)	Total Kjeldahl Nitrogen as N	Total Nitrogen as N	Total Phosphorus as P
			%	%	%	%	%	%	%	%	%	%	%	%	mg/kg	%	%	%	%	mg/kg	mg/kg	mg/kg	mg/kg	%	%	g/cm3	mg/kg	mg/kg	mg/kg
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 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 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
Standard 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
Standard 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

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

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 www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants

TAXON: Conospermum undulatum **TPFL Pop. No:** 1a +1e

OBSERVATION DATE: 05/12/2023 **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)**:**

Maida Vale Recreation Reserve

Reserve No: R14088, 38489 & 33262

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ____ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐

Conservation park ☐ Water reserve ☐ UCL ☐ SLK/Pole _____ to _____ Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 32 ha

EFFORT: Time spent surveying (minutes): 32 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive	2693	59	2	2754
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• dieback			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☐
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana tall open woodland
2. Xanthorrhoea preissii and Hibbertia hypericoides mid to low open shrubland
3. Mesomelaena pseudostygia, Anigozanthos manglesii subsp. manglesii and *Gladiolus caryophyllaceus sedgeland/herbland
4.

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 1b

OBSERVATION DATE: 05/12/2023 **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)**:**

Gooseberry Hill Road Bushland

Reserve No: R30200

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 2.05ha

EFFORT: Time spent surveying (minutes): 8 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	331		5	336
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• dieback			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☒
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:

Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana tall open woodland
2. Xanthorrhoea preissii and Hibbertia hypericoides mid to low open shrubland
3. Mesomelaena pseudostygia, Anigozanthos manglesii subsp. manglesii and *Gladiolus caryophyllaceus sedgeland/herbland
4.

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 1c

OBSERVATION DATE: 14/12/2023 **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)**:**

Gooseberry Hill Road Bushland

Reserve No: R30200

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 2.2 ha

EFFORT: Time spent surveying (minutes): 8 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	618	5	193	816
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
•			
•			
•			

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.

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☒
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☒
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☐
Sandy loam ☒
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☐
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana tall open woodland
2. Xanthorrhoea preissii and Hibbertia hypericoides mid to low open shrubland
3. Mesomelaena pseudostygia, Anigozanthos manglesii subsp. manglesii and *Gladiolus caryophyllaceus sedgeland/herbland
4.

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: <3yrs **Fire Intensity:** High ☐ Medium ☒ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

Please return completed form to **Species And Communities Program** DBCA,
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TAXON: Conospermum undulatum **TPFL Pop. No:** 1i

OBSERVATION DATE: 08/01/2024 **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)**:**

Maida Vale Recreation Reserve

Reserve No: R49122

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 1ha

EFFORT: Time spent surveying (minutes): 4 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	102			102
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
•			
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•			

Please return completed form to **Species And Communities Program** DBCA,
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RECORDS: Please forward to **Flora Administrative Officer,** Species and Communities Program.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana tall open woodland
2. Xanthorrhoea preissii and Hibbertia hypericoides mid to low open shrubland
3. Mesomelaena pseudostygia, Anigozanthos manglesii subsp. manglesii and *Gladiolus caryophyllaceus sedgeland/herbland
4.

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

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 www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants

TAXON: Conospermum undulatum **TPFL Pop. No:** 1k

OBSERVATION DATE: 18/10/2023 **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)**:**

Watsonia Road Reserve

Reserve No:

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 0.5ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	6	2		8
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• Road weeds			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☒
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:

Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana tall open woodland
2. Xanthorrhoea preissii and Hibbertia hypericoides mid to low open shrubland
3. Mesomelaena pseudostygia, Anigozanthos manglesii subsp. manglesii and *Gladiolus caryophyllaceus sedgeland/herbland
4.

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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TAXON: Conospermum undulatum **TPFL Pop. No:** 2

OBSERVATION DATE: 02/11/2024 **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)**:**

Hawkesvale Nature Reserve

Reserve No: R49079

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 10ha

EFFORT: Time spent surveying (minutes): 32 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	562	20		582
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
•			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. *Eucalyptus marginata* subsp. *marginata, Banksia attenuata* and *Banksia grandis* open woodland
2. Adenanthos cygnorum subsp. cygnorum and Xanthorrhoea preissii tall shrubland
3. Lambertia multiflora var. darlingensis and Hibbertia hypericoides mid to low shrubland d
4. Anigozanthos manglesii subsp. manglesii and Dampiera linearis herbland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☒ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: 2020 **Fire Intensity:** High ☐ Medium ☒ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 4h

OBSERVATION DATE: 21/11/2023 **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)**:**

Sultana Road West Bushland

Reserve No:

DBCA DISTRICT: swan coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 18ha

EFFORT: Time spent surveying (minutes): 16 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	211	1	0	212
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• Dieback has been mapped in the area			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana, Banksia menziesii and Banksia attenuata woodland
2. *Adenanthos cygnorum* subsp. *cygnorum* and *Allocasuarina humilis* tall to mid open shrubland
3. Stirlingia latifolia and Hibbertia hypericoides low open shrubland
4. Patersonia occidentalis var. occidentalis and Mesomelaena pseudostygia herb/sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

Please return completed form to **Species And Communities Program** DBCA,
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Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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TAXON: Conospermum undulatum **TPFL Pop. No:** 4i

OBSERVATION DATE: 21/11/2023 **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)**:**

Sultana Road West Bushland

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 22ha

EFFORT: Time spent surveying (minutes): 16 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	99			99
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• Dieback has been mapped in the area			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana, Banksia menziesii and Banksia attenuata woodland
2. Adenanthos cygnorum subsp. cygnorum and Allocasuarina humilis tall to mid open shrubland
3. Stirlingia latifolia and Hibbertia hypericoides low open shrubland
4. Patersonia occidentalis var. occidentalis and Mesomelaena pseudostygia herb/sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

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TAXON: Conospermum undulatum **TPFL Pop. No:** 4j

OBSERVATION DATE: 21/11/2023 **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)**:**

Sultana Road West Bushland

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 25ha

EFFORT: Time spent surveying (minutes): 16 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	263	5		268
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• Dieback has been mapped in the area			
•			
•			

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.

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Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana, Banksia menziesii and Banksia attenuata woodland
2. Adenanthos cygnorum subsp. cygnorum and Allocasuarina humilis tall to mid open shrubland
3. Stirlingia latifolia and Hibbertia hypericoides low open shrubland
4. Patersonia occidentalis var. occidentalis and Mesomelaena pseudostygia herb/sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

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Version 1.4 March 2021

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TAXON: Conospermum undulatum **TPFL Pop. No:** 4l

OBSERVATION DATE: 18/10/2023 **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)**:**

43 Brae Road

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐

Conservation park ☐ Water reserve ☐ UCL ☐ SLK/Pole _____ to _____ Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 1ha

EFFORT: Time spent surveying (minutes): 4 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive	6			6
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
•			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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GOVERNMENT OF WESTERN AUSTRALIA

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Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata isolated trees
2. Xanthorrhoea preissii, Lambertia multiflora var. darlingensis and Allocasuarina humilis sparse shrubland
3. Mesomelaena pseudostygia and Amphipogon turbinatus open sedge/grassland
4.

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

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TAXON: Conospermum undulatum **TPFL Pop. No:** 4m

OBSERVATION DATE: 18/10/2023 **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)**:**

Brae Road

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐

Conservation park ☐ Water reserve ☐ UCL ☐ SLK/Pole _____ to _____ Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 2ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	2			2
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

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Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata isolated trees
2. Xanthorrhoea preissii, Lambertia multiflora var. darlingensis and Allocasuarina humilis sparse shrubland
3. Mesomelaena pseudostygia and Amphipogon turbinatus open sedge/grassland
4.

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

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 www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants

TAXON: Conospermum undulatum **TPFL Pop. No:** 4t

OBSERVATION DATE: 18/10/2023 **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)**:**

62 Brae Road

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐

Conservation park ☐ Water reserve ☐ UCL ☐ SLK/Pole _____ to _____ Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 2.7ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	17			17
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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

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Department of **Biodiversity, Conservation and Attractions**

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata isolated trees
2. Xanthorrhoea preissii, Lambertia multiflora var. darlingensis and Allocasuarina humilis sparse shrubland
3. Mesomelaena pseudostygia and Amphipogon turbinatus open sedge/grassland
4.

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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TAXON: Conospermum undulatum **TPFL Pop. No:** 10c

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)**:**

Tonkin Hwy near Hartfield Park

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 2.5ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	8	1		9
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds **road**			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

Please return completed form to **Species And Communities Program** DBCA,

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana and Banksia menziesii open woodland
2. Adenanthos cygnorum subsp. cygnorum and Allocasuarina humilis tall to mid shrubland
3. Dasypogon bromeliifolius, Desmocladus flexuosus and * Ehrharta calycina herb/sedgeland
4.

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☒ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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.

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TAXON: Conospermum undulatum **TPFL Pop. No:** 13a

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)**:**

Clifford Street Reserve

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Gosnels Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 12ha

EFFORT: Time spent surveying (minutes): 16 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	373	6		379
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds **squatter camp**			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Banksia menziesii and Allocasuarina fraseriana low woodland
2. Xanthorrhoea preissii and Adenanthos cygnorum subsp. cygnorum tall isolated shrubs
3. Allocasuarina humilis and Hibbertia hypericoides subsp. hypericoides mid to low open shrubland
4. Mesomelaena pseudostygia Alexgeorgea nitens and Dasypogon bromeliifolius sparse sedge/herbland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

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TAXON: Conospermum undulatum **TPFL Pop. No:** 14b

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:

DBCA DISTRICT: Swan Coastal **LGA:** City of Gosnels Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	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 ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	5			5
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds **road**			
•			
•			

Please return completed form to **Species And Communities Program** DBCA,

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Department of **Biodiversity, Conservation and Attractions**

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Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
1. Weedy road reserve. Accesss wasn't given to enter remnant

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 most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 16a

OBSERVATION DATE: 26/02/2024 **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)**:**

Korung National Park

Reserve No: R47881

DBCA DISTRICT: Perth HIlls **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☒ Full survey ☐ Area observed (m²): 7ha

EFFORT: Time spent surveying (minutes): 16 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	192			192
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds **grazing**			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana tall open woodland
Xanthorrhoea preissii, *Acacia iteaphylla and Hakea lissocarpha tall to mid sparse shrubland
Banksia dallanneyi, *Ursinia anthemoides, *Briza maxima and *Ehrharta calycina herb/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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☒ Degraded ☒ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: _____ **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 16j

OBSERVATION DATE: 11/01/2024 **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)**:**

254 Kelvin Rd

Reserve No:

DBCA DISTRICT: Perth HIlls **LGA:** City of Gosnels Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 2ha

EFFORT: Time spent surveying (minutes): 4 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	6	2		8
Dead				

Area of pop (m²): _____
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 ☐ Flower ☐
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Banksia menziesii isolated trees
Xanthorrhoea preissii and Jacksonia floribunda open shrubland
Mesomelaena pseudostygia open sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☒ Degraded ☒ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: 5<10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☒ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

Please return completed form to **Species And Communities Program** DBCA,
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TAXON: Conospermum undulatum **TPFL Pop. No:** 16l

OBSERVATION DATE: 18/10/2023 **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)**:**

79 Dale Pl

Reserve No:

DBCA DISTRICT: Perth HIlls **LGA:** City of Gosnels Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 2ha

EFFORT: Time spent surveying (minutes): 4 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	21		1	22
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana and Banksia menziesii low open woodland
Melaleuca seriata, Allocasuarina humilis and *Xanthorrhoea preissii* open shrubland
Alexgeorgea nitens open sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☒ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 16m

OBSERVATION DATE: 18/10/2023 **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)**:**

Kelvin Road

Reserve No:

DBCA DISTRICT: Perth HIlls **LGA:** City of Gosnels Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 0.2ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	62	2		64
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
•			
•			

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

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

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 most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☐ Degraded ☒ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 17

OBSERVATION DATE: 05/12/2023 **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)**:**

Smokebush Pl

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☒
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 6ha

EFFORT: Time spent surveying (minutes): 12 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	166			166
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
•			
•			

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

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Allocasuarina fraseriana and Banksia menziesii tall isolated trees
Lambertia multiflora var. darlingensis, Jacksonia floribunda and Xanthorrhoea ?brunonis mid open shrubland
Anigozanthos manglesii subsp. manglesii, Scaevola repens and Cyathochaeta equitans herb/ sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☒ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: <2yrs **Fire Intensity:** High ☒ Medium ☐ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

Please return completed form to **Species And Communities Program** DBCA,
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TAXON: Conospermum undulatum **TPFL Pop. No:** 18a and 18o

OBSERVATION DATE: 31/10/2023 **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)**:**

Dundas Road Bushland

Reserve No: R 37997

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ____ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: _____

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 25ha

EFFORT: Time spent surveying (minutes): 40 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive	1180	189	19	1388
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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.

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata, Banksia menziesii and Banksia attenuata woodland

Adenanthos cygnorum subsp. cygnorum tall sparse shrubland over Xanthorrhoea preissii, Lambertia multiflora var. darlingensis and Hibbertia hypericoides mid to low shrubland

Dasypogon bromeliifolius, Patersonia occidentalis var. *occidentalis* and *Mesomelaena pseudostygia* herb/sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☒ Very good ☐ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: _____ Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

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 www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants

TAXON: Conospermum undulatum **TPFL Pop. No:** 18g

OBSERVATION DATE: 08/01/2024 **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)**:**

DFES fire training school

Reserve No: R 37260

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: DFES

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 52ha

EFFORT: Time spent surveying (minutes): 45 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive	1987	204	538	2729
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata, Banksia menziesii open woodland
Adenanthos cygnorum subsp. cygnorum tall open shrubland
Hibbertia hypericoides, Banksia dallanneyi and Stirlingia latifolia low shrubland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☒ Very good ☐ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: nov Year: 2022 **Fire Intensity:** High ☐ Medium ☐ Low ☒ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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TAXON: Conospermum undulatum **TPFL Pop. No:** 18h, 18t and 18y

OBSERVATION DATE: 07/11/2023 **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)**:**

DFES fire training school

Reserve No: R 29815

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other: Agriculture Pro board

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 13ha

EFFORT: Time spent surveying (minutes): 45 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive	590	7		597
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata, Banksia attenuata and Banksia menziesii open woodland

Xanthorrhoea preissii and Hibbertia hypericoides mid to low open shrubland

Mesomelaena pseudostygia and Cyathochaeta equitans sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☒ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

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Department of **Biodiversity, Conservation and Attractions**

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TAXON: Conospermum undulatum **TPFL Pop. No:** 18i and 18k

OBSERVATION DATE: 21/02/2024 **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)**:**

Pioneer Park Bushland

Reserve No: R 41156

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ____ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☒
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 46ha

EFFORT: Time spent surveying (minutes): 32 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	771	47	1	819
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ Percentage in flower: _____%

CONDITION OF PLANTS: Healthy ☐ Moderate ☒ Poor ☐ Senescent ☐

COMMENT: most plants and vege look drought affected

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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds drought			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana and Eucalyptus marginata subsp. marginata tall open woodland
Xanthorrhoea preissii and Lambertia multiflora var. darlingensis mid open shrubland
Hibbertia hypericoides low shrubland

ASSOCIATED SPECIES:
Mesomelaena pseudostygia, Desmocladus fasciculatus and Dasypogon obliquifolius sedgeland/ herbland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT: _____

FIRE HISTORY: **Last Fire:** Season/Month: Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

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

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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Version 1.4 March 2021

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TAXON: Conospermum undulatum **TPFL Pop. No:** 18j

OBSERVATION DATE: 25/10/2023 **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)**:**

Roe Hwy, adjacent to Pioneer Park Bushland

Reserve No:

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM: GDA94 / MGA94 ☐ AGD84 / AMG84 ☐ WGS84 ☐ Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required) DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED: GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ____ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 1.5ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals (Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	3	1		4
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
• rubbbish			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana and Eucalyptus marginata subsp. marginata tall open woodland
Xanthorrhoea preissii and Lambertia multiflora var. darlingensis mid open shrubland
Hibbertia hypericoides low shrubland

ASSOCIATED SPECIES:
Mesomelaena pseudostygia, Desmocladus fasciculatus and Dasypogon obliquifolius sedgeland/ herbland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT: _____

FIRE HISTORY: **Last Fire:** Season/Month: Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 18n

OBSERVATION DATE: 25/10/2023 **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)**:**

Roe Hwy, near Dundas nature reserve

Reserve No:

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

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: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive	14	4		18
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
• rubbbish			
•			

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.

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Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata, Banksia menziesii and Banksia attenuata woodland

Adenanthos cygnorum subsp. cygnorum and Xanthorrhoea preissii tall to mid open shrubland

Hibbertia hypericoides low shrubland

ASSOCIATED SPECIES:
Burchardia congesta, Patersonia occidentalis var. occidentalis and Dasypogon bromeliifolius open herbland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT: _____

FIRE HISTORY: **Last Fire:** Season/Month: Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 18p

OBSERVATION DATE: 18/10/2023 **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)**:**

Roe Hwy, near Dundas road nature reserve

Reserve No:

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM: GDA94 / MGA94 ☐ AGD84 / AMG84 ☐ WGS84 ☐ Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required) DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED: GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 1ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals (Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive	35	16		51
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
• rubbbish			
•			

Please return completed form to **Species And Communities Program** DBCA,

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Banksia menziesii, Banksia attenuata and Allocasuarina fraseriana woodland
Adenanthos cygnorum subsp. cygnorum, Jacksonia floribunda and Xanthorrhoea preissii tall to mid shrubland
Patersonia occidentalis var. occidentalis, Dasypogon obliquifolius and Mesomelaena pseudostygia open sedge/herbland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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TAXON: Conospermum undulatum **TPFL Pop. No:** 18q

OBSERVATION DATE: 18/10/2023 **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)**:**

Dundas road nature reserve

Reserve No:

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ____ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 1ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	8			8
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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.

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Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Banksia menziesii, Banksia attenuata and Allocasuarina fraseriana woodland
Adenanthos cygnorum subsp. cygnorum, Jacksonia floribunda and Xanthorrhoea preissii tall to mid shrubland
Patersonia occidentalis var. occidentalis, Dasypogon obliquifolius and Mesomelaena pseudostygia open sedge/herbland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

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 www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants

TAXON: Conospermum undulatum **TPFL Pop. No:** 18r

OBSERVATION DATE: 18/10/2023 **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)**:**

Dundas road nature reserve

Reserve No:

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

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: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive	17	3		20
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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

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GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Banksia menziesii, Banksia attenuata and Allocasuarina fraseriana woodland
Adenanthos cygnorum subsp. cygnorum, Jacksonia floribunda and Xanthorrhoea preissii tall to mid shrubland
Patersonia occidentalis var. occidentalis, Dasypogon obliquifolius and Mesomelaena pseudostygia open sedge/herbland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: Year: +10yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☒

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 18v

OBSERVATION DATE: 25/10/2023 **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)**:**

Roe Hwy adjacent to DFES training site

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 1ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	48	59	18	125
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds rubbish			
• road			
•			

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

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Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. *Eucalyptus marginata* subsp. *marginata, Corymbia calophylla* and *Allocasuarina fraseriana* tall open woodland

Callitris acuminata and Chamelaucium uncinatum tall open shrubland

Hibbertia hypericoides and Stirlingia latifolia low shrubland

ASSOCIATED SPECIES:
Austrostipa compressa, * Ehrharta calycina, * Sonchus oleraceus grass/ herbland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☒ Degraded ☐ Completely degraded ☐

COMMENT: _____

FIRE HISTORY: **Last Fire:** Season/Month: Year: <2yrs **Fire Intensity:** High ☐ Medium ☐ Low ☒ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 18x

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)**:**

Dundas Road adjacent to Dundas Road nature Reserve

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

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: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	5			5
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds rubbish			
• road			
•			

Please return completed form to **Species And Communities Program** DBCA,

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. *Allocasuarina fraseriana, Eucalyptus marginata subsp. marginata, Banksia menziesii and Banksia attenuata woodland*

Adenanthos cygnorum subsp. cygnorum tall sparse shrubland

Xanthorrhoea preissii, Lambertia multiflora var. darlingensis and Hibbertia hypericoides mid to low shrubland

ASSOCIATED SPECIES:
Dasypogon bromeliifolius, Patersonia occidentalis var. occidentalis and Mesomelaena pseudostygia herb/sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

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: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

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 www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-plants

TAXON: Conospermum undulatum **TPFL Pop. No:** 19b 19c

OBSERVATION DATE: 14/11/2023 **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)**:**

Welshpool road bushland

Reserve No:

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 3ha

EFFORT: Time spent surveying (minutes): 4 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:	**Mature:**	**Juveniles:**	**Seedlings:**	**Totals:**
Alive	79	5		84
Dead				

Area of pop (m²): _____
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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. *Banksia attenuata open woodland*
Lambertia multiflora var. darlingensis, Eremaea pauciflora var. pauciflora and Hibbertia hypericoides mid to low shrubland
Xanthorrhoea preissii, Lambertia multiflora var. darlingensis and Hibbertia hypericoides mid to low shrubland

ASSOCIATED SPECIES:
Dasypogon bromeliifolius and Mesomelaena pseudostygia herb/sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT: _____

FIRE HISTORY: **Last Fire:** Season/Month: Year: 3<5yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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

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

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

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TAXON: Conospermum undulatum **TPFL Pop. No:** 19d

OBSERVATION DATE: 14/11/2023 **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)**:**

Welshpool road bushland

Reserve No:

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 1ha

EFFORT: Time spent surveying (minutes): 2 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	11			11
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds			
•			
•			

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

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HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. *Banksia attenuata open woodland*
Lambertia multiflora var. darlingensis, Eremaea pauciflora var. pauciflora and Hibbertia hypericoides mid to low shrubland
Xanthorrhoea preissii, Lambertia multiflora var. darlingensis and Hibbertia hypericoides mid to low shrubland

ASSOCIATED SPECIES:
Dasypogon bromeliifolius and Mesomelaena pseudostygia herb/sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☒ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT: _____

FIRE HISTORY: **Last Fire:** Season/Month: Year: 3<5yrs **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 22a

OBSERVATION DATE: 18/10/2023 **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)**:**

Honey Rd

Reserve No:

DBCA DISTRICT: Perth Hills **LGA:** City of Kalamunda Land manager present: ☐

DATUM:
GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)
DecDegrees ☐ DegMinSec ☐ UTMs ☒
Lat / Northing: see shapefile attached
Long / Easting:
ZONE:

METHOD USED:
GPS ☐ Differential GPS ☒ Map ☐
No. satellites: ___ Map used: _____
Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 1ha

EFFORT: Time spent surveying (minutes): 1 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	1			1
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
1. Roadside vegetation

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 most representative vegetation layers (with up to three dominant species in each layer). Structural Formations should follow 2009 *Australian Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

CONDITION OF HABITAT: Pristine ☐ Excellent ☐ Very good ☐ Good ☐ Degraded ☐ Completely degraded ☐

COMMENT:

FIRE HISTORY: **Last Fire:** Season/Month: Year: **Fire Intensity:** High ☐ Medium ☐ Low ☐ No signs of fire ☐

FENCING: Not required ☐ Present ☐ Replace / repair ☐ Required ☐ Length req'd: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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

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TAXON: Conospermum undulatum **TPFL Pop. No:** 23b

OBSERVATION DATE: 17/10/2023 **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)**:**

Near cnr of Roe hwy and Adelaide St

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Swan Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐
AGD84 / AMG84 ☐
WGS84 ☐
Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 1ha

EFFORT: Time spent surveying (minutes): 1 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals
(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	1			1
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒
Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
•			
•			

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.

Record entered by:_____ **Sheet No.:**_____ **Record Entered in Database** ❑

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

Threatened and Priority Flora Report Form

Version 1.4 March 2021

HABITAT INFORMATION:

LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Banksia menziesii open woodland
Jacksonia floribunda mid open shrubland
*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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

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: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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TAXON: Conospermum undulatum **TPFL Pop. No:** 23c

OBSERVATION DATE: 17/10/2023 **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)**:**

Near cnr of Roe hwy and Great Eastern hwy

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Swan Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
Conservation park ☐	Water reserve ☐	UCL ☐	SLK/Pole _____ to _____	Specify other:

AREA ASSESSMENT: Edge survey ☐ Partial survey ☐ Full survey ☒ Area observed (m²): 5ha

EFFORT: Time spent surveying (minutes): 4 hours No. of minutes spent / 100 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	1			1
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
• rubbish			
•			

Please return completed form to **Species And Communities Program** DBCA,

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LANDFORM:
Crest ☐
Hill ☐
Ridge ☐
Outcrop ☐
Slope ☐
Flat ☒
Open depression ☐
Drainage line ☐
Closed depression ☐
Wetland ☐

ROCK TYPE:
Granite ☐
Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
30-50% ☐
50-100% ☐

SOIL TYPE:
Sand ☒
Sandy loam ☐
Loam ☐
Clay loam ☐
Light clay ☐
Peat ☐
Specify other: _____

SOIL COLOUR:
Red ☐
Brown ☒
Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
Well drained ☒
Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Allocasuarina fraseriana, Banksia menziesii and Banksia attenuata open woodland
Allocasuarina humilis and Xanthorrhoea preissii open shrubland
Desmocladus flexuosus, Dasypogon bromeliifolius and *Ehrharta calycina herb/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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

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: _____

ROADSIDE MARKERS: Not required ☐ Present ☐ Replace / reposition ☐ Required ☐ Quantity req'd: _____

OTHER COMMENTS: (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 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: 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: _____

Submitter of Record: Angela Benkovic Role: Snr. Botanist Signed:  Date: 24/06/2024

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TAXON: Conospermum undulatum **TPFL Pop. No:** 30a

OBSERVATION DATE: 18/10/2023 **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)**:**

Tonkin Hwy north of Kelvin Rd

Reserve No:

DBCA DISTRICT: Swan Coastal **LGA:** City of Gosnells Land manager present: ☐

DATUM:

GDA94 / MGA94 ☐

AGD84 / AMG84 ☐

WGS84 ☐

Unknown ☐

COORDINATES: (If UTM coords provided, **Zone** is also required)

DecDegrees ☐ DegMinSec ☐ UTMs ☒

Lat / Northing: see shapefile attached

Long / Easting:

ZONE:

METHOD USED:

GPS ☐ Differential GPS ☒ Map ☐

No. satellites: ___ Map used: _____

Boundary polygon captured: ☐ Map scale: _____

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 ☐
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 m²: _____

POP'N COUNT ACCURACY: Actual ☒ Extrapolation ☐ Estimate ☐ Count method: individuals

(Refer to field manual for list)

WHAT COUNTED: Plants ☒ Clumps ☐ Clonal stems ☐

TOTAL POP'N STRUCTURE:

	Mature:	Juveniles:	Seedlings:	Totals:
Alive	9	1		10
Dead				

Area of pop (m²): _____

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 ☐ Flower ☒

Immature fruit ☐ Fruit ☐ Dehisced fruit ☐ 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+)	**Current impact (N-E)**	**Potential Impact (L-E)**	**Potential Threat Onset (S-L)**
• weeds road			
• rubbish			
•			

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Wetland ☐

ROCK TYPE:
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Dolerite ☐
Laterite ☐
Ironstone ☐
Limestone ☐
Quartz ☐
Specify other: _____

LOOSE ROCK:
(on soil surface; eg gravel, quartz fields)
0-10% ☒
10-30% ☐
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50-100% ☐

SOIL TYPE:
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Loam ☐
Clay loam ☐
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Peat ☐
Specify other: _____

SOIL COLOUR:
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Yellow ☐
White ☐
Grey ☒
Black ☐
Specify other: _____

DRAINAGE:
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Seasonally inundated ☐
Permanently inundated ☐
Tidal ☐

Specific **Landform** Element: _____
(Refer to field manual for additional values)

CONDITION OF SOIL: Dry ☒ Moist ☐ Waterlogged ☐ Inundated ☐

VEGETATION CLASSIFICATION*:
Eg: **1**. Banksia woodland (B. attenuata, B. ilicifolia); **2**. Open shrubland (Hibbertia sp., Acacia spp.) ; **3**. Isolated clumps of sedges (M.tetragona)

1. Eucalyptus marginata subsp. marginata, Corymbia calophylla, Allocasuarina fraseriana tall isolated trees

* Gaudium laevigatum, Calothamnus quadrifidus and Xanthorrhoea preissii tall to mid shrubland

* Ehrharta calycina, * Lysimachia arvensis and Mesomelaena pseudostygia grass/sedgeland

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 Soil and Land Survey Field Handbook* guidelines – refer to field manual for further information and structural formation table.

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: _____

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→ The Power of Commitment