Targeted Flora Survey: *Grevillea prominens* (P3), *Schizaea rupestris* (P2) and *Senecio leucoglossus* (P4)

19.0 – 24.2 SLK Harvey-Quindanning Road, Harvey

FEBRUARY 2025

SW environmental

Version control

Project number:	SW546			
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Client:	Shire of Harvey			
Revision	Date	Prepared by (name)	Reviewed by (name)	Approved by (name)
Rev 0	11/02/25	Georgia Johnsen SW Environmental	Kelly Paterson SW Environmental	Shane Priddle SW Environmental

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Abbreviations and acronyms

Organisations	
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Federal Department of Climate Change, Energy, the Environment and Water
DWER	WA Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
Common Terms	
DSA	Desktop Study Area – survey area plus a 10 km buffer
GIS	Geographic Information Systems
MNES	Matters of National Environmental Significant
PEC	Priority Ecological Community
Project	Harvey Quindanning Road widening
Significant flora	As defined in Section 11 of EPA Technical Guidance (EPA, 2016b)
Significant vegetation	As defined in Section 11 of EPA Technical Guidance (EPA, 2016b)
SLK	Straight Line Kilometre
SPRAT	Species Profile and Threats
Survey area	Harvey-Quindanning Road, Harvey, between SLK 19.0 and 24.2
TEC	Threatened Ecological Community
The Shire	Shire of Harvey
VU	Vegetation Unit
WA	Western Australia
Legislation	
BC Act	*Biodiversity Conservation Act 2016* (WA)
BC Regs	*Biodiversity Conservation Regulations 2016* (WA)
EP Act	*Environmental Protection Act 1986* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Federal)
Measurements	
ha	Hectare
km	Kilometre
m	Metre

Executive summary

The Shire of Harvey intends to undertake minor road widening between 19.0 and 24.2 Straight Line Kilometres (SLK) on the Harvey-Quindanning Road, Harvey, within the Shire of Harvey (the Shire). Harvey is located approximately 130 kilometres (km) south of Perth. A Structural Vegetation and Condition Assessment (SW Environmental, 2024, unpublished report) has previously been prepared for the Survey Area.

The Shire engaged SW Environmental to undertake a targeted flora survey for the species *Grevillea prominens* (Priority Three), *Schizaea rupestris* (Priority Two) and *Senecio leucoglossus* (Priority Four), as requested by the Department of Water and Environmental Regulation, to support an application (CPS 10628/1) for a clearing permit under section 51E(1) of the *Environmental Protection Act 1986* (the EP Act).

The targeted field survey was undertaken on 31st of October 2024, with *Grevillea prominens* recorded within the Survey Area. Follow up surveys to document the extent of the *Grevillea prominens* population within the clearing footprint were completed on January 9th and February 6th. Following a revision / reduction of the proposed clearing area (Survey Area) a total of seven plants were observed within the revised clearing footprint - four adults and three juveniles. An additional Priority Three species, *Netrostylis* sp. Blackwood River (A.R. Annels 3043), was also recorded within the Survey Area and extending into adjacent remnant vegetation, growing within seasonal creek lines. As the plant is a sedge and was not flowering at the time of the survey, an estimate of the number of plants within the Survey Area was not able to be made. However, the populations are associated with the seasonal drainage areas and extend well outside of the Survey Area. Proposed impacts to local *Netrostylis sp.* Blackwood River populations intersecting the Survey Area would be low considering the high numbers of the plant in offsite areas, extending into adjacent State Forest habitats.

No other target species, or other Priority, Threatened, or otherwise considered significant flora taxa, were recorded during the survey.

1 Introduction

1.1 Project Overview

The Shire of Harvey (herein referred to as 'The Shire') intends to undertake minor road widening between 19.0 and 24.2 Straight Line Kilometres (SLK) on the Harvey-Quindanning Road, Harvey, within the Shire of Harvey (the Shire). Harvey is located approximately 130 kilometres (km) south of Perth (Figure 1 - Appendix A)

The Shire submitted an application (CPS 10628/1) for a clearing permit under section 51E(1) of the *Environmental Protection Act 1986* (the EP Act) on the 27 May 2024, which included a Structural Vegetation and Condition Assessment (SW Environmental, 2024, unpublished report) A preliminary assessment of the application by the Department of Water and Environmental Regulation (DWER) requested (Item 3, Schedule 1 comments) for a flora survey to be undertaken within the application area, particularly, a Targeted Flora Survey for *Grevillea prominens* (Priority Three), *Schizaea rupestris* (Priority Two) and *Senecio leucoglossus* (Priority Four).

The 'Survey Area' consists of the circa 7.48 hectares (ha) proposed development footprint between 19.0 and 24.2 SLK on the Harvey-Quindanning Road (Appendix A – Figure 1). Existing road formation comprises 4.28 ha of the Survey Area, and approximately 3.20 ha consists of vegetation (maintenance zone and remnant native vegetation) as delineated by the clearing envelope provided to SW Environmental by the Shire of Harvey (Figure 2 - Appendix A).

1.2 Scope of Works

The Shire engaged SW Environmental to undertake a Targeted Flora Survey for the flora species identified in Item 3 of the DWER comments, being *Grevillea prominens* (Priority Three), *Schizaea rupestris* (Priority Two) and *Senecio leucoglossus* (Priority Four), to provide additional supporting flora information to inform the environmental assessment and approvals process. The scope of work was to:

- Undertake a field survey to identify the presence and distribution of any target flora taxa (as identified by DWER) within the Survey Area;
- Compile a report detailing the presence of any target flora taxa within the Survey Area, and if so, the extent of impact to each; and
- Opportunistic records of any other flora of conservation significance observed during the survey.

Conservation Significant Flora are defined as per EPA (2016b) as:

- Flora taxa that are identified to be Threatened (T) or Priority (P) species, as formally listed under State (*Biodiversity Conservation Act 2016* (WA) (BC Act)) and Commonwealth (*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)) legislation.
- Other flora taxa considered to be significant, as defined by the Environmental Protection Authority (EPA, 2016b, 2016a).

2 Methods

2.1 Field survey

2.1.1 Survey Methodology

A Targeted Survey was conducted on the 31st of October 2024 by an experienced botanist (Table 3-2) to cover the entire Survey Area, with follow up surveys to map the distribution of *Grevillea prominens* within the clearing footprint completed by experienced botanists on 9th of January and 6th February 2025. The initial survey occurred within the optimal timing for the South-West botanical province, as per the EPA Technical Guidance (EPA, 2016b). The survey period coincided with the flowering period of the target taxa. The timing of the follow up surveys was suitable to identify the *Grevillea prominens* within the clearing footprint.

The Survey Area was defined as being the area demarcated with pink flagging tape, which was up to 6 metres from the pegged boundary along the road edge. Portions of the Survey Area were then further reduced to a pegged clearing footprint, revised based on the results of this survey to reduce the impact to *Grevillea prominens*.

The Survey Area was traversed on foot to cover the entire area (Figure 2 - Appendix A). Additional search efforts concentrated on the remnant vegetation patches of the Survey Area where habitat quality for target taxa was more suitable.

The survey was completed in line with Section 4.2 of the *Technical Guidance for Flora and Vegetation Surveys for Environmental Impact* (EPA, 2016b), and complies with the following documents:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA, 2016a).
- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (Targeted Survey) (EPA, 2016b).

2.2 Plant Collection and Identification

Flora identification was completed in the field where possible, including collection of notes and photographs. For flora requiring further investigation, a plant specimen was taken for identification purposes.

Plants were collected using methodology consistent with guidance from the Western Australian Herbarium (2020). All plant material was collected under relevant *Flora Taking (Biological Assessment) Licence* (under Regulation 62 of the WA *Biodiversity Conservation Regulations 2018*) and *Authorisation to Take or Disturb Threatened Species* (pursuant to Section 40 of the BC Act).

Plant identifications were undertaken using taxonomic keys where available, utilising available resources such as existing herbarium specimens and/or consultation with taxonomic experts. Plant identifications were overseen by a Senior Botanist with extensive previous experience (>10 years).

2.2.1 Significant Flora

If conservation significant flora taxa were observed within the Survey Area, a count of plant abundance and/or extent was recorded, along with a point location using a handheld Garmin Global Positioning System (GPS) unit (± 3m accuracy). A representative collection of plant material was obtained for any significant flora taxa.

2.3 Limitations of Survey

In accordance with *Technical Guidance* (EPA, 2016b), potential survey limitations are identified in Table 2-1 below.

Table 2-1 Limitations of survey adequacy and accuracy

Aspect	Constraint	Comment
Availability of contextual information at a local and regional scale	No limitation	The Survey Area is within a well surveyed area, with good contextual information available. Extracts from available databases were obtained, including DBCA and WA Herbarium Threatened and Priority Flora and Ecological Communities database search, NatureMap and PMST database extracts
Competency / experience of the survey team	No limitation	Suitably qualified botanists carried out the work. Kelly Paterson has >10 years' experience conducting botanical surveys across many bioregions of WA, particularly the Southwest. Georgia Johnsen has >2 years' experience conducting botanical surveys across many bioregions of WA including the Southwest.
Proportion of flora recorded and/or collected, any identification issues	No limitation	Flora species identification was completed in the field and WA Herbarium, with two species of conservation significance recorded, *Grevillea prominens* and *Netrostylis* sp. Blackwood River, both Priority Three. No other species of conservation significance were recorded.
Effort and extent of survey	No limitation	The surveys were completed adequately, to a sufficient level with respect to the scope.
Access restrictions within the Survey Area	No limitation	There were no access restrictions, the entirety of the Survey Area was accessible by foot.
Survey timing, including rainfall and season of survey.	No limitation	The surveys were conducted in Spring and early Summer, with the entire Survey Area searched in Spring, the peak flowering time to observe the target species. The January and February surveys were to count the number of *Grevillea prominens* plants within the Survey Area and revised clearing footprint. Although they were no longer flowering., this species was still easily observed at that time.
Disturbances	No limitation	There were no recent disturbances that affected the survey.

3 Results

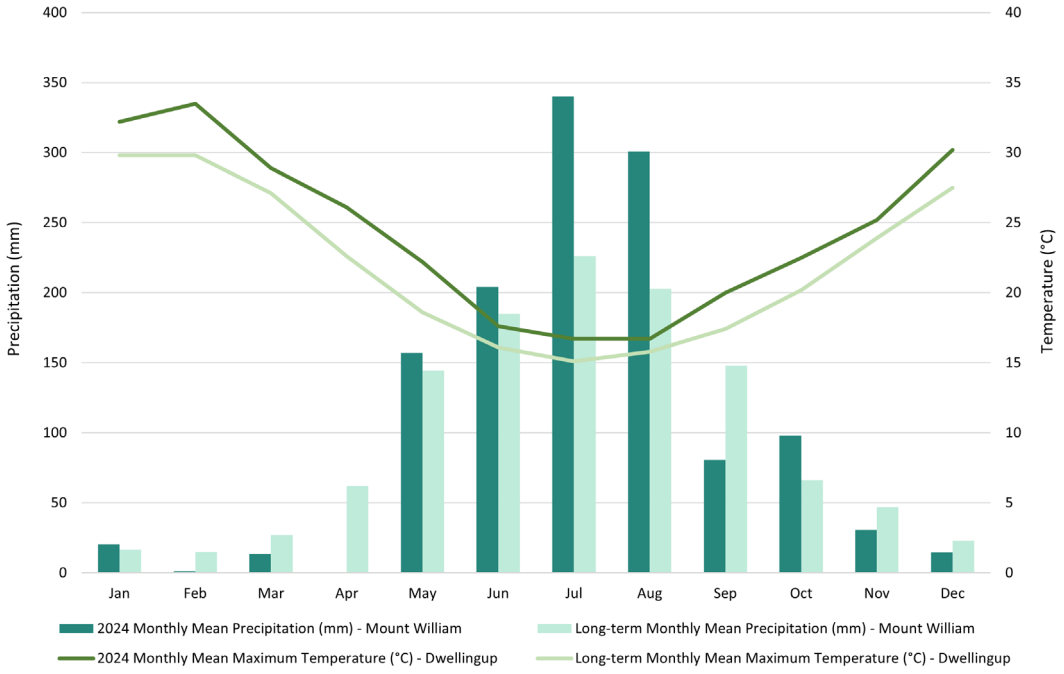
3.1 Site Context

The Survey Area is located within the Jarrah Forest Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, specifically within the Southern Jarrah Forest (JAF02) IBRA subregion (DCCEEW, 2022, 2023). The Southern Jarrah Forest region is of a warm Mediterranean climate, typically experiencing winter precipitation ranging between 600 to 1200 mm per annum and a dry season of 5 to 6 months per year (Beard, 2015).

Graph 4-1 presents climatic information for the 12 months preceding the survey from the Bureau of Meterology (BoM) (2025) weather stations of Dwellingup (station number 9538) and Mount William (station number 109501). These stations presented the most relevant, up to date climate data currently available for the area. The Dwellingup station is located approximately 32 km from the Survey Area. This station was used to obtain mean maximum temperature data, as no comprehensive recent and/ore long term temperate data was available at the Mount William station (8.6 km away from the Survey Area).

Long-term mean maximum temperatures range from 29.8 in the hottest months of January and February, to 15.1°C in the coolest month of July. The long-term average annual rainfall is 1162.4 mm. Between the months of January 2023 and December 2024, annual precipitation was recorded to be slightly above average at 1261.6 mm (BoM, 2025).

Weather records from the 12 months preceding the survey period demonstrate temperatures that have exceeded the long-term average over all months. Precipitation over this period was well below average over late summer and autumn, with rainfall across winter in excess of the long-term averages (Graph 4-1).



Graph 4-1 Temperature and rainfall data from the Dwellingup and Mount William bureau weather stations (BoM, 2025)

3.2 Species Profiles

3.2.1 Schizaea rupestris – Priority Two

Schizaea rupestris is a rhizomatous, perennial, rush like fern, growing in crevices on granitic outcrops and on sheltered shady creek banks in sandy soil (Wheeler et al., 2002) listed as Priority Two (BC Act). *Schizaea rupestris* has previously been recorded approximately 7 km to the north west of the Survey Area. No habitat data was recorded for this point, however other nearby populations were recorded from grey clay loam, in association with creek lines and riverbanks (DBCA, 2024). This species was not recorded within the Survey Area.

Photo 1 *Schizaea rupestris* illustration (Wheeler et al., 2002, page 231)

3.2.2 Grevillea prominens – Priority Three

Grevillea prominens is a spreading shrub, growing up to 1.7 metres in height (WA Herbarium, 1998), listed as Priority Three (BC Act). Preferred habitat for this species includes gravelly loam creeklines and lower slopes in Jarrah Marri forest. It is distinguished from *Grevillea trifida* in its longer, subsecund conflorescences, its longer peduncles and shorter pedicels (Olde & Marriott, 1993). *Grevillea prominens* has previously been recorded along this portion of Harvey-Quindanning Road (DBCA, 2024).

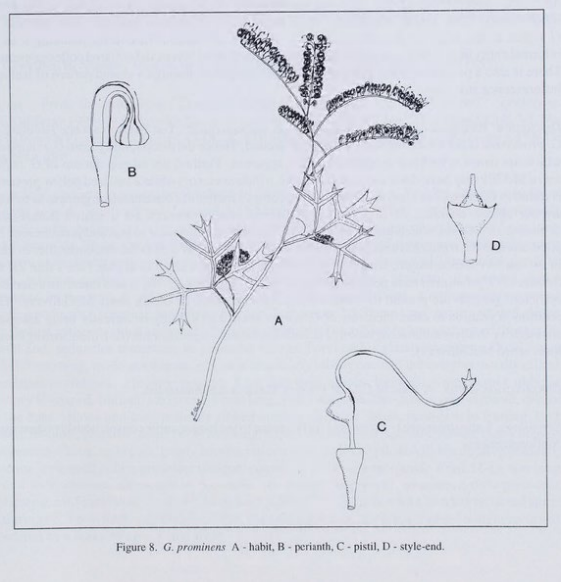


Photo 2 *Grevillea prominens* illustration, from Nuytsia 9:262-265,Fig.8 (1993)

3.2.3 Senecio leucoglossus– Priority Four

Senecio leucoglossus is an erect annual herb, growing to 1.3 metres (WA Herbarium, 1998). The flowerheads radiate with conspicuous and spreading ligules on the female flowers. This species is distinguished by the cylindrical involucres 2 to 4 mm long, with three white ray florets that are considerably longer than the involucre (Grieve & Blackall, 1982). The closest record to the Survey Area is approximately 5.2 km to the south, in gravelly lateritic Jarrah Marri forest (DBCA, 2024).

Photo 3 *Senecio leucoglossus* specimen, from Kew's Herbarium K000852266 (Kew, 2025)**.**

3.3 Field Survey

3.3.1 Significant Flora Recorded

Two species of conservation significance were recorded during the survey, *Grevillea prominens* and *Netrostylis* sp. Blackwood River (A.R. Annels 3043), both Priority Three (BC Act). No other Priority, Threatened, or otherwise considered significant flora taxa were recorded during the survey.

After the initial survey, the eastern portion of the Survey Area was revised to reduce potential impacts to *Grevillea prominens*. A total of seven *Grevillea prominens* plants were recorded within the final pegged clearing footprint, with four being adults and the remaining three being juvenile (Figure 3 - Appendix A).

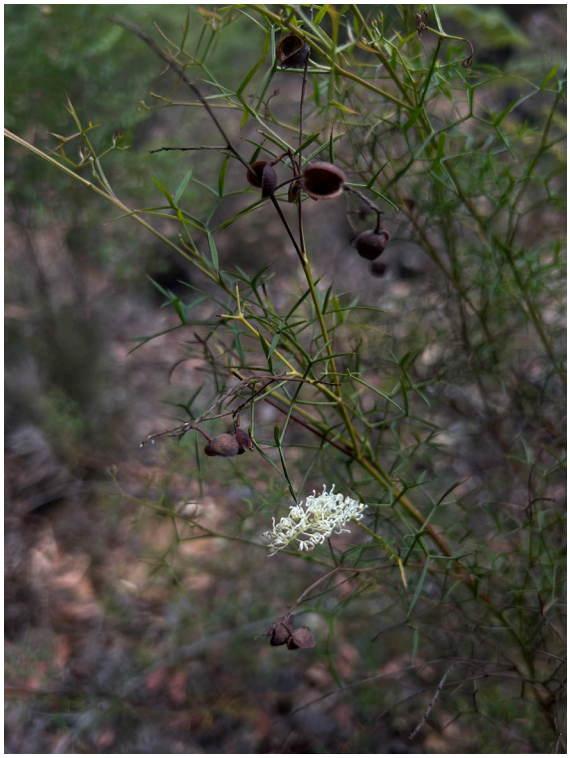


Photo 4 *Grevillea prominens* (PriorityThree) within the Survey Area

Netrostylis sp. Blackwood River (A.R. Annels 3043) was not a target of the current survey but was opportunistically observed within a creek line to the east of the Survey Area, outside of the clearing area. Additional plants were recorded within seasonal creek line, with a specimen submitted to the Western Australian Herbarium and confirmed to be *Netrostylis* sp. Blackwood River.

Photo 5 *Netrostylis* sp. Blackwood River (A.R. Annels 3034) (Priority Three)

4 Discussion

Two species of significance, *Grevillea prominens* and *Netrostylis* sp. Blackwood River (A.R. Annels 3043), both Priority Three, were recorded during this survey.

The *Grevillea prominens* population was noted to extend into the remnant vegetation of the Harris River State Forest. The extent of these plants was investigated, with the population noted to have a small number of plants that will remain to the north and northwest of the proposed clearing footprint, with more extensive numbers through the gravelly lower slopes and creek line to the south and east that will not be impacted. The population extends further than shown in Figure 3 - Appendix A, however surveying the full extent was not within the scope of the current survey. More than 100 plants were observed during the current investigation, with a total population count expected to be well in excess of this. Due to the extent of the population that will remain without impact, it is not expected that the proposed clearing will significantly impact the ongoing health of this population.

Netrostylis sp. Blackwood River is a tufted perennial sedge, listed as Priority Three (BC Act). This species can grow in excess of 1.5 m high and preferred habitat includes creek lines and rivers, often in association with *Lepidosperma tetraquetrum*. The closest known record is approximately 13 km to the north west of the Survey Area ((DBCA, 2024).

Netrostylis sp. Blackwood River can be difficult to detect, blending into the numerous other sedge or sedge-like species it co-occurs with. At the time of the January and February surveys, only old inflorescences were present. This species is best surveyed for when the inflorescence has fully developed, which is usually in Autumn. The potential habitat mapping in Figure 4 has been completed based on the observations made during the current survey, as well as aerial imagery and broad vegetation mapping, and is indicative only. Further surveys would be required to provide accurate areas of the population extent. This was outside of the scope of this survey and would be best completed during the flowering period, however a number of plants were observed and it is assumed that this species is scattered through similar seasonal creek lines across the landscape. The final clearing footprint in proximity to the *Netrostylis* sp. Blackwood River populations has not been pegged, however plants were observed to be set back a minimum of 50 cm from the edge of the vegetation. It is unlikely that the proposed clearing will significantly impact the ongoing health of this population, due to the small area of proposed clearing and extension of the population into the adjacent vegetation that will not be impacted.

5 Conclusion and recommendations

Final recommendations are made to minimize clearing, particularly in proximity to the Priority flora recorded within the Survey Area:

- Seven *Grevillea prominens* (Priority Three) plants were recorded from within the clearing footprint, including four adults and three juveniles. The population extends into the adjacent remnant vegetation, with over a hundred plants observed.
- *Netrostylis* sp. Blackwood River (A.R. Annels 3043) was also recorded, and was noted to occur within seasonal creek lines across the Survey Area. This species extends into the adjacent remnant vegetation, and is likely to occur in similar habitat across the landscape. Proposed impacts to local *Netrostylis sp.* Blackwood River populations intersecting the Survey Area would be low considering the high numbers of the plant in offsite into adjacent State Forest.
- Any follow up surveys to quantify the extent of *Netrostylis* sp. Blackwood River should be completed during Autumn, when the spikelets are fully developed and plants are easier to detect.
- The clearing footprint has been significantly revised to reduce the impacts to *Grevillea prominens* plants. The final design should also minimise seasonally wet areas that provide suitable habitat for *Netrostylis* sp. Blackwood River, to reduce any impact to this species.

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Appendix A Figures

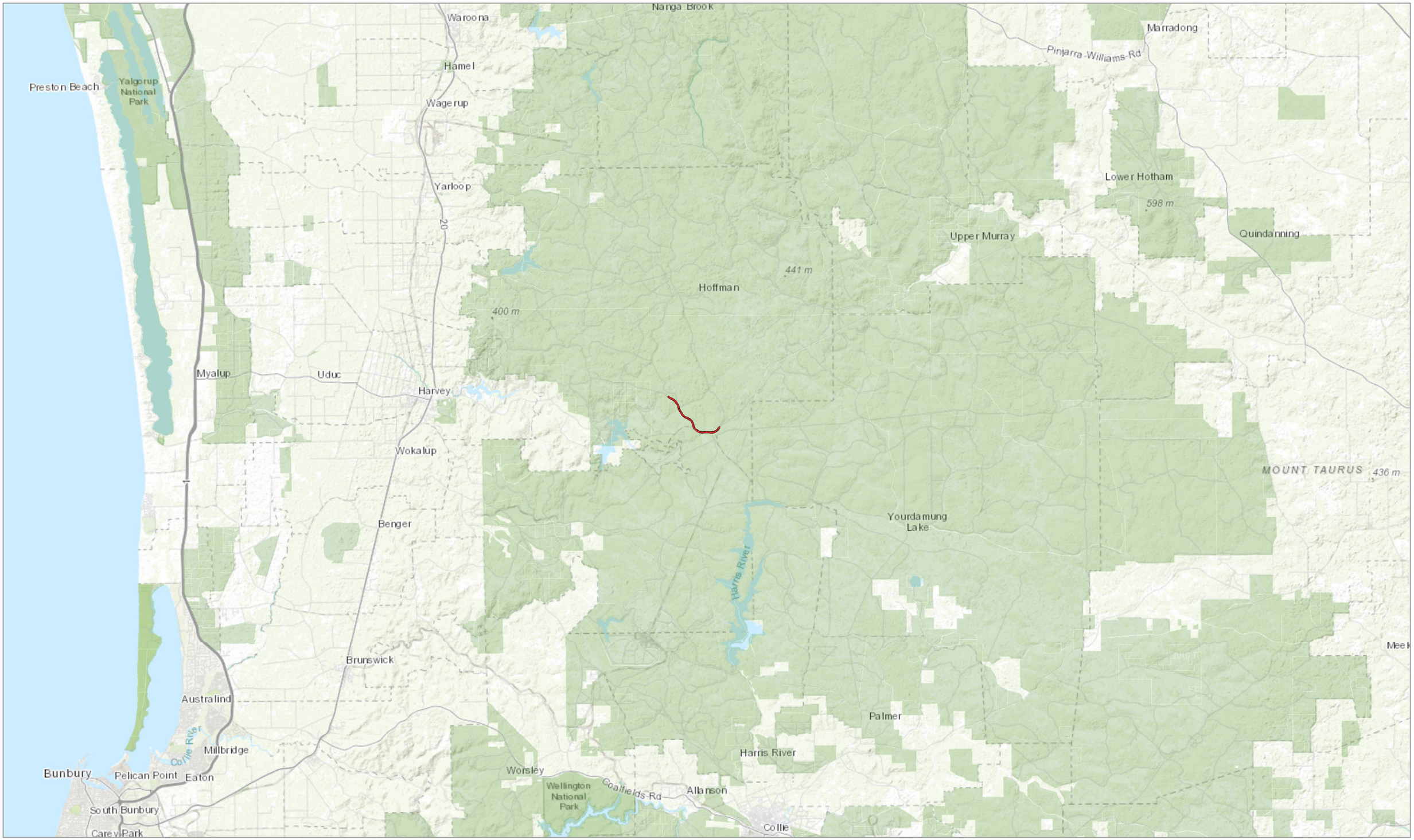
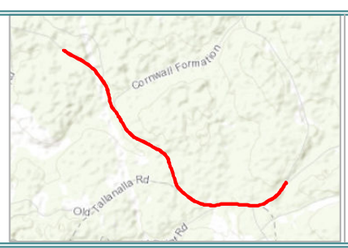


Figure 1 - Location

Project extent

DBCA managed land

HARVEY QUINDANNING ROAD 19.0 - 24.2 SLK



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0 1 2 4 km

GRID: GDA zone 50

N

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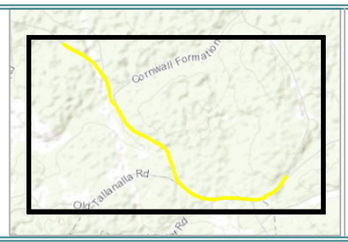
Ref: SW546
Date: 11/09/2024 Author: SP

Figure 2 - Survey Area

HARVEY QUINDANNING ROAD 19.0 - 24.2 SLK

- Project extent
- Road
- Minor drainage line
- DBCA managed land

Ref: SW546
Date: 11/09/2024 Author: SP



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0 50 100 200 m

GRID: GDA zone 50

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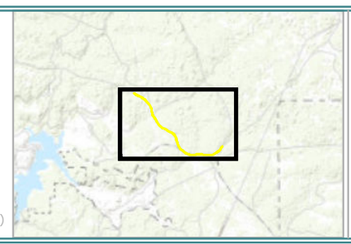
Figure 3 *Grevillea prominens* recorded within the Survey Area

HARVEY QUINDANNING ROAD 19.0 - 24.2 SLK

Ref: SW546
Date: 10/02/2025 Author: SP

- *Grevillea prominens* individuals likely to be cleared
- Revised maximum clearing area
- Approximate *Grevillea prominens* population extent
- Survey Area
- Road
- Minor drainage line



Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)

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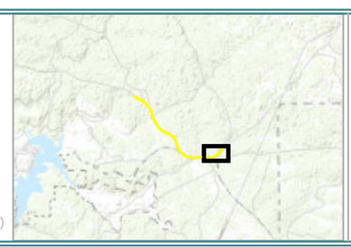
Figure 3 *Grevillea prominens* recorded within the Survey Area

HARVEY QUINDANNING ROAD 19.0 - 24.2 SLK

- *Grevillea prominens* individuals likely to be cleared
- Revised maximum clearing area
- Approximate *Grevillea prominens* population extent
- Survey Area
- Road
- Minor drainage line



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Ref: SW546
Date: 10/02/2025 Author: SP

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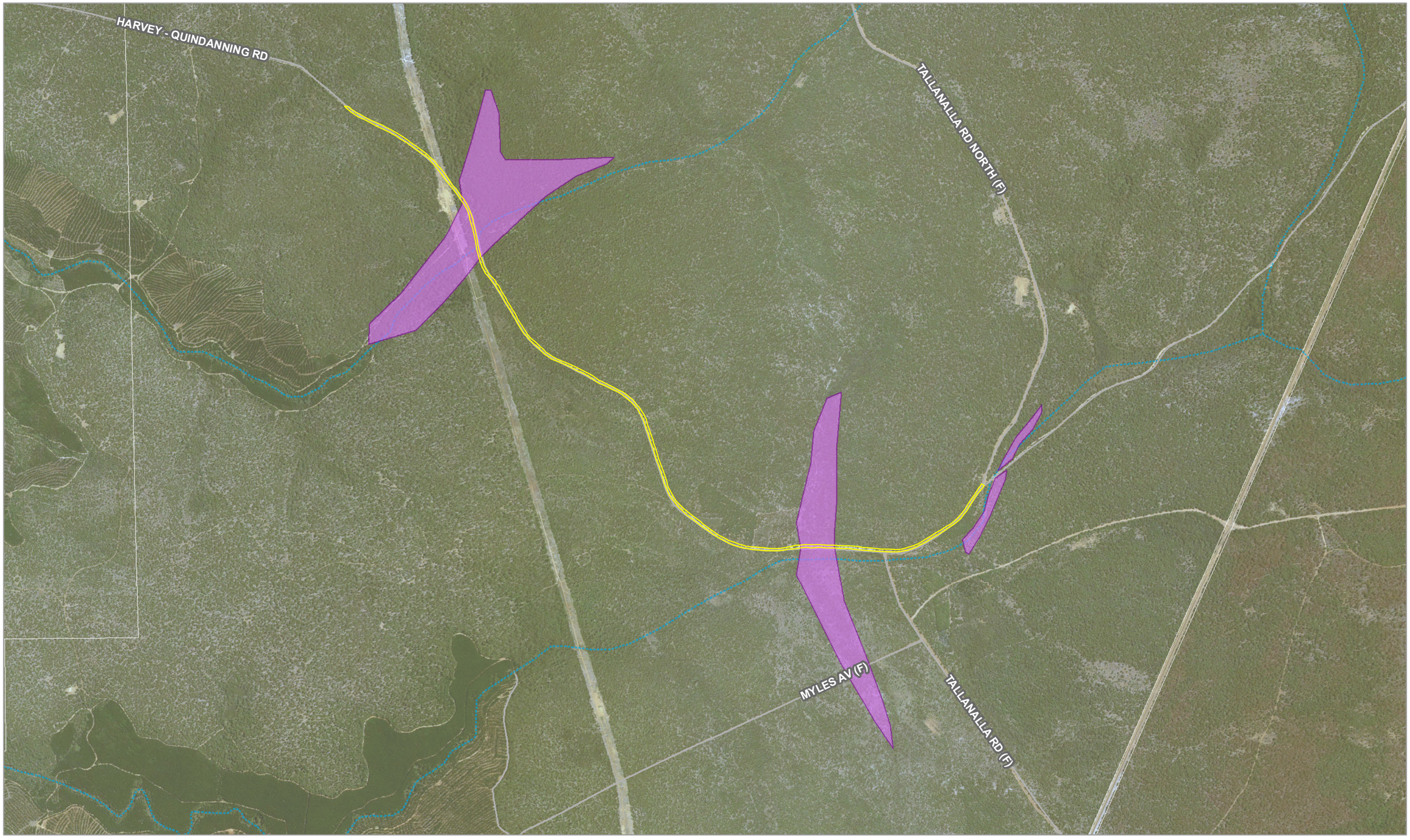
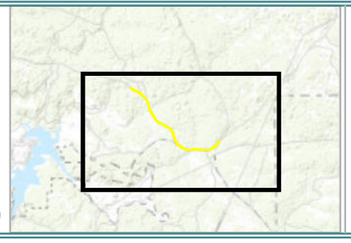


Figure 4 *Netrostylis sp.* Blackwood River recorded within the Survey Area

HARVEY QUINDANNING ROAD 19.0 - 24.2 SLK

- Survey Area
- *Netrostylis sp.* Blackwood River habitat intersecting the Survey Area
- Road
- Minor drainage line



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GRID: GDA zone 50

N

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Ref: SW546
Date: 10/02/2025 Author: SP

Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)