FLORA & VEGETATION ASSESSMENT

ARROWSMITH NORTH SURVEY AREA

Prepared By

Mattiske Consulting Pty Ltd

Prepared For

VRX Silica Limited

Date

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BAM Act:	*Biosecurity and Agriculture Management Act 2007* (WA)
BC Act:	*Biodiversity Conservation Act 2016* (WA)
BOM:	Bureau of Meteorology
DAWE:	Department of Agriculture, Water and the Environment
DBCA:	Department of Biodiversity, Conservation and Attractions
EP Act:	*Environmental Protection Act 1986* (WA)
EPA:	Environmental Protection Authority
EPBC Act:	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
IBRA:	Interim Biogeographical Regionalisation for Australia
Mattiske:	Mattiske Consulting Pty Ltd
NVIS:	National Vegetation Information System
PEC:	Priority Ecological Community
PRIMER:	Plymouth Routines in Multivariate Ecological Research
SIMPER:	Similarity percentages
SIMPROF:	Similarity profile
TEC:	Threatened Ecological Community
VRX:	VRX Silica Ltd
WAH:	Western Australian Herbarium (PERTH)
WAOL:	Western Australian Organism List

EXECUTIVE SUMMARY

Mattiske Consulting was commissioned by VRX Silica Ltd to undertake detailed flora and vegetation surveys of the Arrowsmith North survey area. Over the period 2018 to 2021, a total of six separate surveys have been conducted. These surveys have amounted to a total of 138 field person days. The Arrowsmith North survey area occupies an area of approximately 2190 ha of mostly native vegetation, and is located between the towns of Eneabba and Dongara, Western Australia.

A total of 157 vegetation quadrats were established to sample all the apparent vegetation community types which were located within the Arrowsmith North survey area. These vegetation quadrats were established and monitored over multiple seasons. A total of 113 vegetation quadrats were established to sample all the apparent vegetation community types which were located within the Arrowsmith North mine area in 2018 and 2019. An additional 44 vegetation quadrats were established in 2020 within the Arrowsmith North transport corridor alignment options. In 2021, a total of 44 vegetation quadrats were remonitored, 33 from the original 133 in the Arrowsmith North mine area and 11 in the Arrowsmith North transport corridor to provide supplementary survey data.

Conservation significant flora have been extensively sampled in the Arrowsmith North survey. Targeted threatened and priority flora surveys were carried out in 2020 and 2021, in addition to opportunistic records obtained in 2018 and 2019. The targeted threatened and priority surveys consisted of extensive (418 km), systematic foot traverses over a 20 m grid covering an area of 420 ha.

A summary of the six field surveys found the following:

- 305 vascular plant taxa, representative of 136 genera and 52 families were recorded within the Arrowsmith North survey area. The most common families overall, were Myrtaceae, Proteaceae, and Fabaceae.
- 40 annual plant taxa were recorded within the Arrowsmith North survey area, representing 13.1 % of all taxa recorded.
- Species accumulation analysis shows that approximately 83 % of taxa potentially present in the Arrowsmith North survey area were recorded during the field surveys.
- No threatened flora species were recorded within the Arrowsmith North survey area. *Paracaleana dixonii* (T) has not been recorded despite extensive surveys. The closest records are approximately 5 km to the east of the Arrowsmith North survey area near the Dampier to Pinjarra Natural Gas Pipeline. The primary preferred soil type of *Paracaleana dixonii* (T), grey sand over gravel, is also not found in the Arrowsmith North survey area (mostly comprised of deep white to pale yellow sand).
- Eleven priority flora species were recorded in the Arrowsmith North survey area (Table 1). These are: *Schoenus* sp. Eneabba (F. Obbens & C. Godden I154) (P2), *Beyeria gardneri* (P3), *Comesperma rhadinocarpum* (P3), *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3), *Hopkinsia anoectocolea* (P3), *Hypocalymma gardneri* (P3), *Leschenaultia juncea* (P3), *Persoonia rudis* (P3), *Banksia elegans* (P4), *Schoenus griffinianus* (P4) and *Stawellia dimorphantha* (P4).
- Of the priority flora species, *Comesperma rhadinocarpum* (P3) and *Leschenaultia juncea* (P3) are locally and regionally less well known. The latter may relate to the difficulty in locating these two priority flora as they are small and inconspicuous. In view of their small size, it is expected that both species may be dependent on seed and also be shallow rooted.
- No taxa recorded within the Arrowsmith North survey area represent extensions to current known distributions.
- Eleven introduced (weed) species, **Aira caryophyllea* (Silvery Hairgrass), *Brassicaceae sp., **Briza maxima* (Blowfly Grass), **Eragrostis curvula* (African Lovegrass), **Hypochaeris glabra* (Smooth Cats-ear), **Lysimachia arvensis* (Pimpernel), **Sonchus oleraceus* (Common Sowthistle), **Trifolium arvense* var. *arvense* (Haresfoot Clover), **Ursinia anthemoides* (Ursinia), **Wahlenbergia capensis* (Cape Bluebell) and **Vulpia myuros* forma *myuros* (Annual Fescue) were recorded within the Arrowsmith North survey area. None of these are listed as declared pest organisms or weeds of national significance.

- A total of 17 vegetation communities were mapped across the Arrowsmith North survey area. Eight from the Arrowsmith mine area and 10 from the Arrowsmith North transport corridors; one of these is recorded in both areas.
- The eight vegetation communities mapped across the Arrowsmith North mine area: consisted of five Heathland communities, one Scrub community, one Thicket to Scrub community and one Low Open Woodland community. Two Heathland communities, H2 and H4, made up most of the vegetation of the Arrowsmith North mine survey area (47.7 %).
- The ten vegetation communities mapped across the Arrowsmith North transport corridors: consisted of two Heathland communities, one Scrub community, four Thicket communities and three Woodland communities. One of these communities (T1) mapped is shared across both areas. Two communities, a Woodland (W4) and a Thicket (T6), were the dominant vegetation communities in the Arrowsmith North transport corridor (34.3 %).
- No Threatened or Priority ecological communities were inferred as occurring in the Arrowsmith North survey area.
- The majority of the vegetation was assessed as being in Pristine or Excellent condition. In the Arrowsmith North survey area 96.5 % of the vegetation was in Pristine condition. In the Arrowsmith North transport corridor 35.6 % of vegetation was in Pristine condition. A large portion (22.9 %) of the Arrowsmith North transport corridor was located in agricultural land and considered in Completely Degraded condition.
- No Malleefowl or Malleefowl mounds were opportunistically recorded during field surveys at Arrowsmith North.

Table 1: Summary of Priority Flora species recorded 2018 to 2021

SPECIES	CONSERVATION CODE	TOTAL LOCATIONS	TOTAL PLANTS
Schoenus sp. Eneabba (F. Obbens & C. Godden I154)	P2	30	467
Beyeria gardneri	P3	8	33
Comesperma rhadinocarpum	P3	47	59
Hemiandra sp. Eneabba (H. Demarz 3687)	P3	161	231
Hopkinsia anoectocolea	P3	85	657
Hypocalymma gardneri	P3	152	274
Lechenaultia juncea	P3	1	1
Persoonia rudis	P3	1	1
Banksia elegans	P4	741	3395
Schoenus griffinianus	P4	5	9
Stawellia dimorphantha	P4	248	398

Overall, the vegetation communities mapped and species recorded in the Arrowsmith North survey area were consistent with the historical mapping of Beard (1976, 1990). The majority of the Arrowsmith North survey area is situated on sand plains supporting mixed open to closed heath communities consisting of *Banksia attenuata, Banksia hookeriana*, *Melaleuca leuropoma* and *Conospermum triplinervium*, over mixed Myrtaceae, Restionaceae and Haemodoraceae species. The vegetation communities recorded within the Arrowsmith North survey area are not locally or regionally unique and are well represented in the wider area. However, the presence of conservation significant flora species within the Arrowsmith North survey area corridor is of local importance with regard to clearing of vegetation.

1. INTRODUCTION

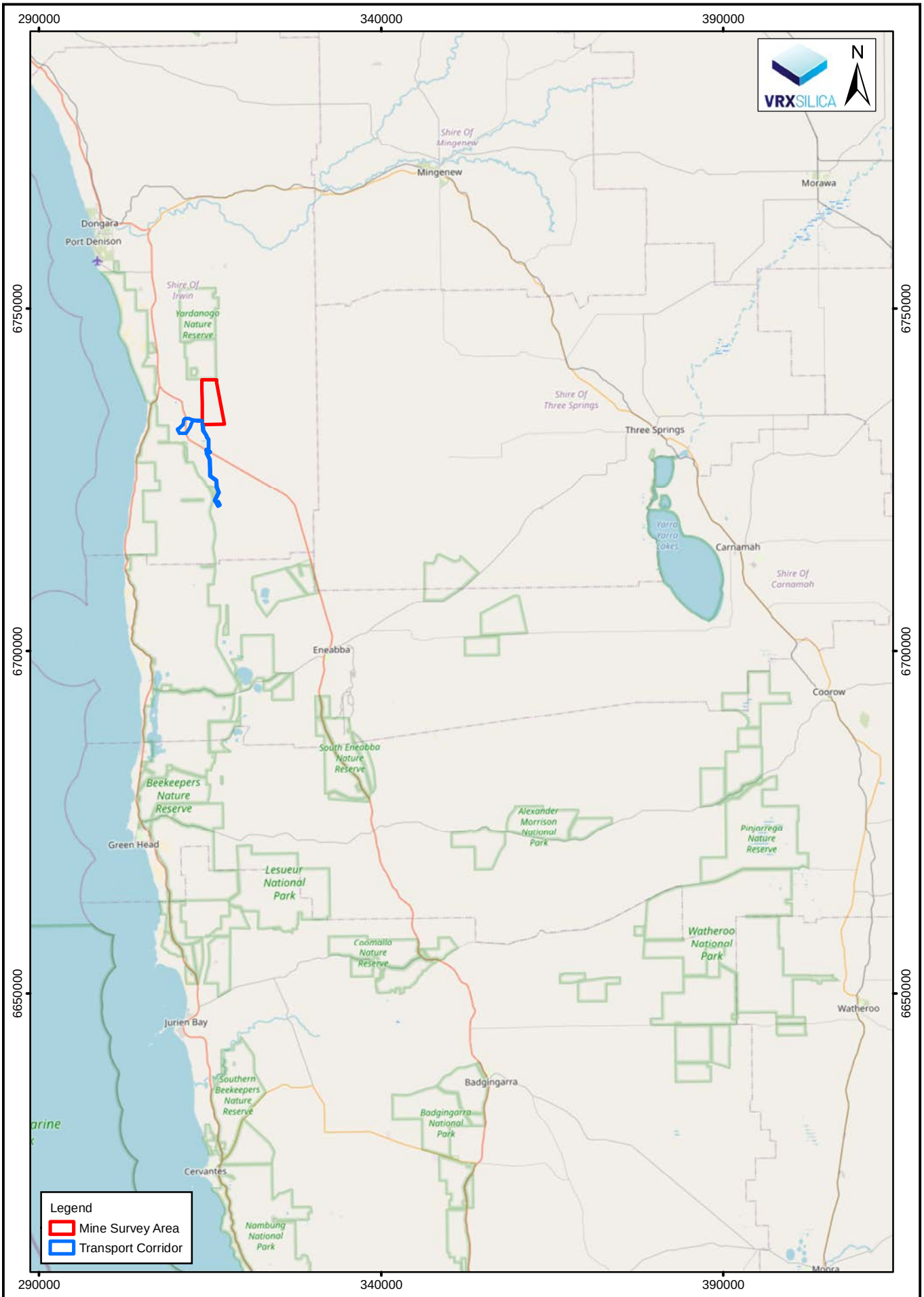
Mattiske Consulting Pty Ltd (Mattiske Consulting) was commissioned by VRX Silica Ltd (VRX) to undertake detailed flora and vegetation surveys of the Arrowsmith North survey. VRX are currently exploring their Arrowsmith tenements for construction sand and high-grade silica sand. Over the period 2018 to 2021, a total of six separate surveys have been conducted. These surveys have amounted to a total of 138 field person days. The Arrowsmith North survey area occupies an area of approximately 2190 ha of mostly native vegetation, and is located between the towns of Eneabba and Dongara. Western Australia (Figure 1).

1.1. Location and Scope of Project

The Arrowsmith North survey area lies approximately 35km North of Eneabba and approximately 20 km southeast of Dongara, Western Australia (Figure 1a & 1b). The survey areas are within the Irwin Botanical District of the South-West Botanical Province (Beard 1990) and the Lesueur Sandplain subregion of the Geraldton Sandplains Region of the Interim Biogeographic Regionalisation for Australia (IBRA) (Department of Agriculture Water and the Environment (DAWE) 2022b).

Mattiske Consulting has undertaken vegetation surveys in the Arrowsmith North survey area since 2018. Over this time there have been several areas surveyed. Figure 2 shows a map of the different areas surveyed over the past four years. In summary, the 2018 survey (Mattiske 2019) included the majority of the Arrowsmith North mine survey area. The 2019 survey expanded on this Arrowsmith North mine survey area (Mattiske 2020a). The autumn 2020 transport corridor survey included two potential transport corridors, Western Alignment and Southern Alignment (Mattiske 2021a). A targeted threatened and priority flora survey was completed in Spring 2020 covering 119 ha (Mattiske 2021b). In 2021, the targeted threatened and priority flora survey area was expanded covering 420 ha and flora and vegetation surveys were undertaken in the Arrowsmith North mine area and transport corridor area. For ease of use, naming terminology in this report refers to the Arrowsmith North survey area collectively, which includes the Arrowsmith North mine survey area and Arrowsmith North transport corridors (including Western and Southern alignments).

This report combines and summarises the desktop reports, detailed flora and vegetation surveys and targeted threatened and priority flora surveys undertaken between 2018 and 2021 specifically for the Arrowsmith North survey area.



Imagery: OpenStreepMap

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Scale: 1:750,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_01

Date: February 2022 | Rev: A | A4

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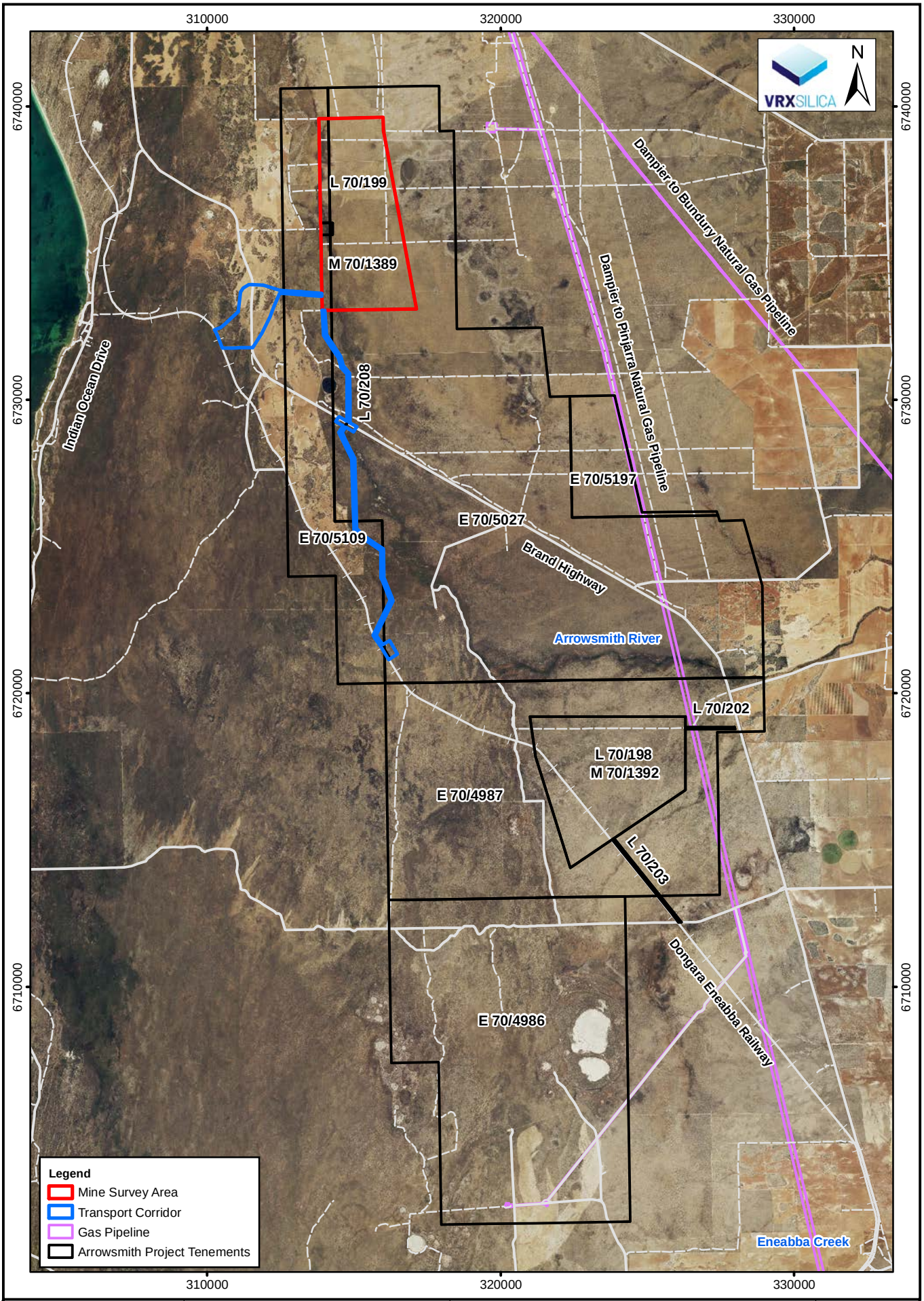
Arrowsmith North Project
Locality

Figure:

1a



Source: Aerial Photography: Landgate (Nov 2016), Tenements: DMIRS (24/06/2019)

0 4 km

Scale: 1:175,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_02

Date: February 2022 | Rev: B | A4

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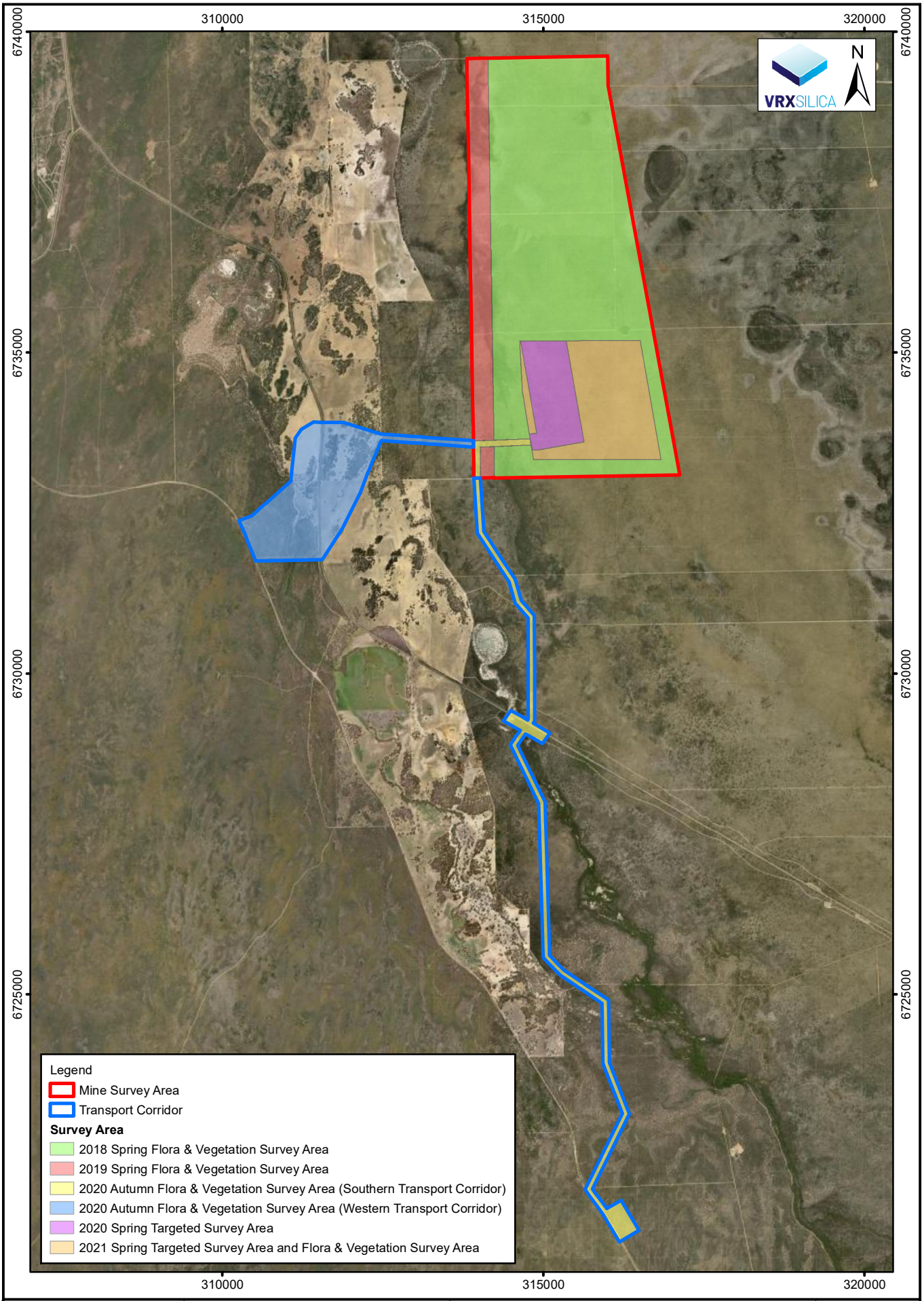
Arrowsmith Northern Project Tenements

Figure: **1b**



Imagery: ESRI, Maxar (July 2018)

0 1,280 m

Scale: 1:80,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_14

Date: February 2022 | Rev: A | A4

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Arrowsmith North Project

Survey Area

Figure: **2**

1.2. Environmental Legislation and Guidelines

The following key Commonwealth (federal) legislation relevant to this survey is the:

- *Environment Protection and Biodiversity Conservation Act 1999.*

The following key Western Australian (state) legislation relevant to this survey include the:

- *Biodiversity Conservation Act 2016* (BC Act);
- *Biosecurity and Agriculture Management Act 2007* (BAM Act);
- *Environmental Protection Act 1986* (EP Act); and

Furthermore, key Western Australian guidelines relevant to this survey are the:

- *Environmental Factor Guideline: Flora and Vegetation* (Environmental Protection Authority [EPA] 2016a); and
- *Technical Guidance – Flora and vegetation surveys for environmental impact assessment* (EPA 2016b).

Definitions of flora and vegetation terminology commonly used throughout this report are provided in Appendix A1-6.

2. OBJECTIVES

The objective of this survey was to undertake a flora and vegetation assessment of the Arrowsmith North survey area including:

- Undertake a review of the desktop study of the flora and vegetation of the Arrowsmith North survey area, with an emphasis on threatened and priority flora, and threatened and priority ecological communities (TECs and PECs);
- Review the historical literature of the Arrowsmith North survey area;
- Undertake a detailed survey of the Arrowsmith North survey area, and collect and identify the vascular plant species present;
- Define and map the vegetation communities in the Arrowsmith North survey area;
- Define and map the location of any threatened and priority flora located within the Arrowsmith North survey area;
- Define any management issues related to flora and vegetation values;
- Provide recommendations on the local and regional significance of the vegetation communities;
- Prepare a report summarising the findings.

3. METHODS

3.1. Desktop Assessment

3.1.1. Arrowsmith North Mine Survey Area

A desktop assessment using FloraBase (Western Australian Herbarium [WAH] 1998-), *NatureMap* (Department of Biodiversity Conservation and Attractions [DBCA] 2007-) and the EPBC Act *Protected Matters Search Tool* (DAWE 2022a) databases, was used to identify the possible occurrence of threatened and priority flora and threatened and priority ecological communities within the Arrowsmith North survey area. The *NatureMap* search was conducted for the Arrowsmith North survey area (E70/5027 and part of E70/5109). A 10 km buffer was applied to the search area; therefore, this area is considerably large than the Arrowsmith North mine survey area. Search parameters were 'by rectangle' using the following parameters:

- Arrowsmith North: 115° 04' 24" E, 115° 14' 31" E, - 29° 38' 17" S, - 29° 26' 47" S

The aforementioned coordinates were also used in the *EPBC Act Protected Matters Search Tool* (DAWE 2022a). In addition, historical documentation and vegetation mapping of the region, principally that of Beard (1976, 1990) and Desmond and Chant (2001), that provide extensive resource material for the floristics and vegetation of the Arrowsmith North survey area, was reviewed.

3.1.2. Arrowsmith North Transport Corridor Survey Area

A desktop assessment was conducted in March 2020 using FloraBase (WAH 1998-), *NatureMap* (DBCA 2007-) and EPBC Act Protected Matters Search Tool (DAWE 2022a) databases to identify the possible occurrence of threatened and priority flora, threatened fauna and threatened and priority ecological communities within the two potential transport corridors (Mattiske 2020b). Search parameters used in the *NatureMap* search were 'by line' and encompassed the proposed access corridor polygons using a 5 km buffer. The coordinates for the Southern Transport Corridor were those presented in Table 2. The aforementioned coordinates were also used in the EPBC Act Protected Matters Search Tool using a 5 km buffer (DAWE 2022a). The 5 km buffer applied to the search area, resulted in a considerably larger search area than the Arrowsmith North transport corridor survey area.

Table 2: Coordinates of Arrowsmith North Transport Corridor Survey Area

	Western Alignment			Southern Alignment	
	Latitude	Longitude		Latitude	Longitude
1	-29.513572	115.089166	1	-29.518478	115.080495
2	-29.513652	115.080047	2	-29.526111	115.080935
3	-29.512533	115.065249	3	-29.538064	115.088846
4	-29.512637	115.064289	4	-29.552594	115.088612
5	-29.517377	115.062409	5	-29.556091	115.085763
6	-29.518407	115.060344	6	-29.564334	115.090056
7	-29.518548	115.051271	7	-29.585818	115.090411
8	-29.521272	115.050971	8	-29.592355	115.099741
9	-29.522810	115.051802	9	-29.600865	115.099708
10	-29.529055	115.050158	10	-29.608098	115.102749
11	-29.529082	115.044654	11	-29.618603	115.096604
			12	-29.625520	115.101550

In addition, historical documentation and vegetation mapping of the region, principally that of Beard (1976, 1990) and Desmond and Chant (2001), that provide extensive resource material for the floristics and vegetation of the Arrowsmith North transport corridor, was reviewed.

3.2. Field Survey

A detailed field assessment of the flora and vegetation of the Arrowsmith North survey area within tenements and L70/199, M701389 and E70/5109 were conducted by experienced botanists from Mattiske Consulting between 2018 and 2021 consisting of six separate surveys (Table 3). A further three targeted flora survey for Threatened and Priority species were conducted in 2020 and 2021 (Table 3). Of these six surveys, five were conducted in Spring and one conducted in Autumn. All surveys totalled 138 field person days.

All surveys were conducted in accordance with methods outlined in *Technical Guidance – Flora and vegetation surveys for environmental impact assessment* (EPA 2016b). All botanists held valid collection licences to collect flora for scientific purposes, issued under the Wildlife Conservation Act 1950 (WA).

Table 3: Summary of field surveys of Arrowsmith North survey area, 2018 to 2021

Survey	Year	Dates	Personnel	Area / Survey Type
1	2018	29th October to 2nd November	4 botanists (20 days)	L70/199, M70/1389 and E70/5109 Flora & Vegetation
1	2018	5th November to 9th November	2 botanists (10 days)	L70/199, M70/1389 and E70/5109 Flora & Vegetation
2	2019	21st October to 25th October	4 botanists (20 days)	L70/199, M70/1389 and E70/5109 Flora & Vegetation
2	2019	11th November to 14th November	3 botanists (12 days)	L70/199, M70/1389 and E70/5109 Flora & Vegetation
3	2020	19th May to 22nd May	2 botanists (8 days)	L70/208 Transport Corridor Flora & Vegetation
4	2020	27th to 30th October	3 botanists (12 days)	M70/1389 Targeted Threatened & Priority
5	2021	13th September to 17th September	4 botanists (20 days)	M70/1389 Targeted Threatened & Priority
5	2021	20th September to 24th September	4 botanists (20 days)	M70/1389 Targeted Threatened & Priority
6	2021	4th October to 7th October	4 botanists (16 days)	L70/199, L70/208 and M70/1389 Flora & Vegetation

The geographic co-ordinates defining the Arrowsmith North survey area were supplied by VRX Silica Ltd. High resolution aerial photographic maps of the Arrowsmith North survey area were supplied by VRX Silica Ltd and prepared by CAD Resources. Survey sites for the Arrowsmith North survey area were selected using aerial photographic maps and field observations.

A total of 98 quadrats were established in the Arrowsmith North survey area in 2018, and a further 15 quadrats were established in 2019. These 113 quadrats were selected to sample all vegetation types, with replication, within the survey area. Refer to Appendix D for the geographic locations of the quadrats. A total of 33 quadrats of these 113 were re-monitored in October 2021, this supplementary survey was undertaken to provide additional survey data on the range of flora that is likely to occur in the Arrowsmith North survey area.

In addition, a total of 44 quadrats were established in 2020 within the Arrowsmith North transport corridor survey area, these quadrats were selected to sample all vegetation types, with replication, within the survey area. Eleven of these 44 quadrats were re-monitored in October 2021, this supplementary survey was undertaken to provide additional survey data on the range of flora that is likely to occur in the Arrowsmith North transport corridor survey area.

Vegetation quadrats consisted of marked (fence dropper, NW corner) 10 x 10 metre quadrats. Flora and vegetation were described and sampled systematically at each survey site, and additional opportunistic collections were undertaken wherever previously unrecorded plants were observed. At each quadrat the following floristic and environmental parameters were recorded:

- GPS location (GDA94 datum, zone 50J);
- Local site topography;
- Soil type and colour;
- Outcropping rocks and their type;
- Percentage litter cover and percentage bare ground;
- Approximate time since fire;
- Vegetation condition (based on [Keighery 1994); and
- For each vascular plant species, the average height and the percentage cover (of both alive and dead material) over the survey site.

A targeted threatened and priority flora survey of the was also undertaken in the Arrowsmith North survey area. The methodology consisted of extensive foot traverses within the Arrowsmith North mine survey area and Arrowsmith North transport corridor. In the 2020 targeted survey work, botanists used handheld Garmin GPS units loaded with the survey polygon and a 20m wide grid overlayed. The 20 m wide grid was searched in a systematic meandering manor which is 50 % more intensive than walking in a straight line (see Figure 9 illustrating foot traverses in survey area).

During the 2021 targeted survey, botanists had access to all relevant data in the Esri iOS application, Collector for ArcGIS on Apple iPads. Data layers accessible in the field included the Arrowsmith North mine survey area and the Arrowsmith North transport corridor plan boundary (Figure 1), locations of all known conservation significant flora from both historical and contemporary surveys and aerial imagery supplied by CAD Resources. The 2021 target survey area was also populated with a grid 20 m in a north-south and east-west orientation. The grid was used as a guide for foot traverses and was also surveyed in a systematic meandering manor.

The locations of any conservation significant flora were recorded with the Esri iOS application, Collector for ArcGIS. If there was more than one plant of the same species in the same location (within 10 m) the area of the population was recorded. During field surveys botanists also had access to detailed taxonomic and ecological data on all potential conservation significant species which may potentially be encountered during the field survey. If suspected or known conservation significant flora species were encountered, a specimen was collected for subsequent identification, and plant numbers were recorded for the population.

All plant specimens collected during the field surveys were dried and processed in accordance with the requirements of the Western Australian Herbarium (WAH). The plant species were identified based on taxonomic literature and through comparison with pressed specimens housed at the WAH. Where appropriate, plant taxonomists with specialist skills were consulted. All priority plant species have been re-confirmed by WAH identification botanist Mike Hislop. Nomenclature of species recorded is in accordance with the WAH (1998-). Unless otherwise stated, all photographs used in this report were taken by S. Ruoss of Mattiske Consulting.

3.3. Analysis of Site Data

A species accumulation curve, based on accumulated species versus number of sites surveyed was prepared to provide an indication of the level of adequacy of the survey effort (*EstimateS* – Colwell 2013). As the number of survey sites increases, and correspondingly the size of the area surveyed increases, there should be a diminishing number of new species recorded. At some point, the number of new species recorded becomes essentially asymptotic. The asymptotic value was determined using Michaelis-Menten modelling and provided an incidence-based coverage estimator of species richness (Chao 2004). When

the number of new species being recorded for survey effort expended approaches this asymptotic value, the survey effort can be considered to be adequate.

Plymouth Routines in Multivariate Ecological Research v7 (PRIMER) statistical analysis software was used to analyse species-by-site data and discriminate survey sites on the basis of their species composition (Clarke and Gorley 2015). To down-weigh the relative contributions of quantitatively dominant species, a fourth root transformation was applied to the data set. Introduced species, annual species, species not identified to a species level and singletons (species recorded at a single quadrat and not forming a dominant structural component i.e. =>5 % cover) were excluded from the data set prior to analysis. Taxa which were identified to more than one subspecies or variety level were revised to the specific level to reduce the tendency to create further statistical variation in the analysis that was considered unwarranted. Computation of similarity matrices was based on the Bray-Curtis similarity measure. Hierarchical Clustering (CLUSTER) was used in conjunction with Similarity Profile (SIMPROF), Similarity Percentages (SIMPER), quadrat descriptions, quadrat photographs and aerial photographs; combining these methods increased the understanding of quadrat inter-relations and thus the ability to accurately delineate those quadrats based on species composition.

3.4. Vegetation Descriptions

Vegetation descriptions were based on Alpin's (1979) modification of the vegetation classification system of Specht (1970), to align with the National Vegetation Information System (NVIS) (see Appendix A5). Vegetation communities were described at the association level of the NVIS classification framework, as defined by the Executive Steering Committee for Australian Vegetation Information (2003). Vegetation condition of each of the mapping sites was assessed as per the criteria developed by Keighery (1994) (see Appendix A6).

3.5. Survey Limitations

A general assessment was made of the surveys undertaken against a range of factors that may have limited the outcomes and conclusions of this report (Table 4). Based on this assessment, the present survey has not been subject to constraints which would affect the thoroughness of the survey, and the conclusions which have been formed.

Table 4: Potential limitations affecting the conclusions made in this report

POTENTIAL SURVEY LIMITATION	IMPACT ON CURRENT SURVEY
Availability of contextual information at a regional and local scale	**Not a limitation:** Reference resources such as Beard's mapping, together with online flora and vegetation information, have provided an appropriate level of information for the current survey. The vegetation of the Dongara area has previously been mapped by Beard (1976). Mattiske Consulting Pty Ltd has completed flora and vegetation and surveys for the Arrowsmith North project in recent years (Mattiske 2019, 2020a, 2020b, 2021a, and 2021b). Regional threatened and priority flora localities were also sourced from tenement holders in close proximity to the project, namely Iluka Resources Limited and Tronox Limited.
Resources (i.e. were there adequate resources to complete the survey to the required standard).	**Not a limitation.** Adequate resources were made available by VRX Silica Ltd to complete the survey.
Competency/experience of team carrying out survey; experience in the bioregion surveyed	**Not a limitation:** Botanists had extensive experience working in a range of botanical districts across the state. Two of the botanists have consistently worked within this bioregion for more than 8 years. Botanists were familiar with flora in the area. Any unknown or potential threatened or priority flora species were collected and identified, utilising resources available at the Western Australian Herbarium and consultation with expert taxonomists.

Table 4: Potential limitations affecting the conclusions made in this report

POTENTIAL SURVEY LIMITATION	IMPACT ON CURRENT SURVEY
Proportion of flora collected and identification issues	**Minimal limitation:** While many plants were in flower during the survey, a proportion of plants encountered during the survey were sterile and may impact the opportunity for identification of some specimens to species level. Orchid species may not emerge each year if conditions are not favourable. Although this may affect the completeness of the species list, it is not expected to have a significant effect on mapping reliability, nor on the identification of threatened and priority species in the area as the majority were perennial species. Surveys have taken place over multiple years and in different seasons maximising the opportunity to record the greatest number of taxa. Based on the survey quadrat data, it was estimated that approximately 83% of the potential flora species that may be present were recorded (refer to Section 5.1 of this report).
Effort and extent of survey	**Minimal limitation:** The survey area was thoroughly covered. Survey quadrats were initially selected from high resolution aerial maps. Low replication of some vegetation communities was unavoidable given the low occurrences within the survey area. The threatened and priority flora survey undertaken by botanists by means of a comprehensive meandering foot-traverse to ensure thorough coverage of the survey area. Flora that was unknown or resembled threatened or priority flora were collected, the location and habitat noted, and the number of plants estimated. The EPA (2016b) recommends a traverse width of 10 m in the South West, however states an effective search width will be determined by the distance over which a target species can be reasonably observed considering the general vegetation structure/density. It was determined that 20 m was an appropriate traverse width as the vegetation was mainly low Heath and botanists could readily observe the majority of the target species. No Thicket or Scrub communities were present in the targeted flora survey area. The 20 m traverse was also the maximum width surveyed, though, when target species were found a more intensive search in the immediate area was conducted, this was often within one to three metres.
Mapping reliability.	**Not a limitation.** Handheld GPS units and *Collector for ArcGIS* on Apple iPads were used for the survey. *Collector for ArcGIS* on Apple iPads was loaded with satellite imagery layered with the area boundary and traverse transects allowing the botanists location to be mapped in real time. Both devices for a majority of field conditions have an accuracy level of ± 5 m.
Access restrictions within survey area	**Not a limitation:** Vehicle access to the Arrowsmith North survey area and foot traverses were sufficient to allow access to the entirety of the survey area. All survey areas were easily accessible for traversing on foot.
Survey timing, rainfall, season of survey	**Not a limitation:** The EPA (2016a) recommends that flora and vegetation surveys in the South – West Botanical Province be conducted in Spring (September-November). The majority of surveys were completed in October and November which falls within this period and also coincided with the peak flowering time of many of the threatened and priority flora species likely to be found in the area. One survey, of the Arrowsmith North transport corridor, was conducted in May. However, the quadrats were re-monitored during October and targeted Threatened & Priority assessment of the whole area was completed during September. Re-monitoring of vegetation quadrats and targeted Threatened & Priority assessment was also completed in the Arrowsmith North survey area in Spring, to provide supplementary survey data.
Disturbances (fire/flood/clearing)	**Not a limitation:** The Arrowsmith North survey area exhibits minimal levels of disturbance. Small areas were disturbed by past fire events.
Data and statistical analysis	**Not a limitation:** Introduced species, annual species and singletons were excluded from the data set prior to analysis. Data collected was sufficient for delineation of vegetation communities based on statistical analysis.

4. DESKTOP ASSESSMENT RESULTS.

4.1. Climate and Survey Timing

The Irwin Botanical District has a typically dry, warm Mediterranean climate, with winter precipitation of 300-500 mm and 7-8 dry months per year (Beard 1990). Rainfall and temperature data for Eneabba is no longer available due to the closing of the Eneabba weather station, therefore rainfall data from Green Grove and temperature data from Carnamah (Bureau of Meteorology 2022) are illustrated in Figure 3. According to the *Technical guidance – Flora and vegetation surveys for environmental impact assessment* (EPA 2016b), the primary survey timing for the Irwin Botanical Province is Spring (September-November). The surveys were all undertaken between September and November within the primary survey timing excluding one survey for the Arrowsmith North transport corridor. This survey was originally completed in May 2020; however, a subset of quadrats was re-monitored during the October 2021 survey and targeted Threatened and Priority assessment was completed during September 2021. The surveys were timed, where possible, to align with peak flowering periods of conservation significant flora with the potential to occur in the Arrowsmith North survey area.

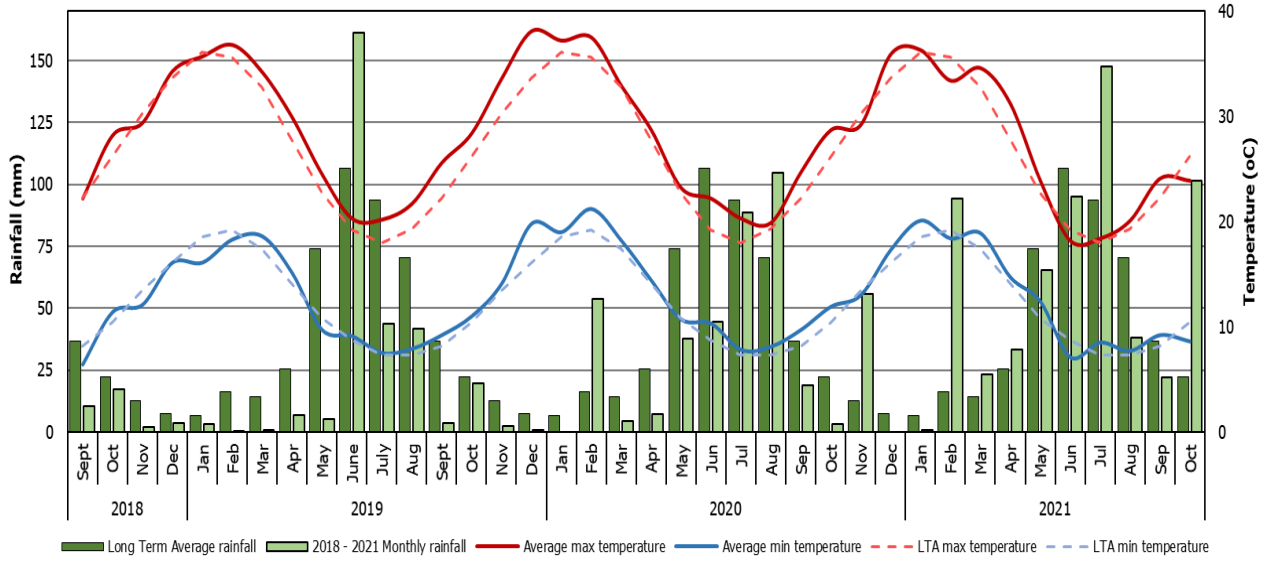


Figure 3: Average and 2018-2021 rainfall for Green Grove and average monthly and long-term temperature for Carnamah (Bureau of Meteorology 2022)

Above average rainfall was received in the 3 months prior to the 2018, May 2020 and 2021 surveys (Table 5). The average rainfall for the February to April 2020 was above average due to a large rainfall event in February, the March and April rainfall was below average. In 2019, rainfall in the 3 months preceding the survey was well below average. The total rainfall recorded in 2019 was 288.2 mm, the long-term average yearly rainfall is 487.3 mm.

Table 5: Comparison of average rainfall and recorded rainfall for Green Grove in the three months prior to each survey 2018 to 2021 (Bureau of Meteorology 2022)

SURVEY	RAINFALL THREE MONTHS PRIOR	
	AVERAGE	RECORDED
Oct-Nov 2018	200.8	284.4
Oct-Nov 2019	200.8	88.6
May 20	55.7	65.0
Sep 20	270.6	237.4
Sep-Oct 21	270.6	280.4

4.2. Managed Lands

There are a number of Nature Reserves in the area surrounding the Arrowsmith North survey area, presented in Figure 4. The Beekeepers Nature Reserve (R 24496) is located to the west of the Arrowsmith North survey area. The Yardanogo Nature Reserve (R 36203) is located north of the Arrowsmith North survey area. The Lake Logue Nature Reserve (R 29073) and nature reserves R 39744 and R 25495 are located to the south of the Arrowsmith North survey area (Figure 4).

The Arrowsmith North transport corridor alignment overlaps with File Notation Areas FNA11507 and FNA2140 and as such are managed by DMIRS/LANDGATE and Department Biodiversity, Conservation and Attractions respectively. FNA2140 which is associated with Arrowsmith Lake is an EPA recommendation for an "A" class Nature Reserve.

4.3. Geology, Soils and Topography

The underlying geology of the area is predominantly Permian to Cretaceous sedimentary basins, with horsts of Proterozoic rocks (Beard 1990, Desmond and Chant 2001). The area is characterised by undulating lateritic sandplains with leached sandy soils over laterite in coastal areas; earthy, yellow sands over laterite further inland; and hard-setting loams with red clay subsoils (Beard 1990, Desmond and Chant 2001).

The Department of Primary Industries and Regional Development's Land Systems present within the Arrowsmith North survey area (Figure 5, Table 6) includes:

Tamala South System (221Ta): Rises and low hills with relict dunes and some limestone outcrop on coastal limestone north of Jurien Bay. Yellow deep sands common, with yellow/brown shallow sands and calcareous shallow and deep sands. *Banksia* woodlands and heathlands.

Correy System (221Cy): Broad sandy alluvial fan of the lower Arrowsmith River. Pale deep sands predominate, with grey shallow sandy duplexes, moderately deep sandy gravels and yellow deep sands less common. *Banksia* woodlands and heathlands.

Table 6: Extent of Land Systems intersecting Arrowsmith North survey area

LAND SYSTEM	MAPPING UNIT	TOTAL STATEWIDE EXTENT (ha)	AREA OF INTERSECTION WITH THE SURVEY AREA (ha)	PROPORTION OF CURRENT EXTENT (%)
Tamala South System	221Ta	154103.48	2141.53	1.39
Correy System	221Cy	27768.43	50.28	0.18

The Arrowsmith North survey area consists of the Tamala South and Correy Land Systems (Figure 5). The proportion of the current state-wide extent is 1.39 and 0.18 % respectively (Table 6).

4.4. Regional Vegetation

Beard (1990) described the vegetation of the Irwin Botanical District as coastal scrub heath on sandplains, with *Acacia* and *Allocasuarina* thickets further inland, and hard-setting loams with *Acacia* scrub and scattered *Eucalyptus loxophleba*.

The Pre-European vegetation systems present within the Arrowsmith North survey area (Figure 6, Table 7) include:

Eridoon System: Flat coastal plain with various small rivers and creeks with numerous small lakes and swamps and some limited alluvial flats of heavier soil on the lower Arrowsmith River. Vegetation consists of scattered small trees with an open layer of tall shrubs over a closed layer of small heath-like shrubs, which experiences frequent fires.

Vegetation Association 378.1: Mixed heath with scattered tall shrubs *Acacia* spp., Proteaceae and Myrtaceae.

Illyarrie System: The majority of the area consists of sandplains with scrub heath and the occasional thickets, scattered trees or woodland.

Vegetation Association 352: Riverine; rivergum E. camaldulensis and Eucalypt woodlands.
Vegetation Association 377.1: Mixed heath with scattered tall shrubs Acacia spp., Proteaceae and Myrtaceae.
Vegetation Association 433.1: Low Woodland/ Scrub.

Table 7: Extent of pre-European vegetation associations intersecting the Arrowsmith North survey area

VEGETATION ASSOCIATION	STATE-WIDE PRE-EUROPEAN EXTENT (ha)	SURVEY AREA	
		AREA OF INTERSECTION (ha)	PROPORTION OF CURRENT EXTENT (%)
Vegetation Association Eridoon 378.1	124192.68	1808.89	1.46
Vegetation Association Illyarrie 352	1123.06	26.05	2.32
Vegetation Association Illyarrie 377.1	84046.50	40.41	0.05
Vegetation Association Illyarrie 433.1	41651.05	316.46	0.76

More recently, the vegetation of Western Australia has been assigned to bioregions and subregions under the IBRA, with the survey falling within the Lesueur Sandplain subregion of the Geraldton Sandplain Region (DAWE 2022b). The Geraldton Sandplain 3 (GS3 – Lesueur Sandplain subregion) is described as having high floristic diversity and levels of endemism, with vegetation composed mainly of proteaceous scrub-heaths (Desmond and Chant 2001). Extensive York Gum (*Eucalyptus loxophleba*) and Jam woodlands occur on outwash plains associated with drainage (Desmond and Chant 2001).

4.5. Potential Flora

Database search results, covering an area of approximately 10 000 ha, is considerably larger than the Arrowsmith North mine survey area (2190 ha). Desktop potential flora and potential threatened and priority flora results are likely to be much greater than those actually present in the Arrowsmith North mine survey area.

A total of 476 vascular plant taxa, representative of 183 genera and 69 families, have the potential to occur within the Arrowsmith North survey area (Appendix B). The most commonly represented families

were the Myrtaceae (80 taxa), Proteaceae (69 taxa) and Fabaceae (44 taxa). The most commonly represented genera were *Acacia* (21 taxa), *Stylidium* (19 taxa), *Eucalyptus* (18 taxa), *Banksia* (16 taxa) and *Conostylis* (14 taxa).

4.5.1. Potential Threatened and Priority Flora

Thirteen threatened flora species, pursuant to Part 2, Division 1, and Subdivision 2 of the BC Act and as listed by the DBCA (2018a) have the possibility of occurring in the Arrowsmith North survey area (Table 8, Appendix B). All of these species, are pursuant to section 179 of the EPBC Act or are listed by the DAWE (2022c) (Appendices B and C, Figure 7). Eleven of these species are listed as Endangered, while the remaining two are listed as Vulnerable and Critically Endangered (Table 8, Appendix B).

A total of 44 priority flora species, including seven priority one, eight priority two, nineteen priority three and ten priority four species as listed by the Western Australian Herbarium (1998-) have the potential to occur in the Arrowsmith North survey area (Appendix B). Thirty-five of these have the potential to occur in the Arrowsmith North mine survey area and 20 in the Arrowsmith North transport corridor survey area. An assessment of the likelihood of recording any of the listed threatened and priority taxa within the Arrowsmith survey area, based on factors including known soil type, topography and distribution, is set out in Appendix C.

Based on this assessment, no threatened flora species, had a high likelihood of occurring in the Arrowsmith North survey area. The likelihood of the presence of *Paracaleana dixonii* (T) has been ranked as low, even though there are records approximately 5 km to the east. This has been formulated in view of a number of factors, including, distribution of known records and preferred soil type. The primary preferred soil type of *Paracaleana dixonii* (T) is described as grey sand over laterite (Brundrett 2014), while it has also been recorded less so on deep sandy soils (Brown 2022). The dominant soil type in the Arrowsmith North survey area comprises deep white to pale yellow sand. Previous locality records of *Paracaleana dixonii* (T) also show that the closest records are approximately 5 km to the east of the Arrowsmith North survey area near the Dampier to Pinjarra Natural Gas Pipeline.

Three threatened flora species had a moderate likelihood and ten had a low likelihood of occurring in the Arrowsmith North survey area. In terms of Priority flora, eight priority flora species had a high likelihood of occurring in Arrowsmith North survey area due to previous records in the area and suitable habitat: *Comesperma rhadinocarpum* (P3), *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3), *Hypocalymma gardneri* (P3), *Leschenaultia juncea* (P3), *Persoonia rudis* (P3), *Banksia elegans* (P4), *Schoenus griffinianus* (P4) *and Stawellia dimorphantha* (P4). Of the remaining priority species potential present in the Arrowsmith North survey area, 20 have a moderate likelihood of occurrence and 20 have a low likelihood of occurrence.

Table 8: Potential Threatened flora in the Arrowsmith North survey area

Note: SCC = State Conservation Code, FCC = Federal Conservation Code

SPECIES	FAMILY	SCC	FCC	LIKELIHOOD (APP. C)
Conostylis dielsii subsp. *teres*	Haemodoraceae	T	Endangered	Low
Conostylis micrantha	Haemodoraceae	T	Endangered	Low
Daviesia speciosa	Fabaceae	T	Endangered	Low
Eucalyptus crispata	Myrtaceae	T	Vulnerable	Low
Eucalyptus leprophloia	Myrtaceae	T	Endangered	Low
Eucalyptus x *balanites*	Myrtaceae	T	Endangered	Low
Eucalyptus x *impensa*	Myrtaceae	T	Endangered	Low
Hemiandra gardneri	Lamiaceae	T	Endangered	Low
Paracaleana dixonii	Orchidaceae	T	Endangered	Low
Styphelia obtecta	Ericaceae	T	Endangered	Low
Tetratheca nephelioides	Elaeocarpaceae	T	Critically Endangered	Low
Thelymitra stellata	Orchidaceae	T	Endangered	Low
Wurmbea tubulosa	Colchicaceae	T	Endangered	Low

4.5.2. Potential Introduced (Weed) Species and Declared Pest (Plant) Organisms

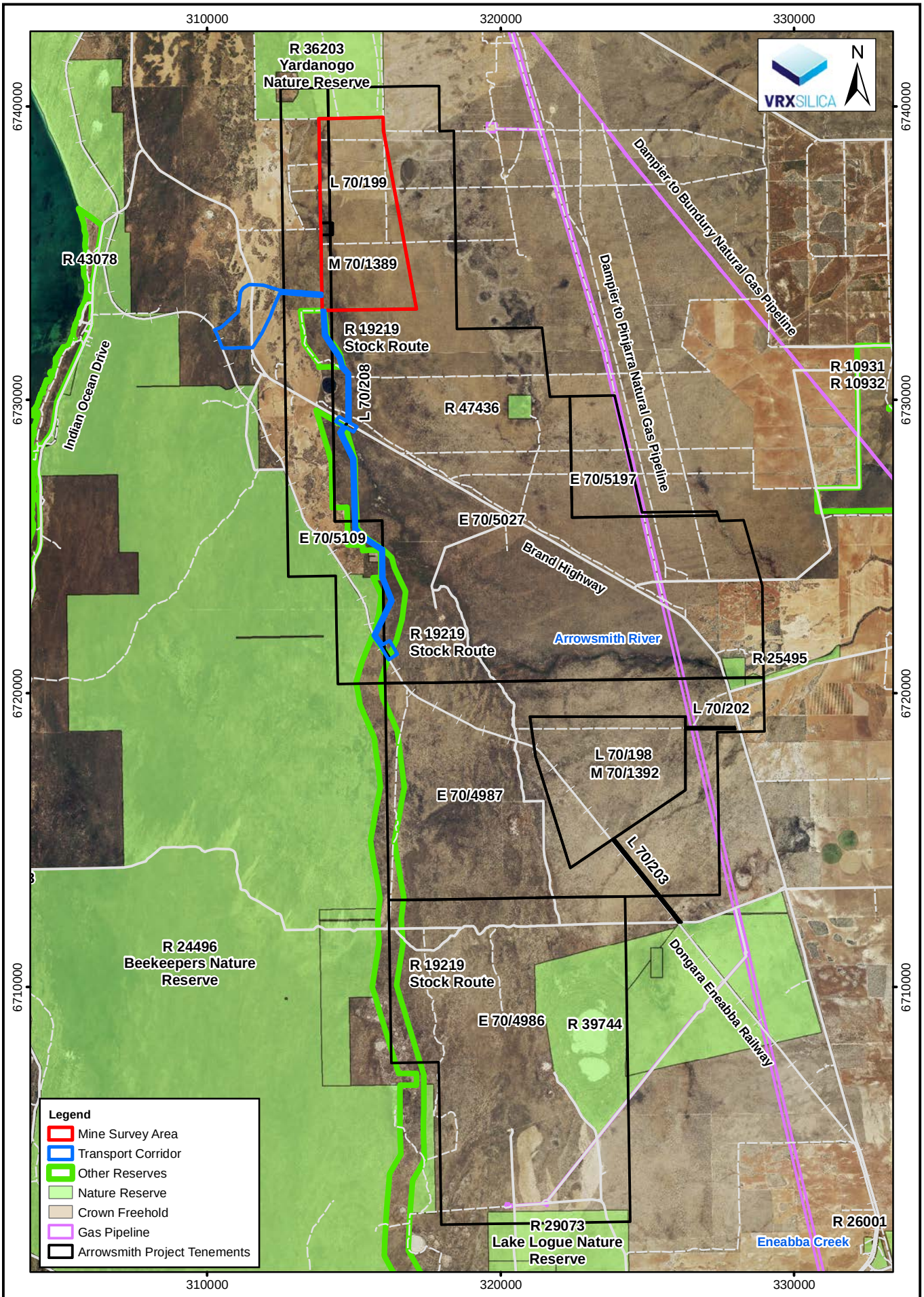
Nine introduced flora species have the potential to occur in the Arrowsmith North survey area (Appendix B). Two of these species, **Asparagus asparagoides* and **Tamarix aphylla*, are declared pest organisms pursuant to section 22 of the Biosecurity and Agriculture Management Act 2007 (BAM Act). **Asparagus asparagoides* and **Tamarix aphylla* both have a declared pest organism keeping category of Exempt for the whole of Western Australia (Department of Primary Industries and Regional Development 2022). A declared pest category of Exempt requires no permits or conditions for keeping, although there may be other requirements under the BAM Act.

4.6. Potential Threatened and Priority Ecological Communities

There are no threatened ecological communities (TECs) listed at the Commonwealth level pursuant to sections 181 and 182 of the *EPBC Act* and listed by the DAWE (2022e) or at State level pursuant to Part 2 of the BC Act and as listed by DBCA (2018b) potentially occur with the Arrowsmith North survey area. No priority ecological communities (PECs) as listed at State Level by the DBCA (2022) potentially occur within the Arrowsmith North survey area (Figure 7).

4.7. Kwongan Region Vegetation

Kwongan vegetation occurs on the sandplains of south-western Australia and includes Proteaceae and Myrtaceae dominated scrub-heath and heath, *Banksia* woodlands, health-like scrub in temporary wet depressions and low scrub on coastal slopes (Mucina et al. 2014). The Kwongan region covers 6,533,552.30 ha of heath in south-western Australia. Of this total area, there is currently 1,230,173.94 ha of Kwongan heath within the DBCA estate (18.8 %). The Arrowsmith North survey area (2190 ha) occurs within the Kwongan Region (Figures 8a and 8b) accounting for approximately 0.03 % of the total extent.



Source: Aerial Photography: Landgate (Nov 2016), Tenements: DMIRS (24/06/2019), Gas Pipelines: DMIRS, Topography: Landgate (Nov 2016), Reserves: landgate (Nov 2016), Managed Lands: DBCA (09/07/2019)

0 4 km
Scale: 1:175,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_04
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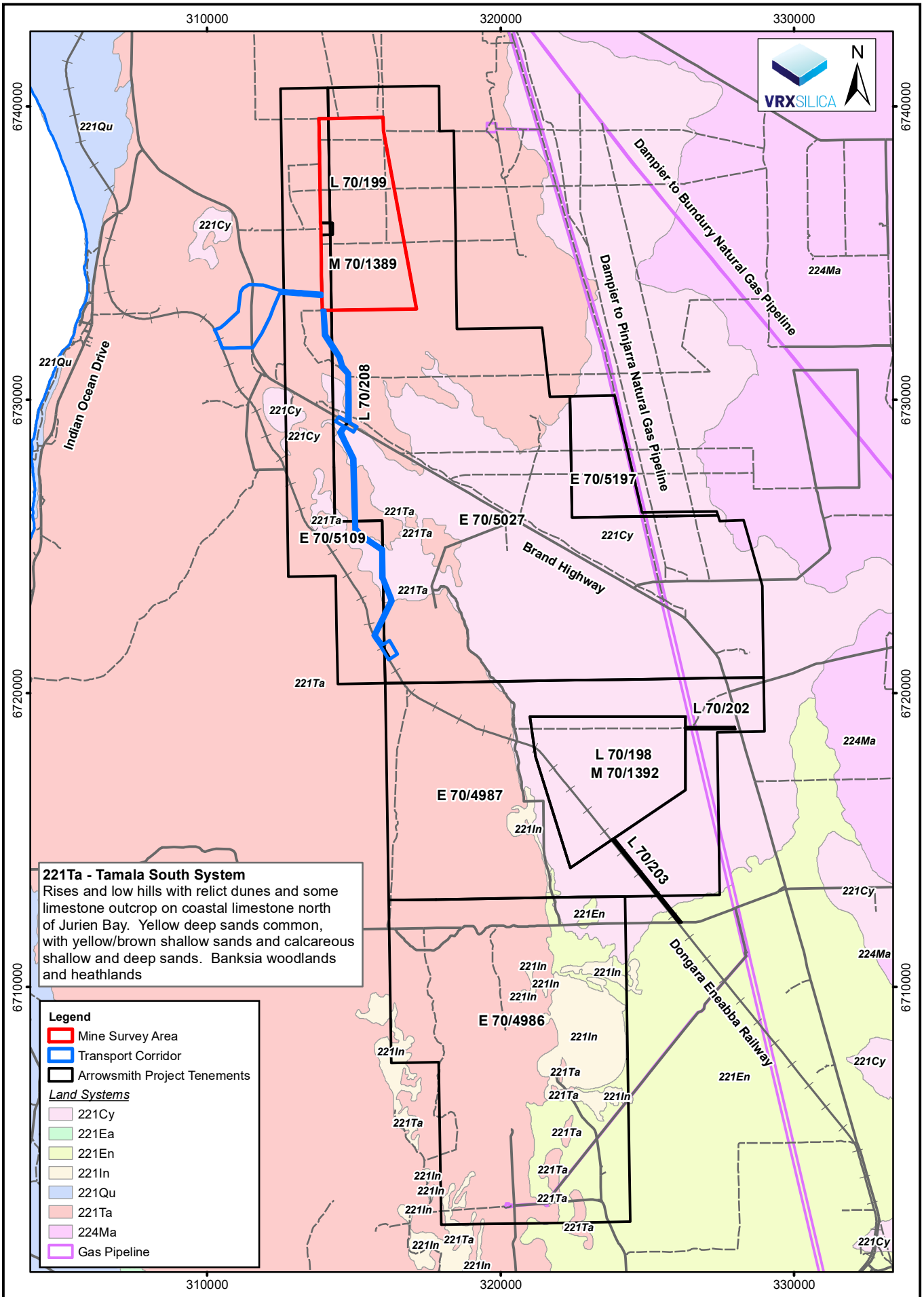
Arrowsmith North Project
Managed Lands

Figure: **4**



Source: Aerial Photography: Landgate (Nov 2016), Tenements: DMIRS (24/06/2019), Gas Pipelines: DMIRS, Topography: Landgate (Nov 2016), Land Systems: DPIRD (05/11/2019)

0 4 km
Scale: 1:175,000
MGA94 (Zone 50)

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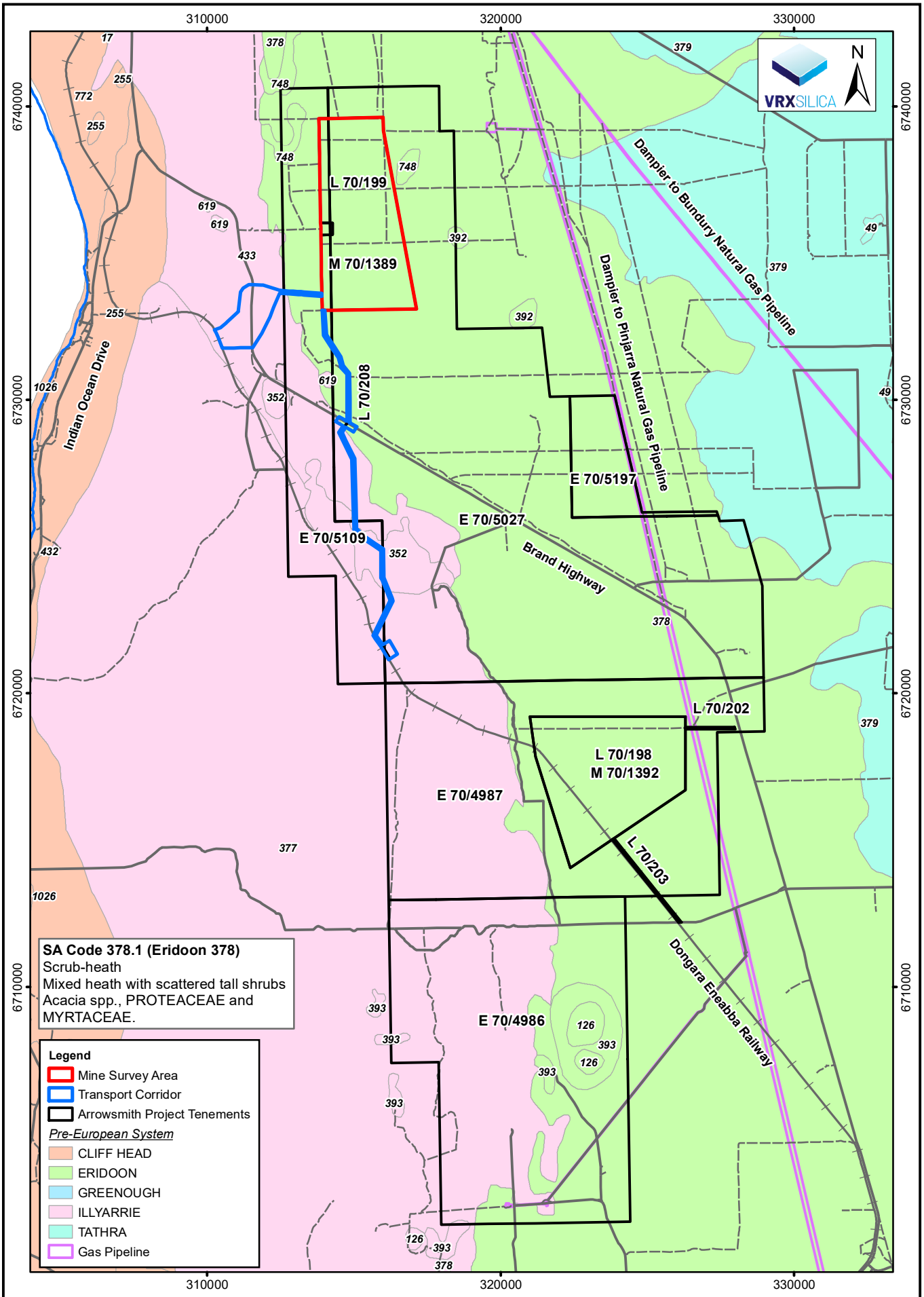
Arrowsmith North Project
Land Systems

Figure: **5**



Source: Aerial Photography: Landgate (Nov 2016), Tenements: DMIRS (24/06/2019), Gas Pipelines: DMIRS, Topography: Landgate (Nov 2016), PEV: DPIRD (24/07/2019)

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Scale: 1:175,000
MGA94 (Zone 50)

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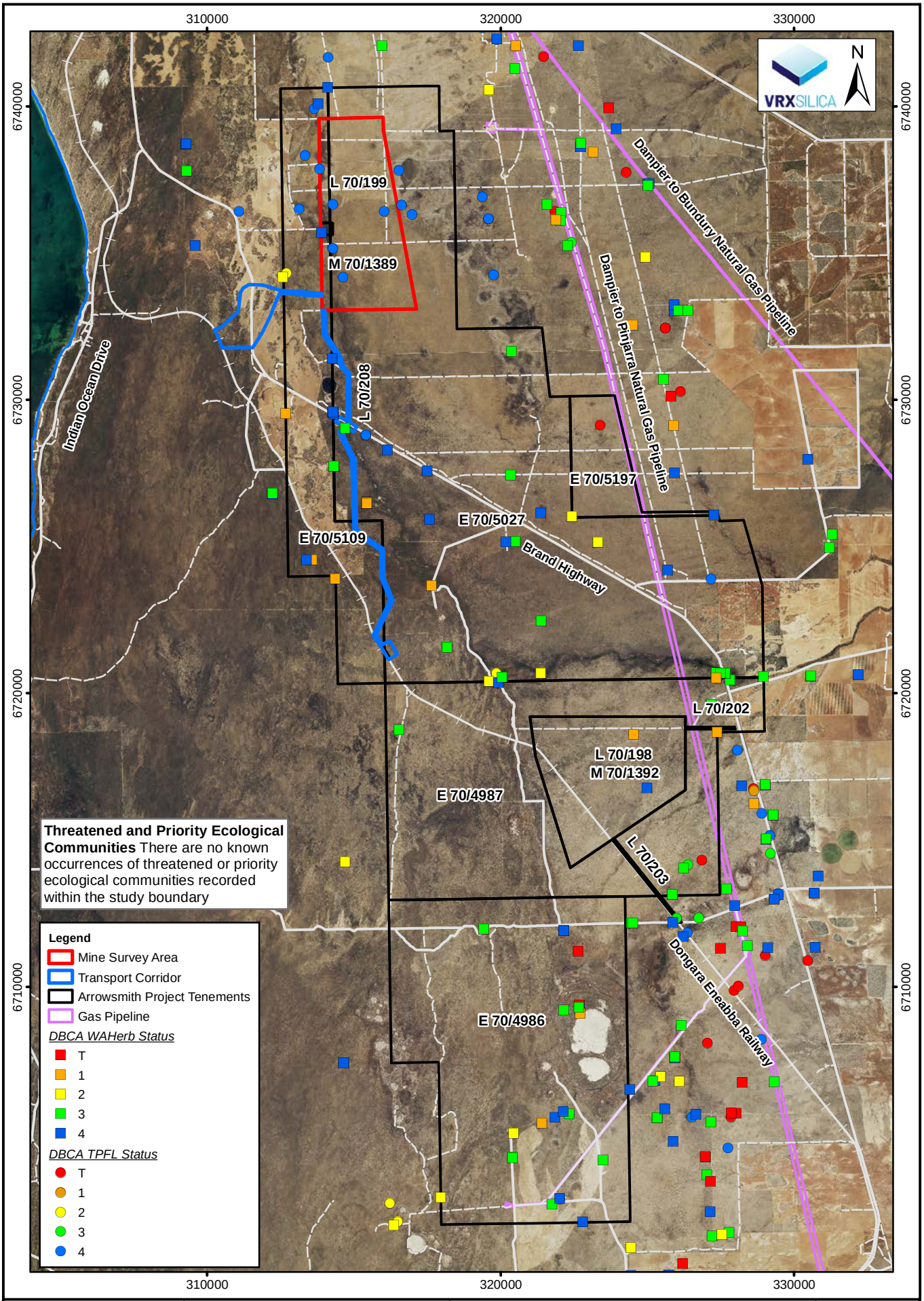
Arrowsmith North Project
Pre-European Vegetation

Figure: **6**



Source: Aerial Photography: Landgate (Nov 2016), Tenements: DMIRS (24/06/2019), Gas Pipelines: DMIRS, Topography: Landgate (Nov 2016), Flora: DBCA (10-0208, 16-0118FL, 08-0218EC)

0 4 km

Scale: 1:175,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_06

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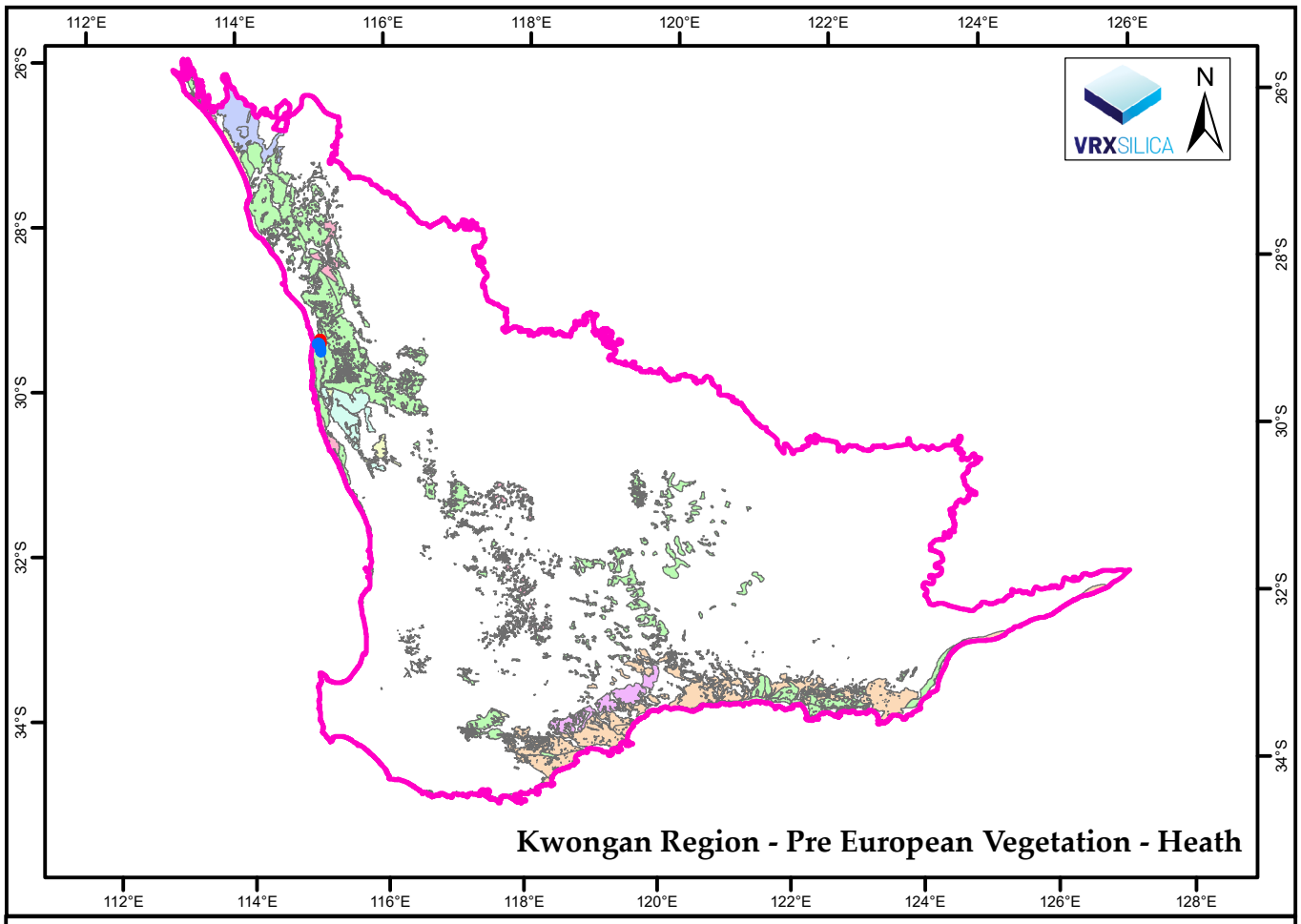
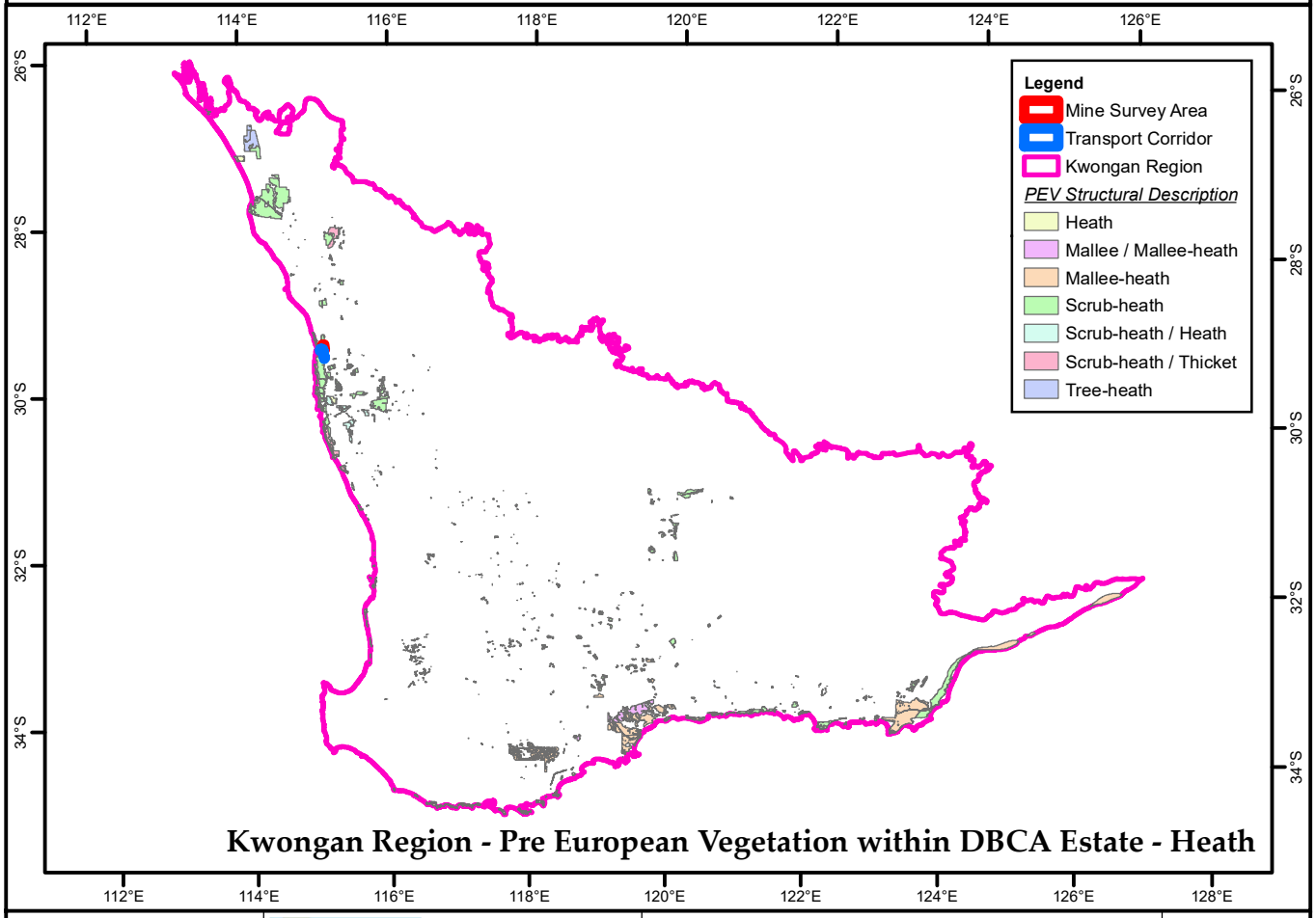
Arrowsmith North Project
Threatened & Priority Species

Figure: **7**





Source: Kwongan Region: UWA, Pre European Vegetation: DPIRD, DBCA Estate: DBCA

0 200 km
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MGA94 (Zone 50)

CAD Ref: a2602_f51_07
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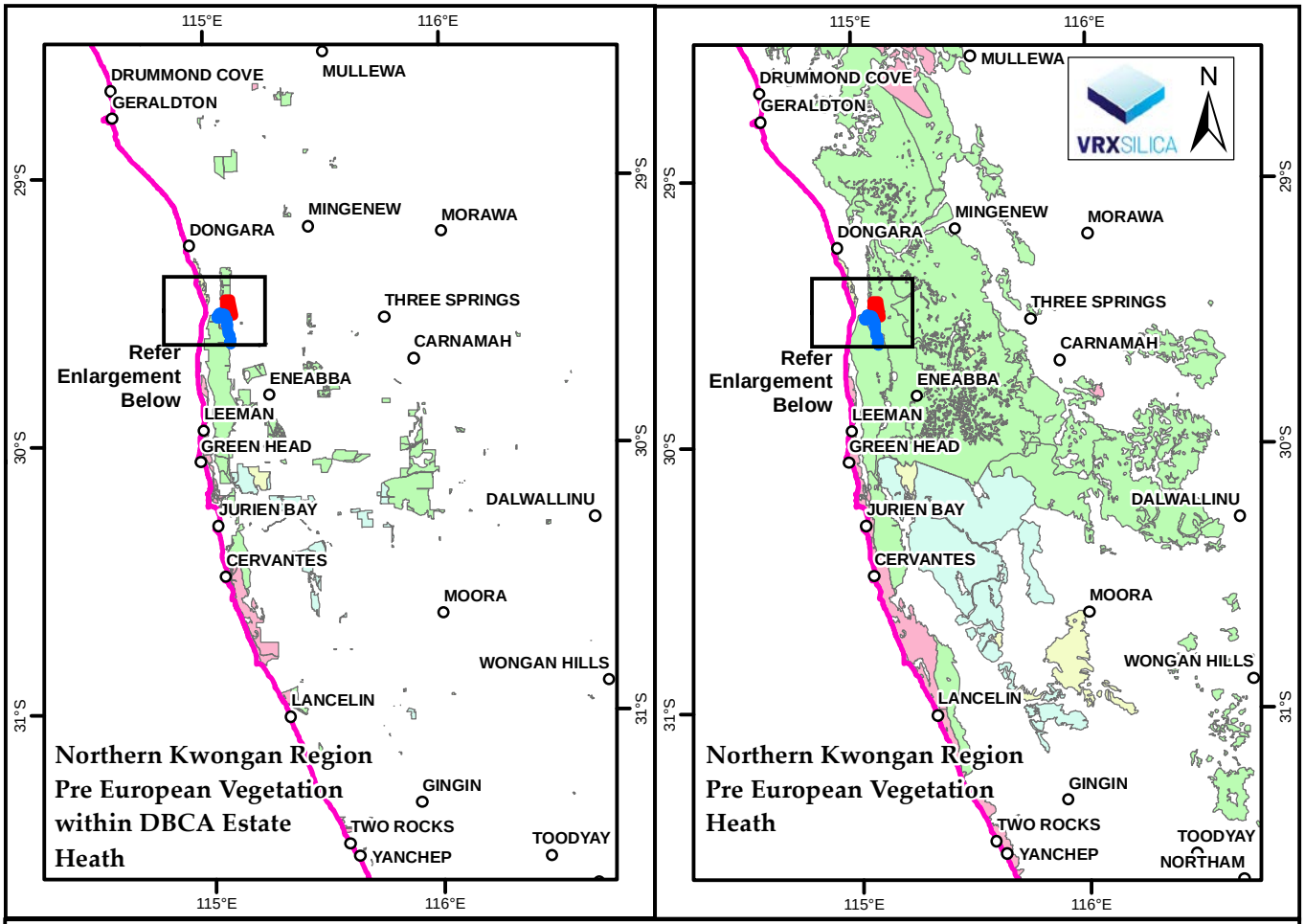
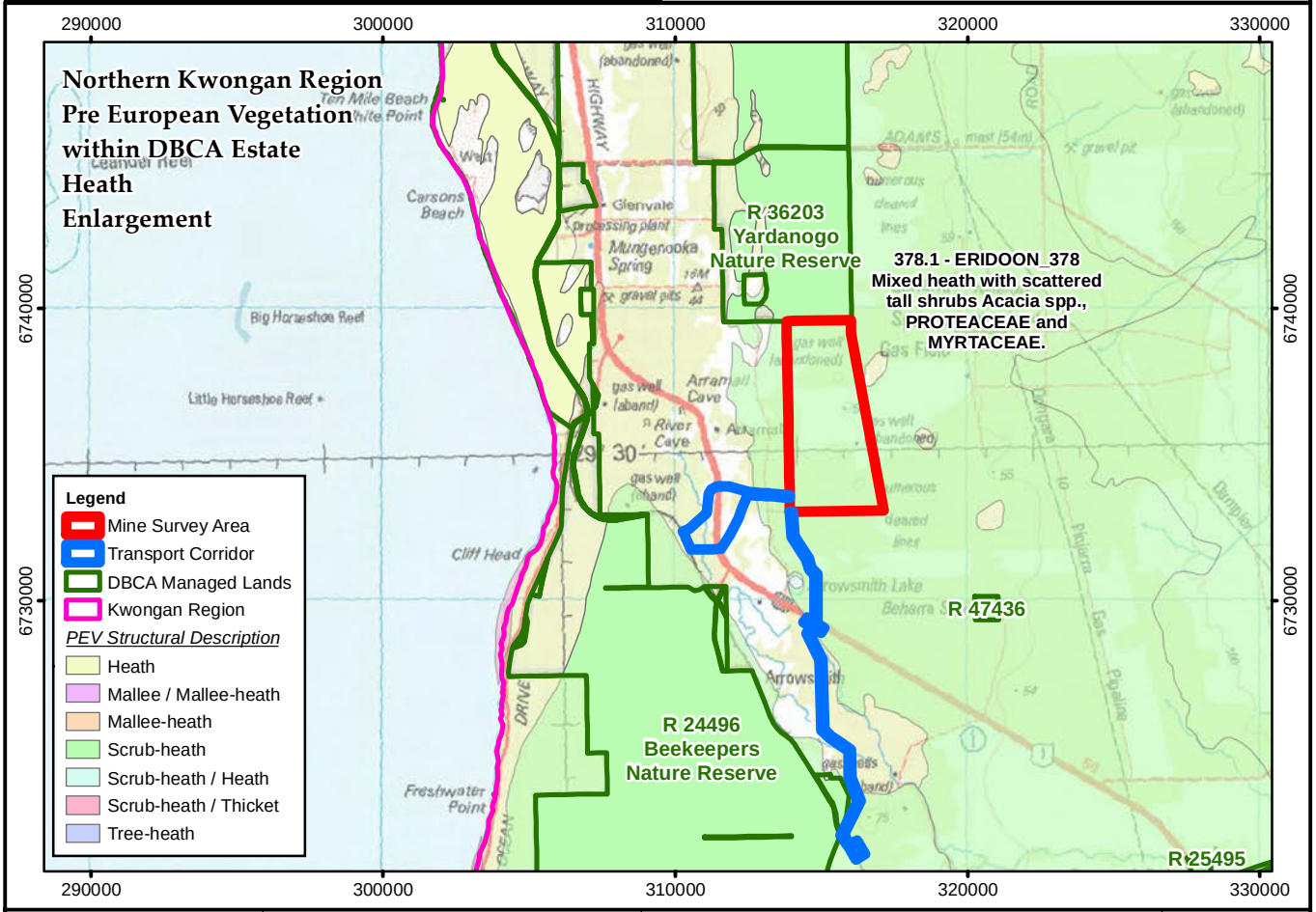
Arrowsmith North Project
Kwongan Region
Pre European Vegetation - Heath

Figure: **8a**





Source: Background Image: GSA, Kwongan Region: UWA, Pre European Vegetation: DPIRD, DBCA Estate: DBCA

0 6 km
Scale: 1:250,000
MGA94 (Zone 50)

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Arrowsmith North Project
Northern Kwongan Region
Pre European Vegetation - Heath

Figure: **8b**

5. FIELD SURVEY RESULTS

A total of 157 vegetation quadrats were used to assess the flora and vegetation of the Arrowsmith North survey area (Figure 10, Appendix D). Of these 157 vegetation quadrats, 98 were established in 2018, 15 in 2019 and 44 in 2020. During 2021, 44 established vegetation quadrats were re-surveyed (33 Arrowsmith North mine area, 11 Arrowsmith North access corridor) to provide supplementary survey data. The taxa recorded during these surveys are set out in Appendix E. A list of plant taxa recorded at each survey quadrat within the Arrowsmith North survey area is set out in Appendix F.

5.1. Flora

A total of 305 vascular plant taxa, representative of 136 genera and 52 families, were recorded within survey quadrats within the Arrowsmith North survey area between 2018 and 2021. The majority of taxa recorded were representative of the Myrtaceae (37 taxa), Proteaceae (33 taxa), and Fabaceae (30 taxa) families (see Appendix E for a complete species list). Forty annual plant species were recorded during the surveys of the Arrowsmith North survey area, representing 13.1 % of all taxa recorded, 11 of these represent introduced annual species.

The 2021 re-surveyed vegetation quadrats in the Arrowsmith North survey area recorded a total of 186 vascular plant taxa, representative of 100 genera and 43 families. This is compared to the same vegetation quadrats in 2018, 2019, 2020 resulting in 167 vascular plant taxa, representative of 86 genera and 36 families. Species richness increased by an average of 6.85 ± 0.77 taxa per vegetation quadrat in 2021.

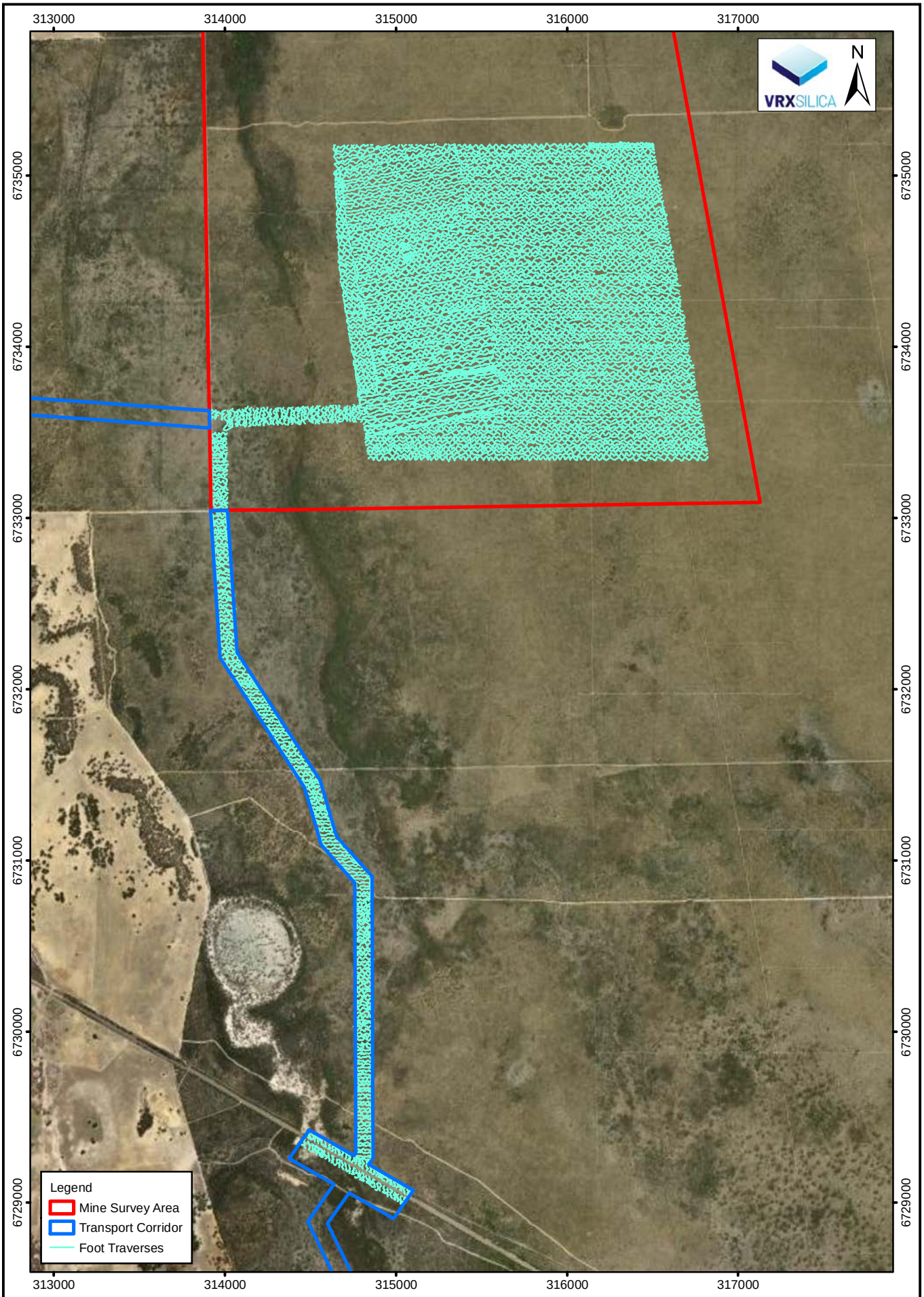
A number of plant specimens collected could not be identified accurately to species level due to the absence of sufficient taxonomic characters to enable accurate identification. Eight taxa were identified to family level only, and 35 to genus level. No taxa were question-marked at a genus level, however, twelve were identified to genus level but were question-marked at species level. The principal reasons for not being able to fully identify some of the collected specimens to species level were:

1. Plant material was sterile or lacked sufficient taxonomic features to permit accurate identification to species level. In these cases, the species is identified as, for example, *Thysanotus* sp. or *Drosera* sp. and,

2. The plant material collected could not be determined to a known taxon. For example, *Lepidosperma* species are currently undergoing taxonomic revision, making accurate identification to species level difficult. Five Lepidosperma taxa were denoted *sens. lat.* (*Lepidosperma apricola sens. lat.*, *Lepidosperma scabrum sens. lat.*, *Lepidosperma squamatum sens. la*t. and *Lepidosperma tenue sens. lat.*), these species are in the broad sense related to the binomial name. One additional taxon of *Lepidosperma*, (*Lepidosperma* aff. apricola), shows affinities to *Lepidosperma apricola* but is not identical.

None of the unidentified flora species are species of interest or likely to represent new species.

A species accumulation curve was used to evaluate the sampling adequacy within the Arrowsmith North survey area and is presented in Figure 11. In the Arrowsmith North survey area the incidence-based coverage estimator of species richness was 367.4. Based on this value and the total of 305 taxa recorded (in vegetation mapping sites *only*), approximately 83 % of the flora species potentially present within the Arrowsmith North survey area and transport corridor were recorded.



Imagery: ESRI, Maxar (July 2018)

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Scale: 1:30,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_09

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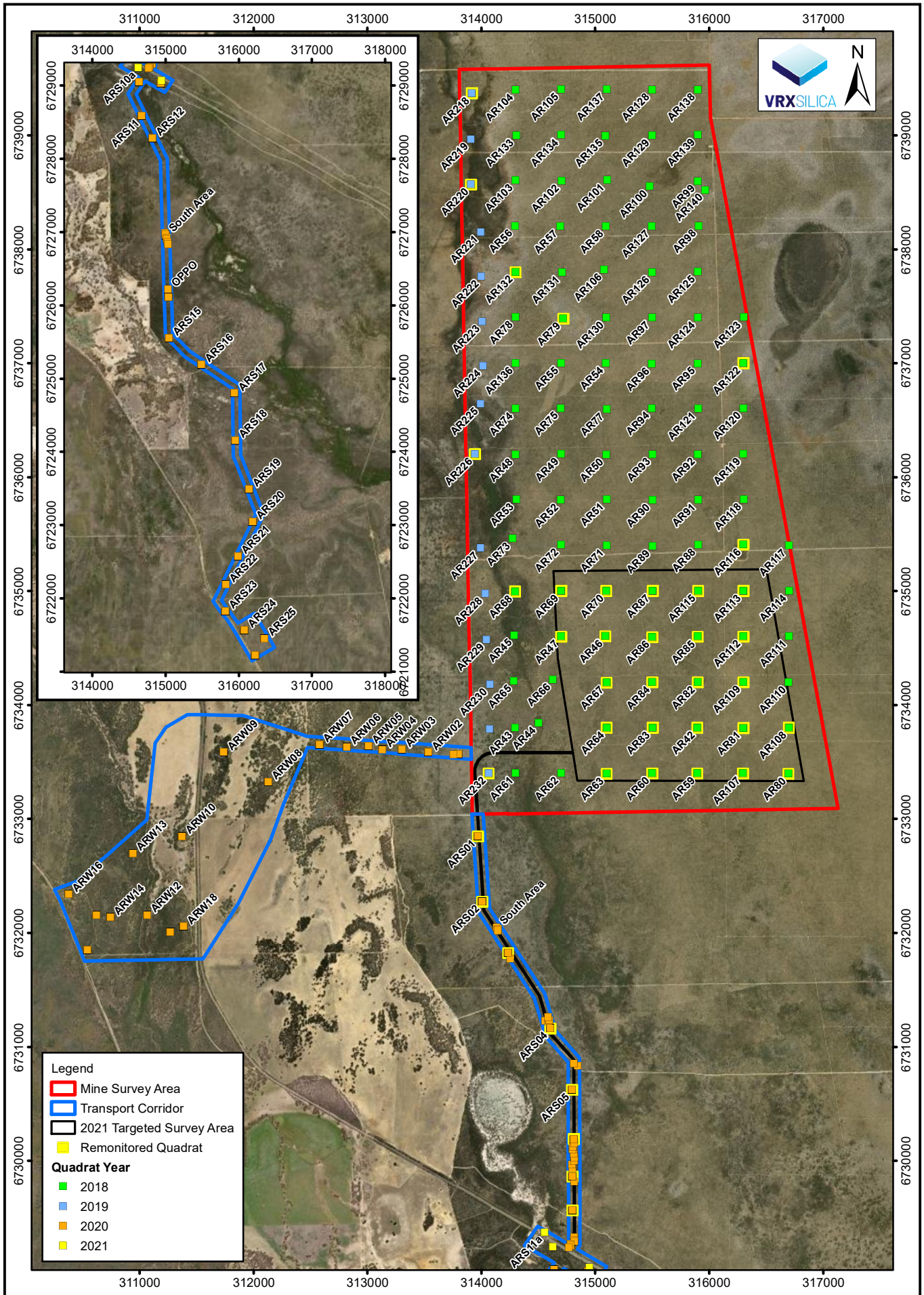
Arrowsmith North Project

2021 targeted survey area

Figure: **9**



Imagery: ESRI, Maxar (July 2018)

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MGA94 (Zone 50)

CAD Ref: a2602_f51_10

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Arrowsmith North Project

Quadrats

Figure: **10**

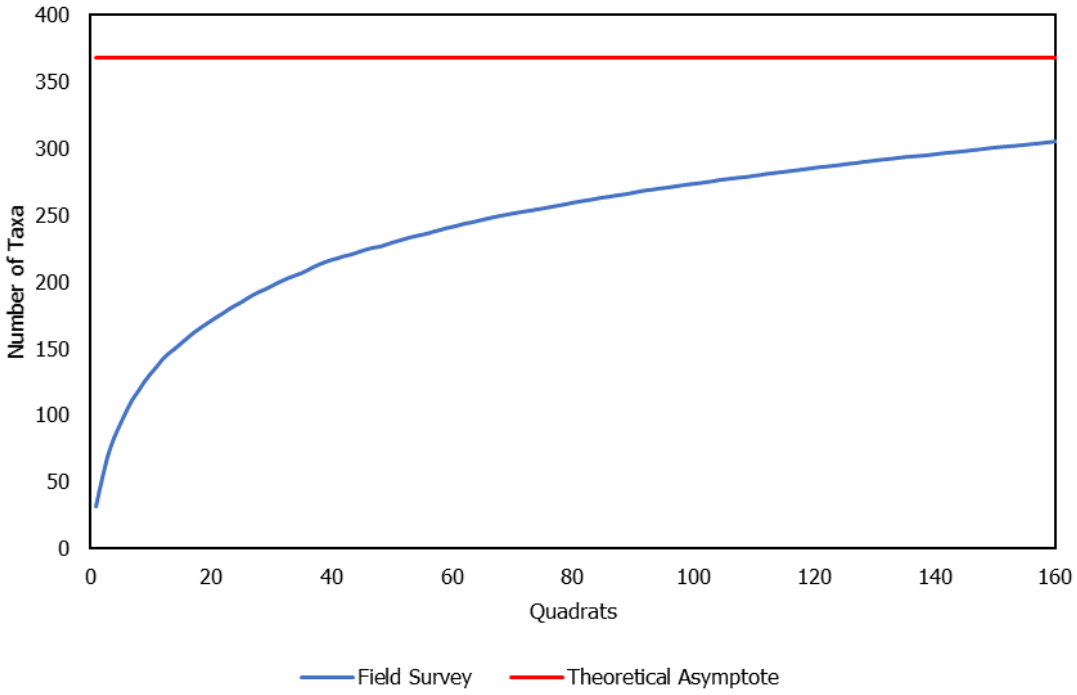


Figure 11: Average randomised species accumulation curve

5.1.1. Threatened and Priority Flora

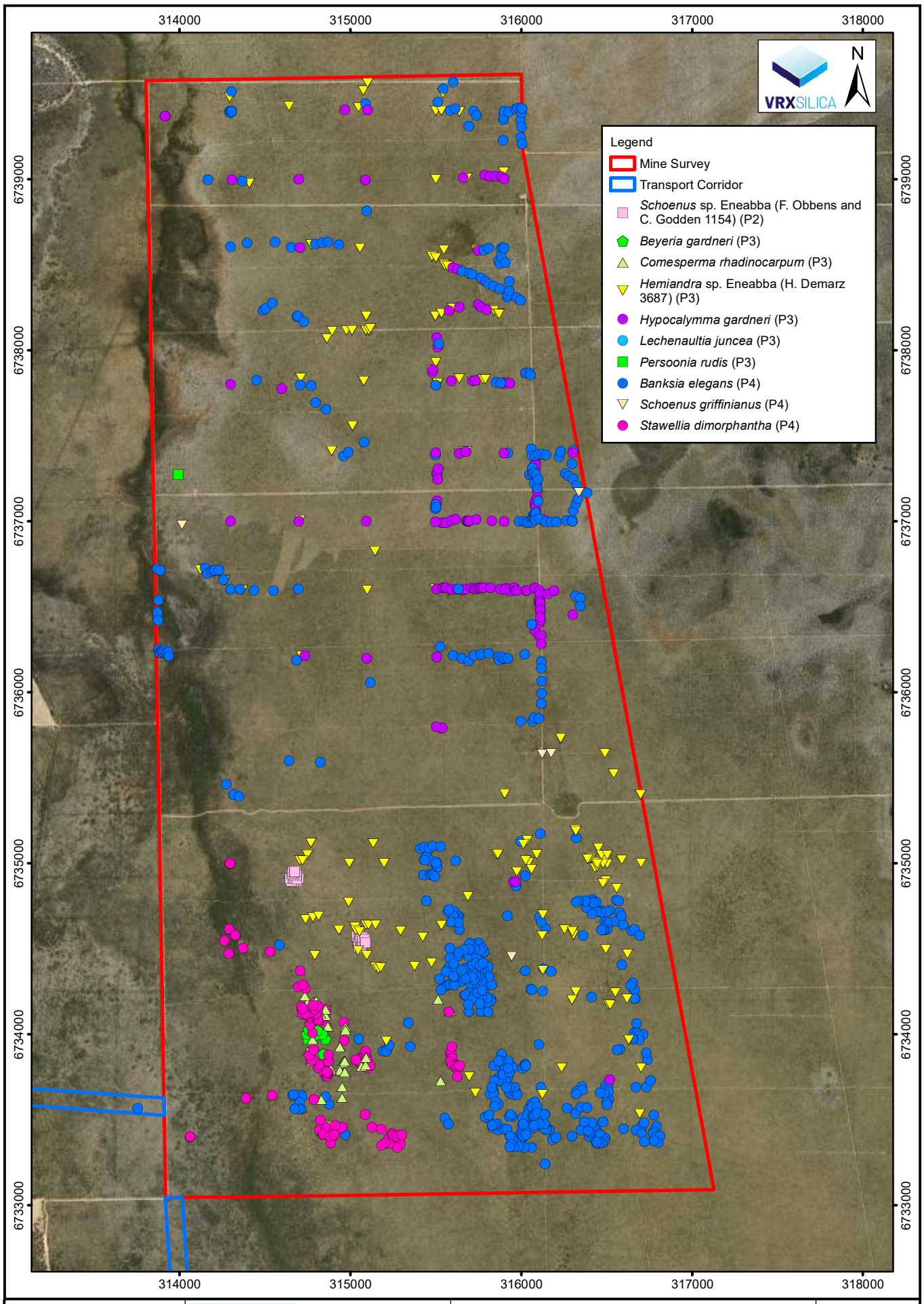
As a result of vegetation mapping quadrats and extensive foot traverses (418 km, Figures 9 and 10), eleven priority taxa, as listed by the Western Australian Herbarium have been recorded in the Arrowsmith North survey area from 2018 to 2021 (Table 9 and Figures 12a to 12c). The geographic locations of each priority flora species recorded during the surveys is listed in Appendix G.

No threatened flora species pursuant to Part 2, Division 1, and Subdivision 2 of the BC Act and as listed by the DBCA (2018a), or pursuant to section 179 of the EPBC Act or listed by the DAWE (2022c), were recorded within the Arrowsmith North survey area.

Eleven priority flora species, *Schoenus* sp. Eneabba (F. Obbens & C. Godden I154) (P2), *Beyeria gardneri* (P3), *Comesperma rhadinocarpum* (P3), *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3), *Hopkinsia anoectocolea* (P3), *Hypocalymma gardneri* (P3), *Leschenaultia juncea* (P3), *Persoonia rudis* (P3), *Banksia elegans* (P4), *Schoenus griffinianus* (P4) and *Stawellia dimorphantha* (P4) as listed by the WAH (1998-), were recorded within the Arrowsmith North survey area (Table 9). The geographic locations of priority flora species are presented in Figures 12a and 12b and Appendices G. A brief description is provided below for the respective species.

Table 9: Location of Priority Flora species recorded 2018 to 2021

Species	Conservation Code	Number of Locations in Mine Survey Area	Number of Plants in Mine Survey Area	Number of Locations in Transport Corridor	Number of Plants in Transport Corridor	Total Number of Locations	Total Number of Plants
Schoenus sp. Eneabba (F. Obbens & C. Godden I154)	P2	30	467	-	-	30	467
Beyeria gardneri	P3	8	33	-	-	8	33
Comesperma rhadinocarpum	P3	47	59	-	-	47	59
Hemiandra sp. Eneabba (H. Demarz 3687)	P3	161	231	-	-	161	231
Hopkinsia anoectocolea	P3	-	-	85	657	85	657
Hypocalymma gardneri	P3	152	274	-	-	152	274
Lechenaultia juncea	P3	1	1	-	-	1	1
Persoonia rudis	P3	1	1	-	-	1	1
Banksia elegans	P4	589	2601	152	794	741	3395
Schoenus griffinianus	P4	5	9	-	-	5	9
Stawellia dimorphantha	P4	123	169	125	229	248	398



Imagery: ESRI, Maxar (July 2018)

0 520 m

Scale: 1:30,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_11a

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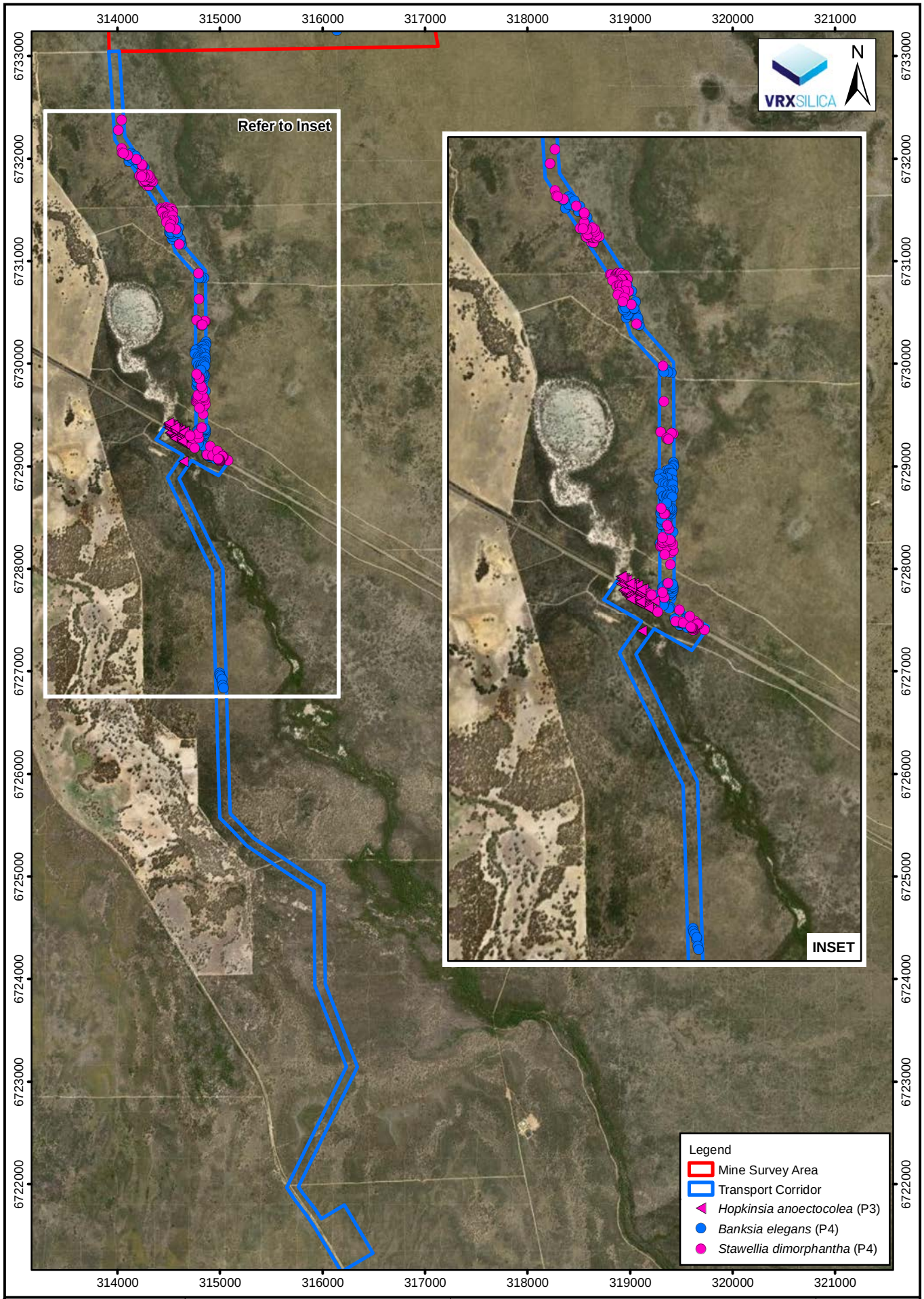
Threatened and Priority Flora

Figure: **12a**



Imagery: ESRI, Maxar (July 2018)

0 900 m

Scale: 1:50,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_11b

Date: February 2022 | Rev: A | A4

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Arrowsmith North Project

Threatened and Priority Flora

Figure: **12b**

- ***Schoenus* sp. Eneabba (F. Obbens & C. Godden I154) (P2) – CYPERACEAE**

  This species is an erect, clumped rhizomatous sedge to 75 cm tall. It is often found growing in grey, yellow or white sand (Plate 1a; WAH 1998-). The WAH houses 13 specimens of *Schoenus* sp. Eneabba (F. Obbens & C. Godden I154) (P2), distributed from Eneabba to the Yardanogo Nature Reserve near Dongara. *Schoenus* sp. Eneabba (F. Obbens & C. Godden I154) (P2) was recorded from 30 locations within the Arrowsmith North mine survey area totalling 467 plants.

Plate 1a: ***Schoenus* sp. Eneabba (F. Obbens & C. Godden I154) (P2)** (Photo: S. Ruoss)

- ***Beyeria gardneri* (P3) – EUPHORBIACEAE**

  This species is a shrub to 50 cm high with yellow flowers from August to September. It often occurs on yellow sand. WAH houses 37 records from Cataby to Nerren Nerren in the Shire of Carnamah, Shire of Chapman Valley, Shire of Coorow, Shire of Dandaragan, City of Greater Geraldton, Shire of Irwin, Shire of Northampton, Shire of Shark Bay and the Shire of Three Springs. *Beyeria gardneri* (P3) was recorded from eight locations within the Arrowsmith North mine survey area totalling 33 plants.

Plate 1b: ***Beyeria gardneri* (P3)** (Photo: S. Ruoss)

- ***Comesperma rhadinocarpum* (P3) – POLYGALACEAE**

  This species is a perennial herb to 30 cm high with blue flowers from October to January. It often occurs on yellow or grey sand. WAH houses 17 records from Perth to Kalbarri in the Shire of Dandaragan, Shire of Gingin, City of Gosnells, City of Greater Geraldton, Shire of Irwin, Shire of Northampton, Shire of Toodyay and the Shire of Yilgarn (WAH 1998-) with two outlier populations at Koolyanobbing and Pinjin Homestead in the Great Victoria Desert. In the Arrowsmith North mine survey area, *Comesperma rhadinocarpum* (P3) was recorded from 47 locations totalling 59 plants.

Plate 1c: ***Comesperma rhadinocarpum* (P3)** (Photo: S. Ruoss)

- ***Hemiandra* sp. Eneabba (H. Demarz 3687) (P3) – LAMIACEAE**

  This species is a straggly, erect shrub, growing from 0.5 to 0.9 m high with blue/violet/white flowers from September to February. It often occurs on sand. The WAH houses 35 specimens of *Hemiandra* sp. Eneabba (H. Demarz 3687) distributed from Eneabba to Yardarino from the Shire of Carnamah, Shire of Coorow, Shire of Irwin and Shire of Three Springs (WAH 1998-). *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3) was recorded from 161 locations within the Arrowsmith North mine survey area totalling 231 plants.

Plate 1d: ***Hemiandra* sp. Eneabba (H. Demarz 3687) (P3)** (Photo: S. Ruoss)

- ***Hopkinsia anoectocolea* (P3) – ANARTHIACEAE**

  This species is a rhizomatous, tufted perennial herb 0.5 to 1 m tall with brown flowers from September to December. Often occurs in white or grey sand, winter wet depressions, floodplains and salt lakes. WAH houses 50 records from the Shire of Carnamah, Shire of Cunderdin, Shire of Dandaragan, Shire of Irwin, Shire of Tammin and Shire of York (WAH 1998-). *Hopkinsia anoectocolea* (P3) was recorded from 85 locations within the Arrowsmith North transport corridor totalling 657 plants.

Plate 1e: ***Hopkinsia anoectocolea* (P3)** (Photo: S. Ruoss)

- ***Hypocalymma gardneri* (P3) – MYRTACEAE**

  This species is a shrub growing to 0.3 m high with yellow flowers from August to September. It often occurs on grey-brown sand, laterite, sandplains and upper slopes. WAH houses 22 records from the Shire of Carnamah, Shire of Coorow, Shire of Dandaragan and Shire of Irwin (WAH 1998-). *Hypocalymma gardneri* (P3) was recorded from 152 locations within the Arrowsmith North mine survey area totalling 274 plants.

Plate 1f: ***Hemiandra* sp. Eneabba (H. Demarz 3687) (P3)** (Photo: S. Ruoss)

- ***Leschenaultia juncea* (P3) – GOODENIACEAE**

This species is an erect grass-like perennial herb to 0.5 m high with blue flowers from November to December. It often occurs on white, grey or yellow sand and sandy gravel. WAH houses 22 records from the Shire of Carnamah, Shire of Coorow, Shire of Dandaragan, Shire of Dandaragan, Shire of Mingenew, Shire of Moora and Shire of Three Springs (WAH 1998-). *Leschenaultia juncea* (P3) was recorded from one location within the Arrowsmith North mine survey area totalling a single plant.

Plate 1g: ***Leschenaultia juncea* (P3)** (WAH 1998-)

- ***Persoonia rudis* (P4) – PROTEACEAE**

This species is an erect, often spreading shrub, growing from 0.2 to 1 m high with yellow flowers from September to December or January. Often occurs on white, grey or yellow sand often over laterite. WAH houses 41 records from the Shire of Carnamah, Shire of Coorow, Shire of Dandaragan, Shire of Gingin, Shire of Irwin, City of Swan, Shire of Three Springs and Shire of Victoria Plains (WAH 1998-). *Persoonia rudis* (P4) was recorded from one location within the Arrowsmith North mine survey area totalling a single plant.

Plate 1h: ***Persoonia rudis* (P4)** (Photo: S. Ruoss)

- ***Banksia elegans* (P4) – PROTEACEAE**

  This species is a shrub with fire-tolerant rootstock growing from 1 to 4 m high with yellow flowers from October to November. Often occurs on yellow, white or red sandplains or low consolidated dunes. WAH houses 44 records distributed from Hill River to Walkaway, from the Shire of Carnamah, Shire of Dandaragan, City of Greater Geraldton, Shire of Irwin and the Shire of Three Springs (WAH 1998-). *Banksia elegans* (P4) was recorded from 741 locations within the Arrowsmith North survey area totalling 3395 plants.

Plate 1i: ***Banksia elegans* (P4)** (Photo: S. Ruoss)

- ***Schoenus griffinianus* (P4) – CYPERACEAE**

  This species is a small, tufted perennial sedge to 0.1 m high and flowers from September to October. Occurs predominantly on white sand, often in disturbed areas. WAH houses 40 records from the Shire of Carnamah, Shire of Chittering, Shire of Coorow, Shire of Dandaragan, Shire of Gingin, City of Greater Geraldton, Shire of Irwin, City of Swan, Shire of Three Springs and Shire of Wongan-Ballidu (WAH 1998-). *Schoenus griffinianus* (P4) was recorded from five locations within the Arrowsmith North mine survey area totalling nine plants.

Plate 1j: ***Schoenus griffinianus* (P4)** (Photo: S. Ruoss)

- ***Stawellia dimorphantha* (P4) – HEMEROCALLIDACEAE**

  This species is a stilt-rooted perennial herb 0.05 to 0.2 m high with purple/cream flowers from June to November. Often occurs on white, grey and yellow sand (Plate 1e; WAH 1998-). WAH houses 23 records distributed from Eneabba to Allanooka, from the Shire of Carnamah, Shire of Irwin and the Shire of Three Springs (WAH 1998-). In the Arrowsmith North survey area, *Stawellia dimorphantha* (P4) was recorded from 248 locations totalling 398 plants.

Plate 1k: ***Stawellia dimorphantha* (P4)** (Photo: S. Ruoss)

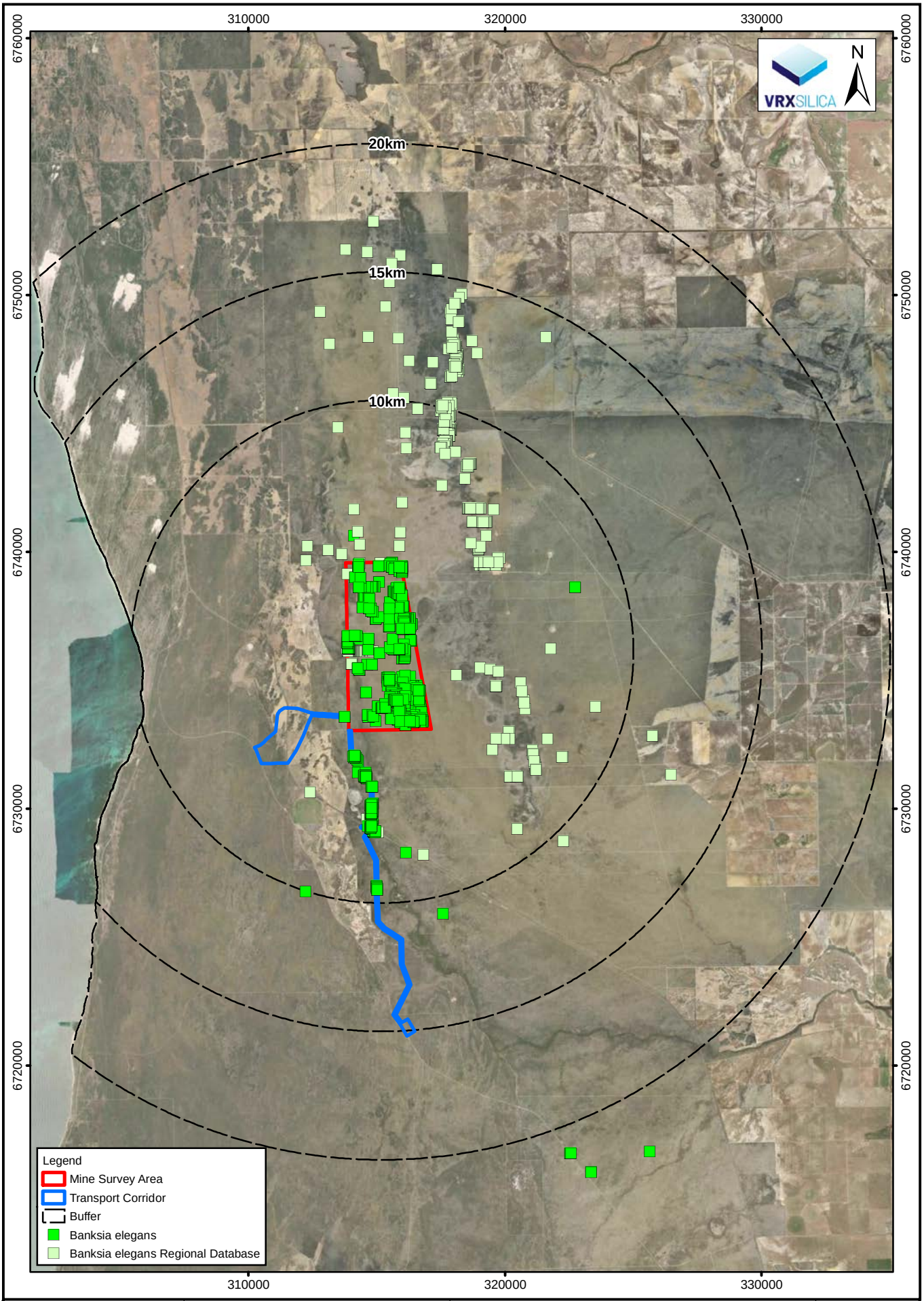
5.1.2. Regional Distribution of Priority Flora

The eleven recorded priority species were added to regional distribution maps to gain an understanding of their distribution in a regional context. A map was also prepared for *Paracaleana dixonii* (T) to show its regional distribution compared to the current Arrowsmith North survey area. The regional database which includes DBCA and WAH records, was greatly improved by adding flora records from tenement holders in close proximity to the project, namely Beach Energy Limited, Iluka Resources Limited and Tronox Limited. Regional maps for all recorded priority species are shown in Figures 13a to 13l.

The regional maps illustrate that the majority of species (nine out of 11 priority species; *Schoenus* sp. Eneabba (F. Obbens & C. Godden 1154) (P2), *Beyeria gardneri* (P3), *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3), *Hopkinsia anoectocolea* (P3), *Hypocalymma gardneri* (P3), *Persoonia rudis* (P3), *Banksia elegans* (P4), *Schoenus griffinianus* (P4) and *Stawellia dimorphantha* (P4)) recorded in the Arrowsmith North survey area have populations distributed throughout the surrounding region.

Two priority species, *Comesperma rhadinocarpum* (P3, Figure 13c) and *Leschenaultia juncea* (P3, Figure 13g) have a much more restricted or varied distribution in the regional area. While a sizeable population (59 plants from 47 locations) of *Comesperma rhadinocarpum* (P3) was found to occur within the Arrowsmith North survey area, only two other populations are found within 30 km of the survey area. *Leschenaultia juncea* (P3) was found in Arrowsmith North survey area but does not have large populations in the surrounding region. The nearest record to the Arrowsmith North survey area corridor is 50 km south-east at Kadathinni.

No *Paracaleana dixonii* (T) plants have been found in the Arrowsmith North survey area and Arrowsmith 0transport corridor from 2018 to 2021. The regional distribution map of *Paracaleana dixonii* (T, Figure 13h) shows the nearest records to be approximately 5 km to the east of the Arrowsmith North survey area near the Parmelia gas pipeline. The map also shows there are no *Paracaleana dixonii* (T) distribution records as far west as the Arrowsmith North survey area.



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

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Scale: 1:200,000
MGA94 (Zone 50)

CAD Ref: a2602_f44_01_Be

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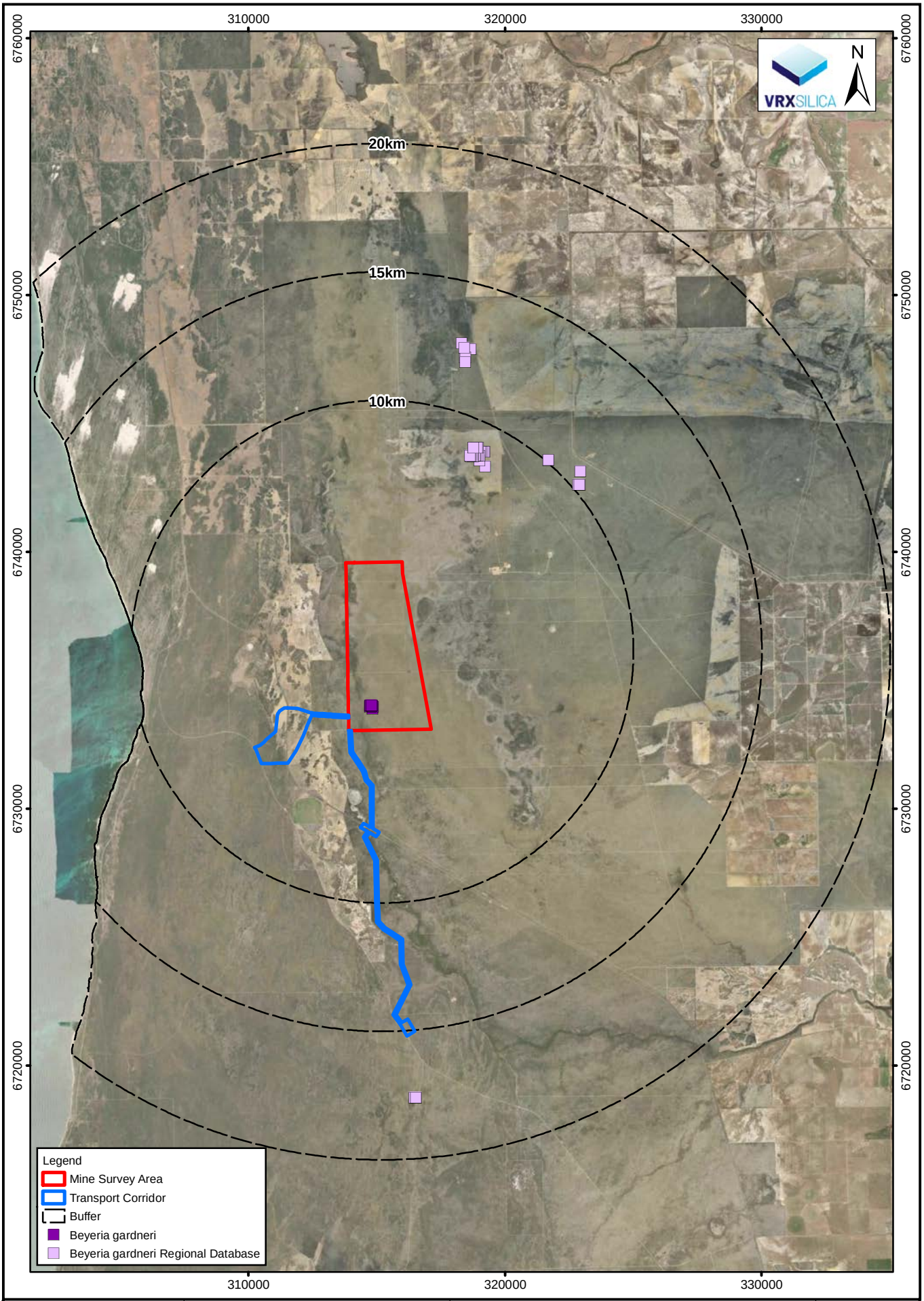
Banksia elegans (P4)

Figure:

13a



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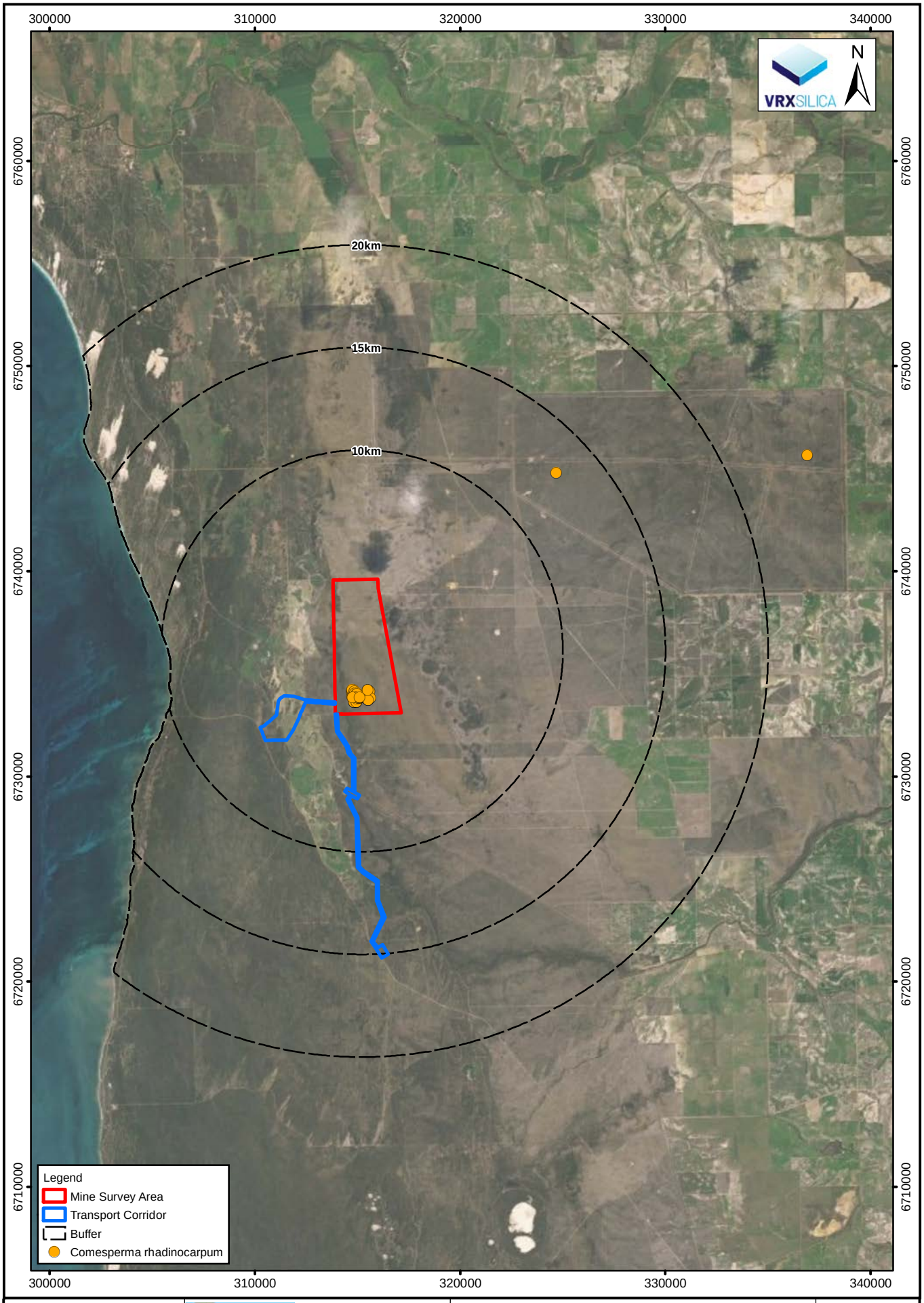
Arrowsmith North Project

Beyeria gardneri (P3)

Figure:

13b



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

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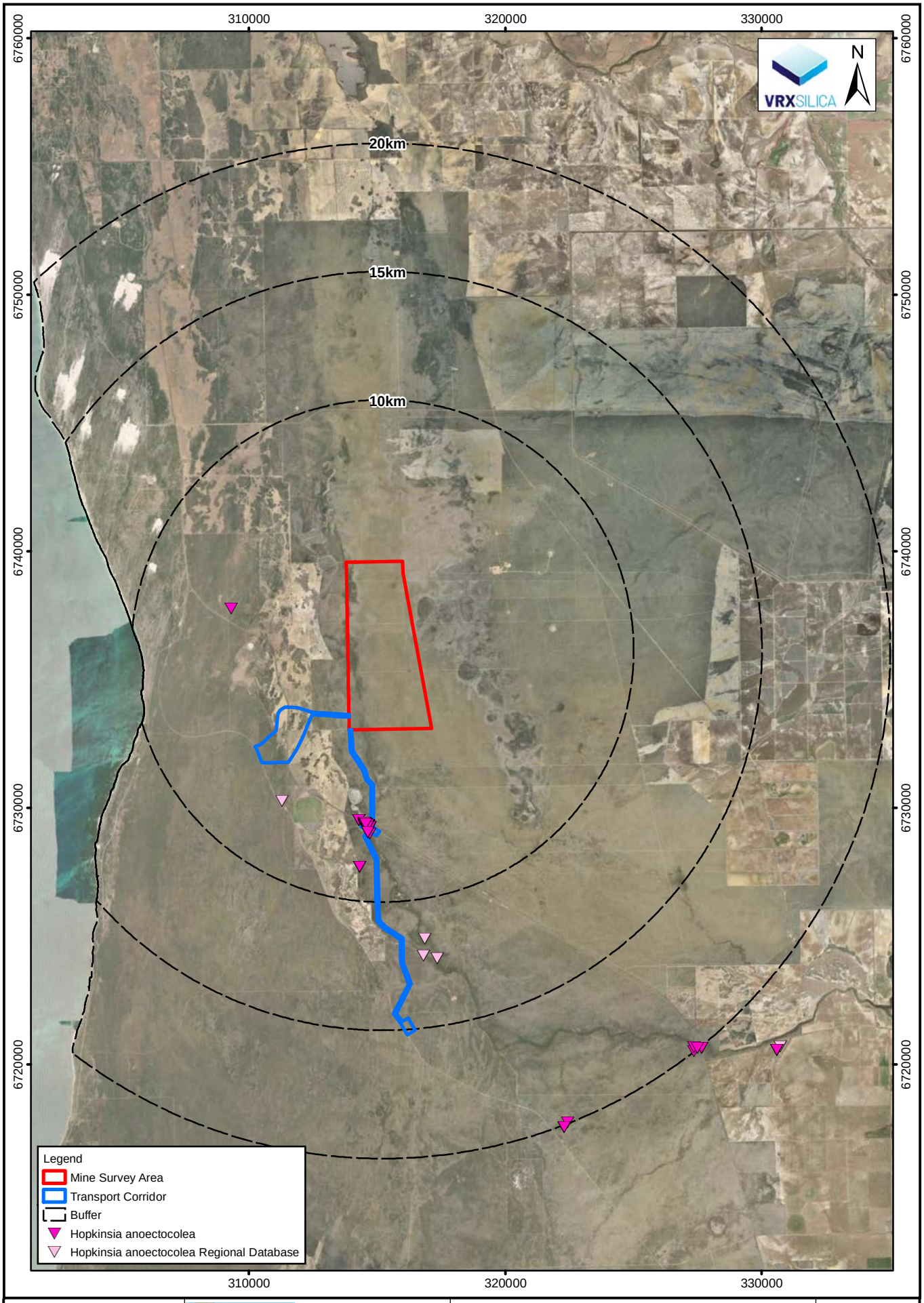
Arrowsmith North Project

Comesperma rhadinocarpum (P3)

Figure:

13c



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

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Scale: 1:200,000
MGA94 (Zone 50)

CAD Ref: a2602_f44_01_Ha

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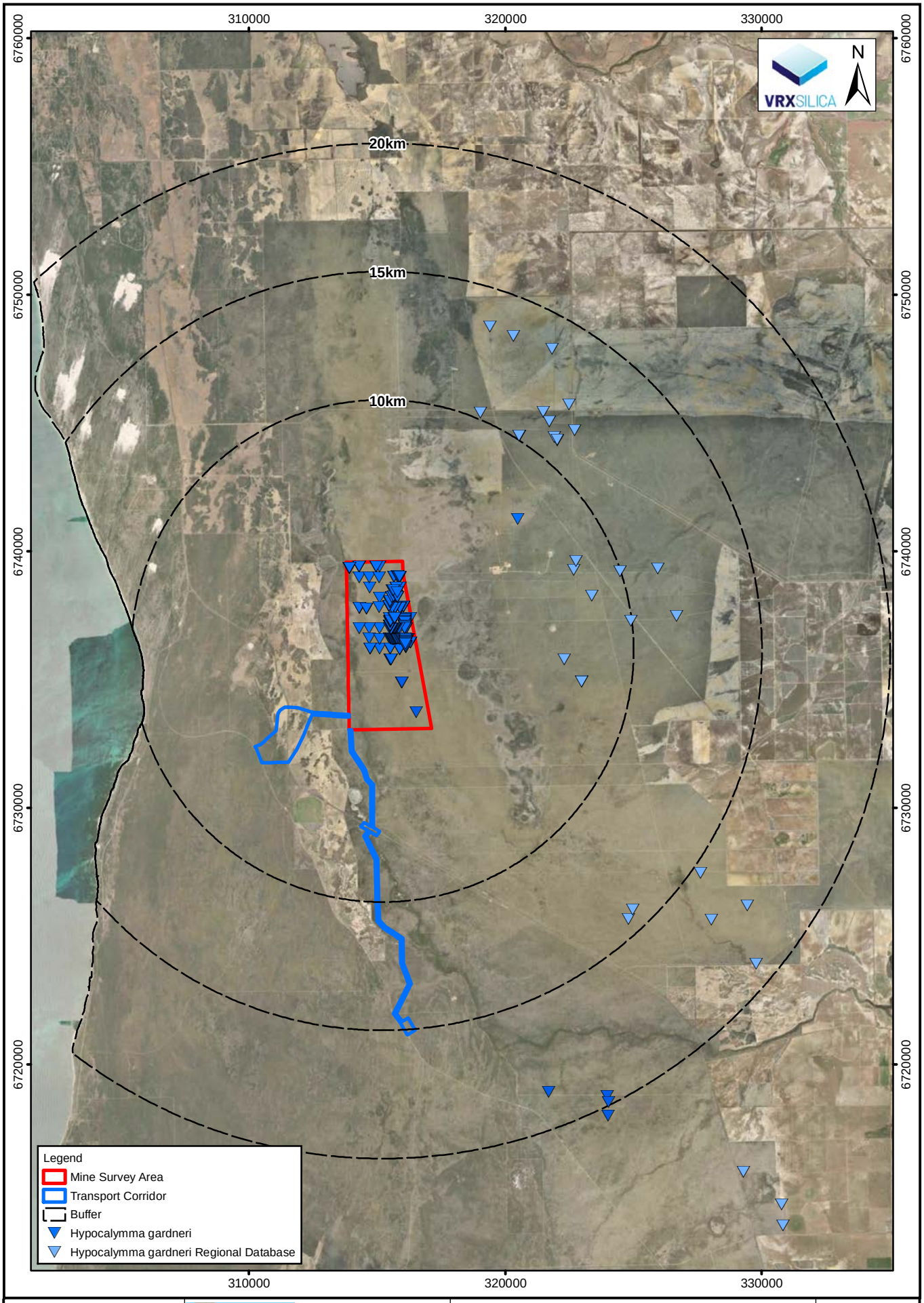
Arrowsmith North Project

Hopkinsia anoectocolea (P3)

Figure:

13d



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

0 3 km

Scale: 1:200,000
MGA94 (Zone 50)

CAD Ref: a2602_f44_01_Hg

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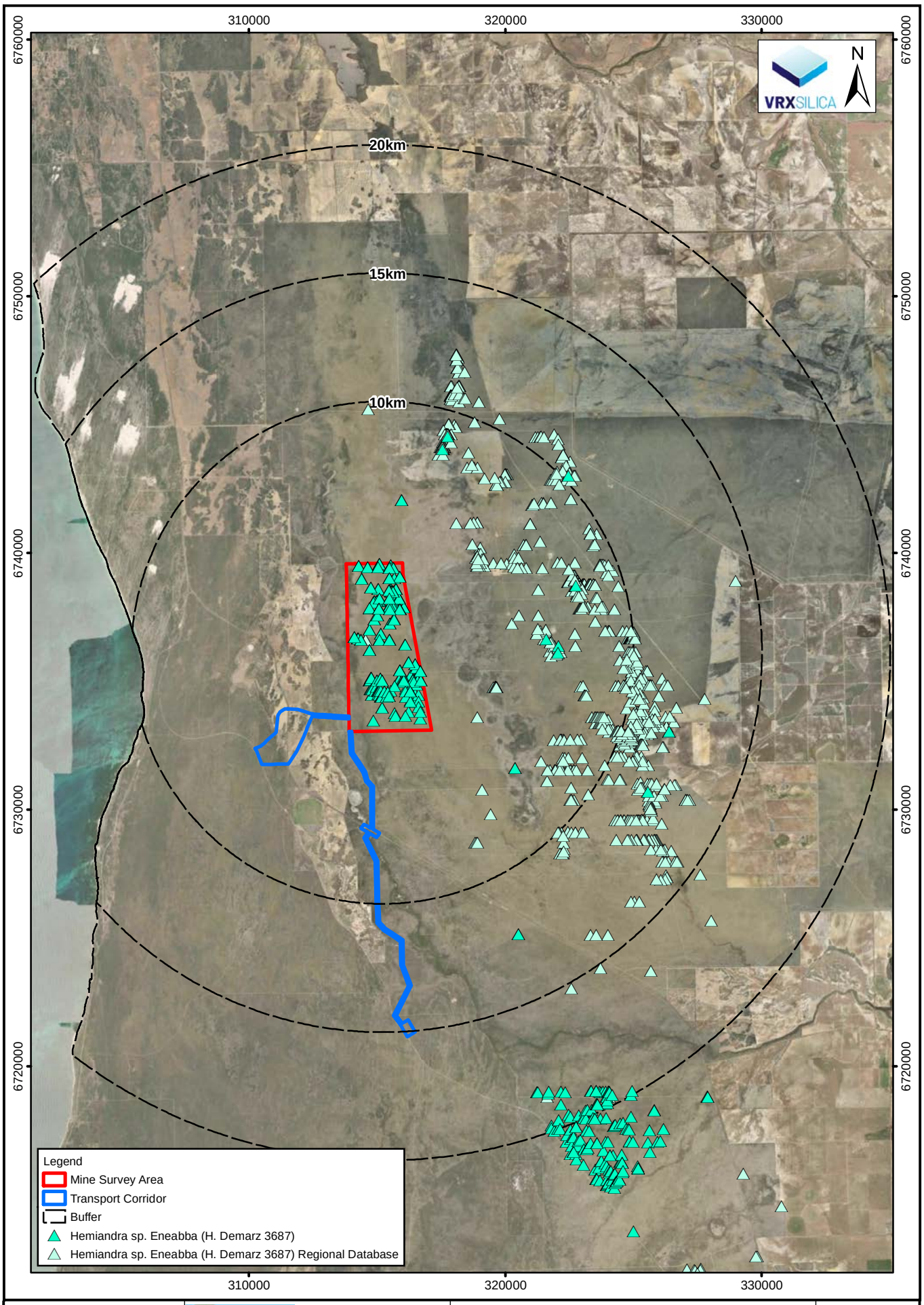
Arrowsmith North Project

Hypocalymma gardneri (P3)

Figure:

13e



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

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Scale: 1:200,000
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CAD Ref: a2602_f44_01_HsE

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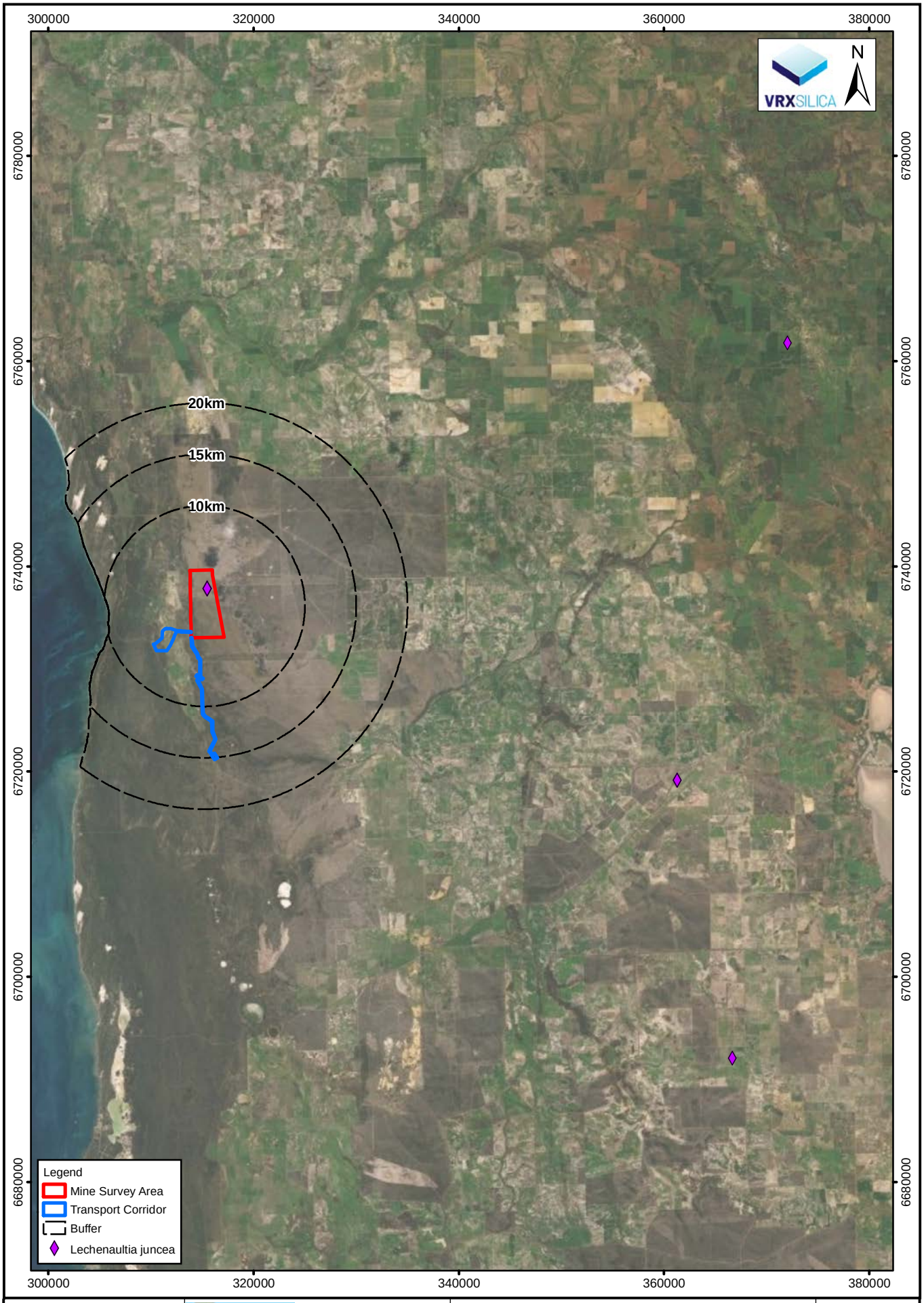
Hemiandra sp. Eneabba (H. Demarz 3687) (P3)

Figure: **13f**



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

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Scale: 1:500,000
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CAD Ref: a2602_f44_01_Lj

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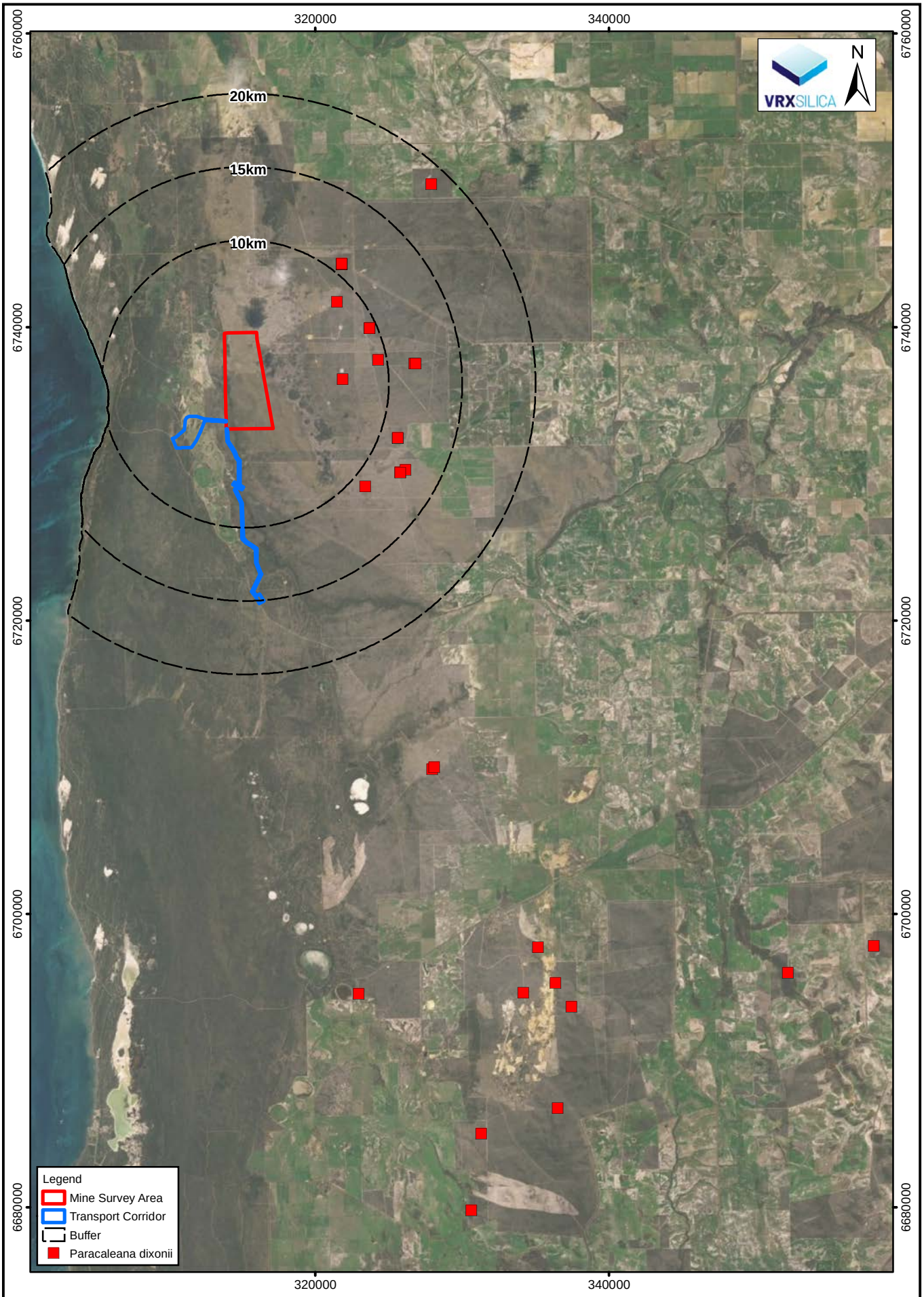
Arrowsmith North Project

Lechenaultia juncea (P3)

Figure:

13g



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

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CAD Ref: a2602_f44_01_Pd

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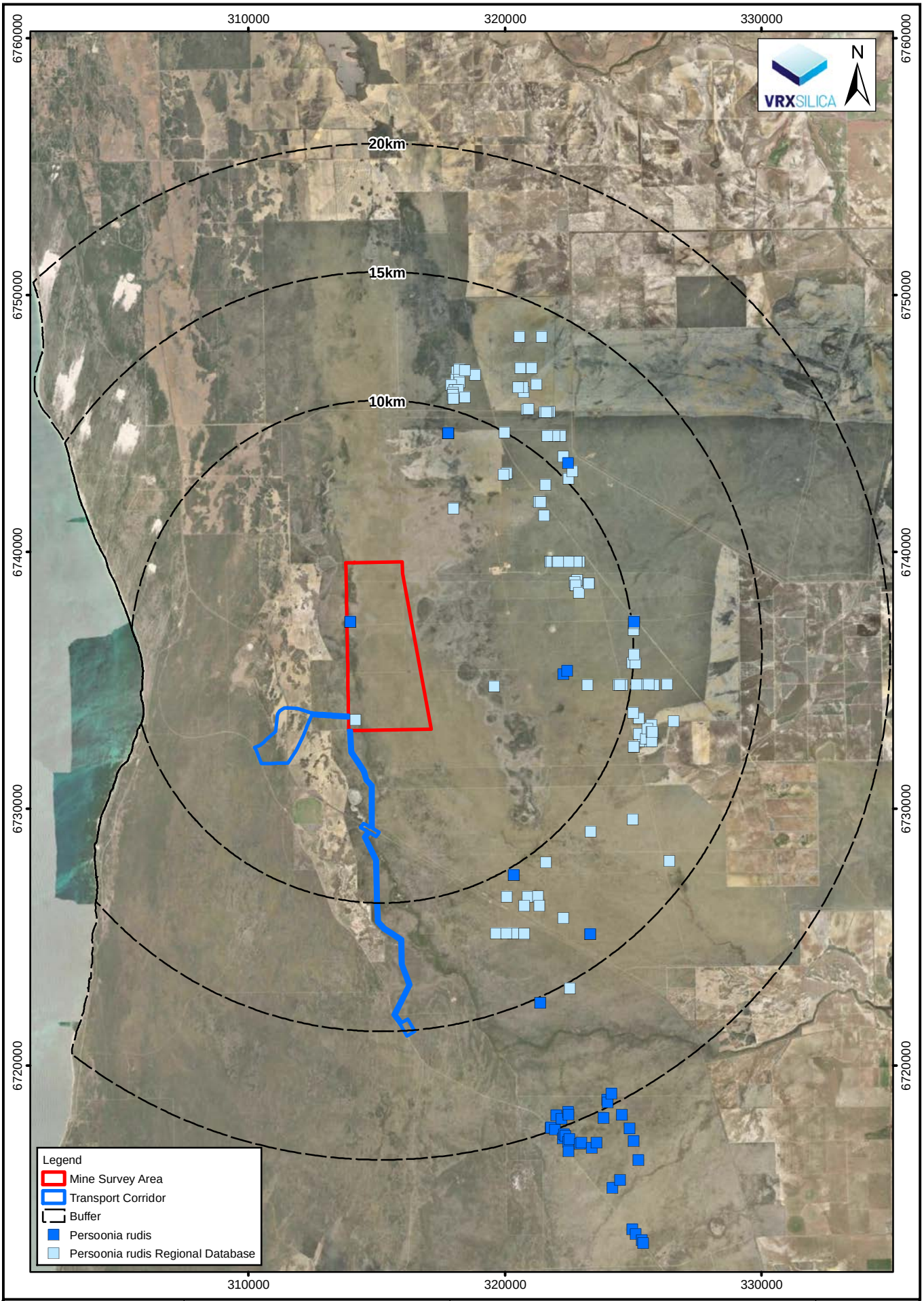
Arrowsmith North Project

Paracaleana dixonii (T)

Figure:

13h



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

0 3 km

Scale: 1:200,000
MGA94 (Zone 50)

CAD Ref: a2602_f44_01_Pr

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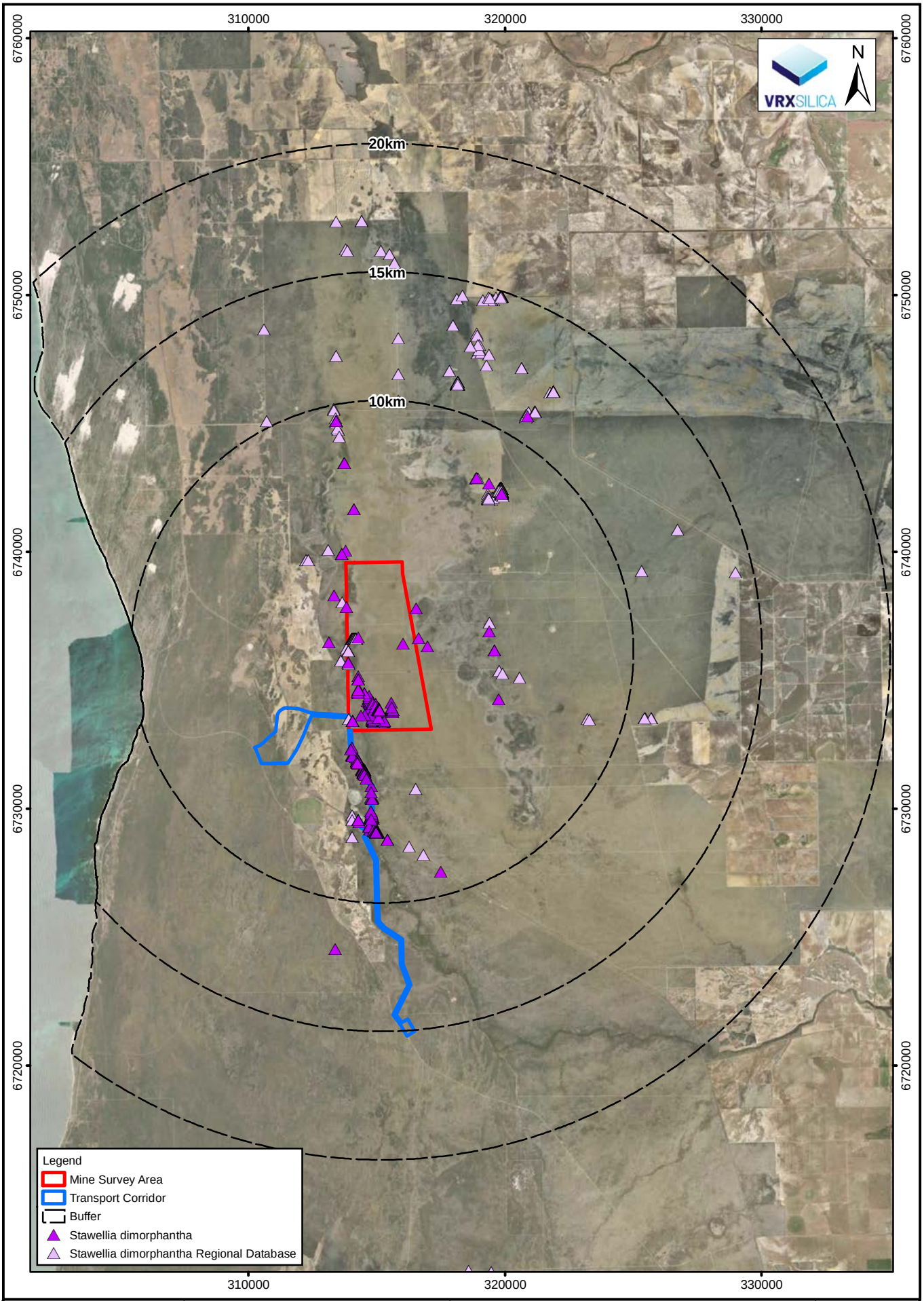
Arrowsmith North Project

Persoonia rudis (P3)

Figure:

13i



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

0 3 km

Scale: 1:200,000
MGA94 (Zone 50)

CAD Ref: a2602_f44_01_Sd

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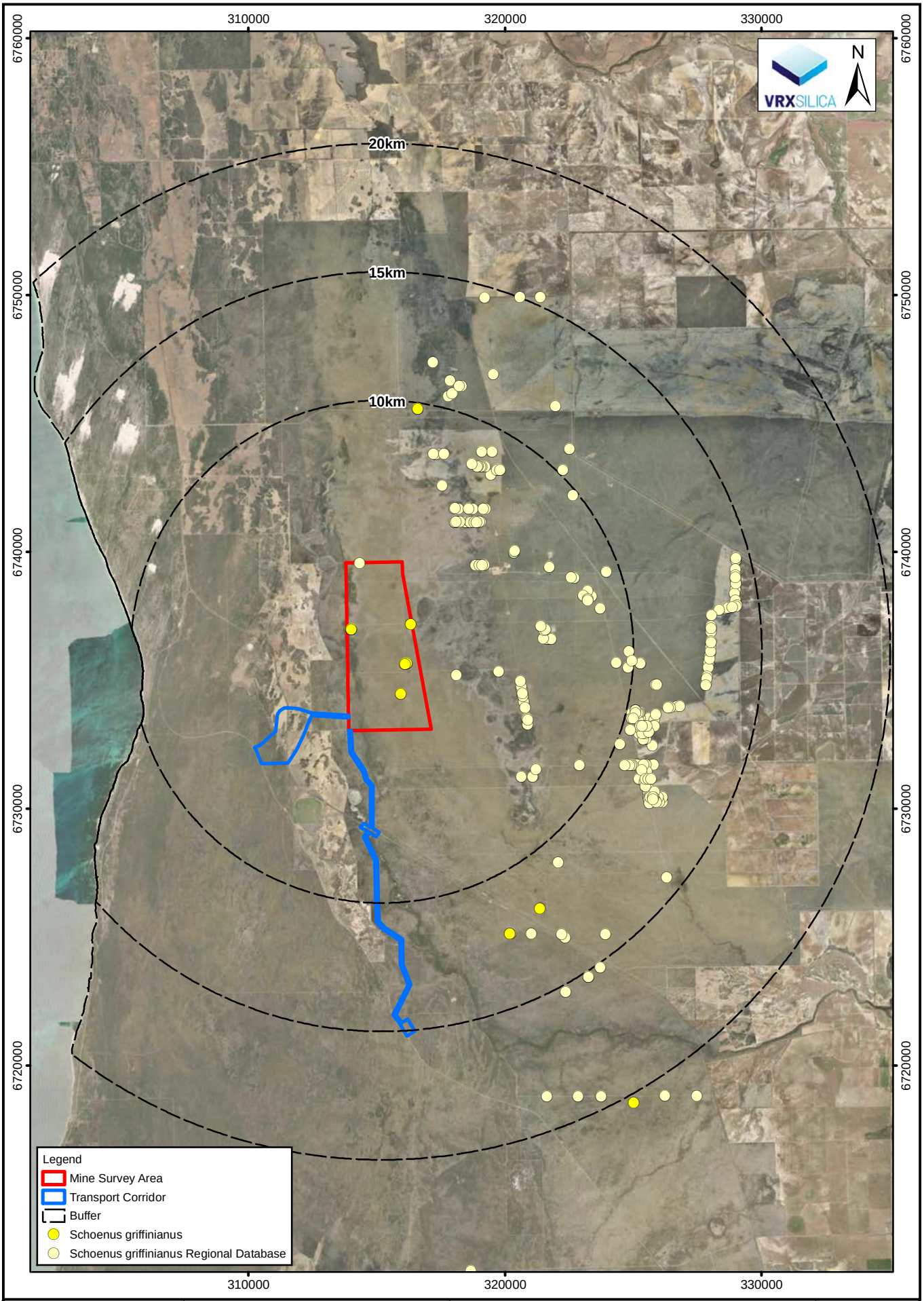
Stawellia dimorphantha (P4)

Figure:

13j



Source: Aerial Photography: LESRI, Digitalglobe, Maxar (March 2019), Tenements: DMIRS, Fauna: Bamford Consulting Ecologists

0 3 km

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MGA94 (Zone 50)

CAD Ref: a2602_f44_01_Sg

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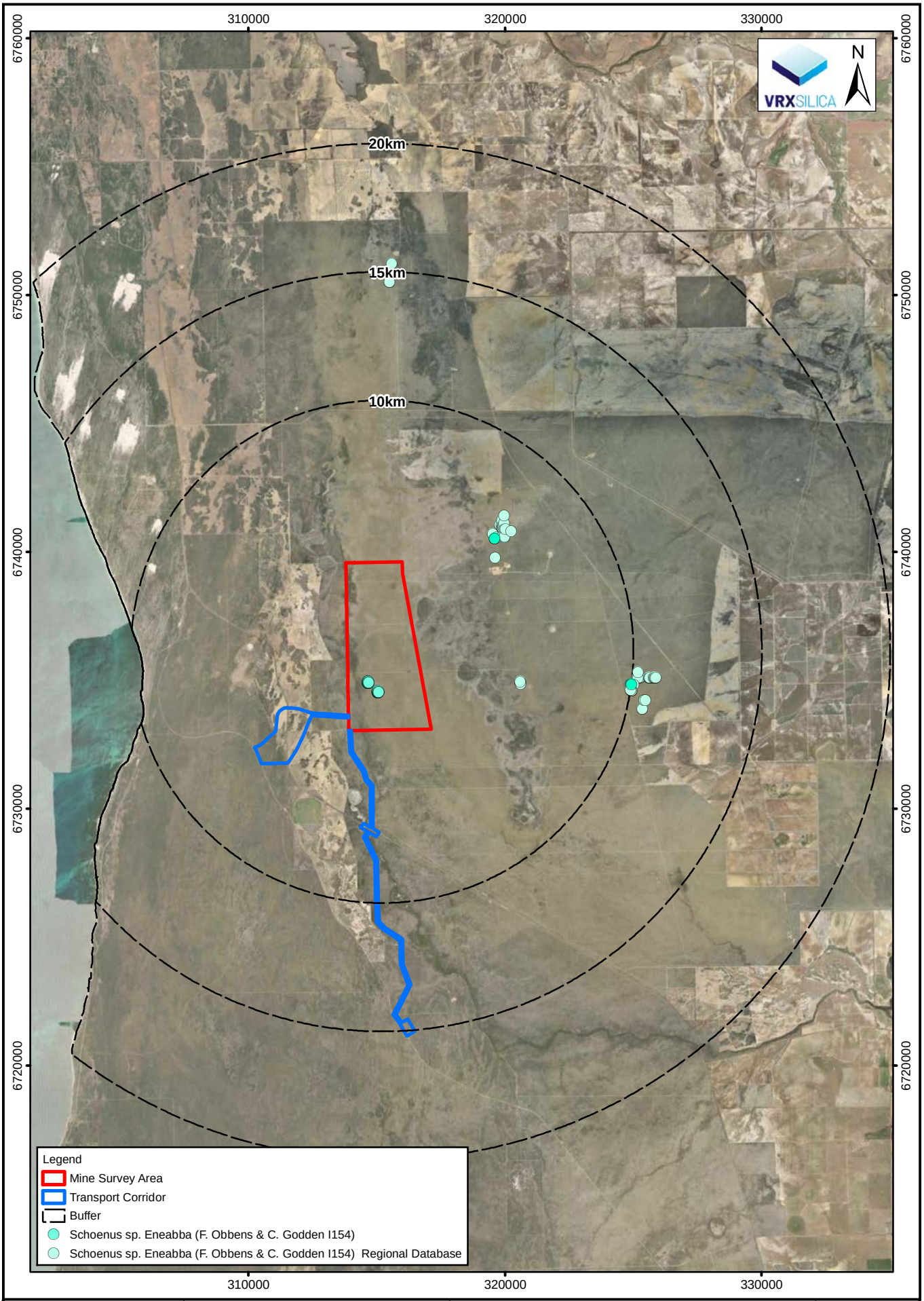
Schoenus griffinianus (P4)

Figure:

13k



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Date: February 2022 | Rev: A | A4

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Arrowsmith North Project
Schoenus sp. Eneabba (F. Obbens and C. Godden I154) (P2)

Figure:

13I

5.1.3. Flora Range Extensions

No species recorded at the Arrowsmith North survey area represented extensions to their current known distributions. In this report, 100 km has been used as a basis to determine an extension to the currently known range for a species.

5.1.4. Introduced (Weed) Species

A total of 11 introduced (weed) species were recorded within the Arrowsmith North survey area (Table 10). None of these species, **Aira caryophyllea*, *Brassicaceae sp., **Briza maxima*, **Eragrostis curvula,* **Hypochaeris glabra*, **Lysimachia arvensis*, **Sonchus oleraceus,* **Trifolium arvense* var. *arvense*, **Ursinia anthemoides,* **Vulpia myuros* forma *myuros* and* *Wahlenbergia capensis* are declared pest organisms pursuant to section 22 of the BAM Act.

None are listed as Weeds of National Significance (DAWE 2022d). All species recorded are listed in the Midwest region impact and invasiveness ratings (DPaW 2013). Four were listed as having high ecological impact and two were listed as being of low ecological impact. The five remaining species, **Briza maxima,* **Sonchus oleraceus,* **Trifolium arvense* var. *arvense*, **Wahlenbergia capensis* and **Vulpia myuros* forma *myuros* are listed as having unknown ecological impacts (DPaW 2013). All weed species recorded were described as having rapid invasiveness, with the exception of **Trifolium arvense* var. *arvense*, which has moderate invasiveness (DPaW 2013).

Table 10: Location of Introduced (Weed) Species within Arrowsmith North survey area 2018-2021

SPECIES	DPAW[1]		WAOL[2]	WONS[3]	GDA94_Z50	
	ECOLOGICAL IMPACT	INVASIVENESS			EASTING	NORTHING
*Aira caryophyllea	H	R	Permitted - s11	No	310625	6732155
					311068	6732156
					311374	6732845
					313997	6738148
					314630	6729243
					314947	6729064
*Brassicaceae sp.	M/H	R	Permitted - s11	No	315495	6725190
					316144	6723488
*Briza maxima	U	R	Permitted - s11	No	311272	6732009
					311374	6732845
					315495	6725190
*Eragrostis curvula	H	R	Permitted - s11	No	314558	6729372
*Hypochaeris glabra	L	R	Permitted - s11	No	313911	6738569
					313945	6736202
					313994	6736640
					314238	6731823
					314630	6729243
					314800	6729567
					314947	6729064

Table 10: Location of Introduced (Weed) Species within Arrowsmith North survey area 2018-2021 (Continued)

SPECIES	DPAW[1]		WAOL[2]	WONS[3]	GDA94_Z50	
	ECOLOGICAL IMPACT	INVASIVENESS			EASTING	NORTHING
**Lysimachia arvensis*	L	R	Permitted - s11	No	313908	6738965
					313911	6738569
					314630	6729243
					314800	6729567
					314947	6729064
**Sonchus oleraceus*	U	R	Permitted - s11	No	313911	6738569
**Trifolium arvense* var. *arvense*	U	M	Permitted - s11	No	313911	6738569
**Ursinia anthemoides*	H	R	Permitted - s11	No	314238	6731823
					314292	6734612
					314297	6733800
					314298	6734996
					314502	6733844
					314605	6731164
					314630	6729243
					314947	6729064
					315946	6724800
					316144	6723488
**Vulpia myuros* forma *myuros*	U	R	Permitted - s11	No	314630	6729243
					314947	6729064
**Wahlenbergia capensis*	U	R	Permitted - s11	No	314002	6737762
					314296	6738202
					314502	6733844
					314630	6729243
					314800	6729567
					314802	6729862
					314947	6729064

Note: [1] DPAW - Department of Parks and Wildlife 2013 weed ranking category for the Midwest region; [2] WAOL - Western Australian Organism List (BAM Act 2007; Department of Primary Industries and Regional Development 2022); Ecological Impact Rating: L - Low; M - Medium; H - High; U - Unknown. Invasiveness Rating: S - Slow; M - Moderate; R - Rapid; U - Unknown; [3] WONS - Weeds of National Significance (DAWE 2022d)

5.2. Vegetation

5.2.1. Statistical Analysis

Several approaches to analysing the foliage cover data were tried in order to define vegetation communities that were both meaningful and not overly complex. The analysis has been split in two groupings; the Arrowsmith North mine survey area and the Arrowsmith North transport corridor. The statistical analysis of the Arrowsmith North transport corridor includes data collected for both alignment options (Southern and Northern).

In the Arrowsmith North mine survey area SIMPROF analysis of the 113 survey quadrats identified eight significantly associated groups of quadrats. Eight significantly dissimilar vegetation communities were delineated within the mapped Arrowsmith North mine survey area. The dendrogram representing the results of the cluster analysis, and the corresponding eight vegetation communities is illustrated in Figure 14a.

In the Arrowsmith North transport corridor SIMPROF analysis of 44 survey quadrats (both alignment options) identified ten significantly associated groups of quadrats. Ten significantly dissimilar vegetation communities were delineated within the Arrowsmith North transport corridor survey area. The dendrogram representing the results of the cluster analysis, and the corresponding ten vegetation communities is illustrated in Figure 14b.

5.2.2. Vegetation Communities

Based on statistical analysis, eight vegetation communities were defined and mapped across the Arrowsmith North mine survey area and ten vegetation communities were defined and mapped across the Arrowsmith North transport corridor survey area. In addition to the statistical analysis, survey quadrat physical data and aerial photographic maps were used to delineate the boundaries of the vegetation communities in the Arrowsmith North mine survey area and Arrowsmith North transport corridor. The vegetation map is presented in Figure 15. A list of species recorded within each vegetation community is set out in Appendix H. Vegetation community descriptions, topographic and edaphic information and representative photos are shown in Appendix I. A summary of the vegetation communities is presented below. The area of each of the vegetation communities in Arrowsmith North survey area is presented in Table 11a & 11b.

Arrowsmith North mine survey area

H1: Open Heath to Closed Heath of *Hakea polyanthema*, *Calothamnus blepharospermus, Conospermum triplinervium, Petrophile macrostachya* and *Melaleuca leuropoma* with emergent *Banksia attenuata* over *Acanthocarpus preissii* and *Ecdeiocolea monostachya* on cream and white surface sands.

H2: Open Heath to Closed Heath of *Banksia hookeriana, Banksia attenuata* with occasional *Banksia menziesii* over *Melaleuca leuropoma*, *Eremaea beaufortioides* var*. beaufortioides, Scholtzia laxiflora, Conospermum triplinervium, Eremaea violacea* subsp*. violacea* over *Mesomelaena pseudostygia* on white sands on plains.

H3: Open Heath of *Melaleuca leuropoma*, *Leptospermum oligandrum, Hakea polyanthema, Conospermum triplinervium, Beaufortia elegans* and *Pileanthus filifolius*, with isolated trees of *Banksia attenuata* and *Xylomelum angustifolium* over *Mesomelaena pseudostygia* and *Ecdeiocolea monostachya* on cream/grey sand on plains.

H4: Open Heath of *Conospermum triplinervium, Banksia attenuata, Banksia hookeriana, Melaleuca leuropoma, Daviesia divaricata* subsp. *divaricata* and *Eremaea beaufortioides* var. *beaufortioides* over *Mesomelaena pseudostygia* and *Dampiera spicigera* on yellow-cream/white sand on flats.

H5: Open Heath to Closed Heath of *Banksia shuttleworthiana, Banksia attenuata* with occasional *Banksia menziesii* over *Melaleuca leuropoma*, *Eremaea beaufortioides* var*. beaufortioides, Conospermum triplinervium, Scholtzia laxiflora* and *Verticordia grandis* over *Mesomelaena pseudostygia, Ecdeiocolea monostachya* and *Lepidobolus preissianus* subsp. *preissianus* on pale yellow sandy flats.

S3: Scrub of *Banksia attenuata, Banksia leptophylla* var. *melletica, Hakea polyanthema* and *Melaleuca leuropoma* over *Scholtzia laxiflora, Petrophila macrostachya, Petrophile drummondii, Allocasuarina humilis, Hakea costata* and *Acacia spathulifolia* over *Scaevola repens* subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445) and *Mesomelaena pseudostygia* on white-yellow sand on flats and slopes.

T1: Thicket to Scrub of *Allocasuarina campestris, Grevillea leucopteris, Guichenotia ledifolia, Acacia* ?*lineolata, Calothamnus quadrifidus* subsp. *quadrifidus* with occasional *Eucalyptus todtiana* and *Banksia attenuata* over *Dianella revoluta* and *Ecdeiocolea monostachya* on grey/cream/orange/red sand on flats and slopes.

W2: Low Open Woodland of *Banksia attenuata* and *Banksia menziesii* over open shrubland of *Melaleuca leuropoma, Eremaea beaufortioides* var. *beaufortioides, Daviesia triflora, Styphelia xerophylla, Pileanthus filifolius* and *Stirlingia latifolia* over *Alexgeorgea nitens, Lyginia imberbis* and *Stylidium crossocephalum* on cream to white sands on plains.

Arrowsmith North transport corridor

H1: Open Heath to Closed Heath of *Hakea polyanthema*, *Calothamnus blepharospermus, Conospermum triplinervium, Petrophile macrostachya* and *Melaleuca leuropoma* with emergent *Banksia attenuata* over *Acanthocarpus preissii* and *Ecdeiocolea monostachya* on cream and white surface sands.

H7: Open Heath to Closed Heath of *Banksia leptophylla* var. *melletica*, *Melaleuca leuropoma* and *Hakea trifurcata* over *Ecdeiocolea monostachya*, *Lepidobolus preissianus* and *Stenanthemum notiale* subsp. *notiale* on cream sand on lower slopes.

S6: Open shrubland of *Acacia blakelyi* and *Allocasuarina campestris*, over *Ecdeiocolea monostachya*, *Jacksonia hakeoides* and *Lepidobolus preissianus* on cream/grey sand on flats to lower slopes.

T3: Thicket of *Allocasuarina campestris, Acacia spathulifolia, Melaleuca* ?*systena, Callitris arenaria* over *Ecdeiocolea monostachya, Lechenaultia linarioides* and *Acanthocarpus preissii* on cream sand on flats.

T4: Thicket to Scrub of *Acacia blakelyi* and *Acacia rostellifera* over *Lepidosperma* aff. *apricola*, *Scholtzia laxiflora, Hakea lissocarpha* and *Verticordia densiflora* on grey sand on flats.

T5: Thicket of *Acacia blakelyi* and *Acacia saligna* and *Macrozamia fraseri* over *Waitzia acuminata* and Poaceae sp. on sandy loam/clay on low lying flats.

T6: Thicket of *Acacia blakelyi*, *Macrozamia fraseri* with occasional *Grevillea leucopteris* over *Conostylis candicans*, *Waitzia acuminata* and *Aira caryophyllea* on cream/grey sand on flats.

W3: Open mallee woodland of *Eucalyptus drummondii,* over shrubland of *Acacia saligna,* over isolated *Solanum* ?*lasiophyllum* and Poaceae sp. on grey clay loam on flats.

W4: Woodland to isolated trees of *Eucalyptus erythrocorys*, over sparse to closed shrubland of *Acacia spathulifolia* and *Acacia rostellifera*, over *Melaleuca leuropoma*, *Conostylis* ?*candicans* subsp. *procumbens*, and *Ecdeiocolea monostachya* on cream sand with limestone outcropping on slopes.

W5: Isolated trees of *Eucalyptus erythrocorys,* over open shrubland of *Melaleuca ?systena*, *Banksia sessilis* and *Labichea cassioides*, over *Hibbertia hypericoides* subsp. *hypericoides* and *Desmocladus asper* on grey/brown sand with limestone outcropping on flats and slopes.

Table 11a: Area of Vegetation Communities within Arrowsmith North mine survey area

Vegetation Community	Arrowsmith North survey area (ha)	Arrowsmith North survey area (%)	Number of survey quadrats
H1	288.982	16.574	20
H2	314.388	18.031	20
H3	258.151	14.806	15
H4	517.886	29.703	32
H5	112.442	6.449	7
S3	23.714	1.360	3
T1	132.539	7.602	7
W2	95.468	5.475	9
Total	**1743.569**	**100**	**113**

Table 11b: Area of Vegetation Communities within Arrowsmith North transport corridor

Vegetation Community	Transport Corridor (ha)	Transport Corridor (%)	Number of survey quadrats
H1	36.569	8.158	10
H7	24.086	5.373	4
S6	44.389	9.903	7
T3	1.067	0.238	1
T4	9.880	2.204	1
T5	26.738	5.965	3
T6	55.380	12.355	5
W3	13.280	2.963	2
W4	98.226	21.914	7
W5	32.033	7.146	4
Cleared	106.591	23.780	-
Total	**448.238**	**100**	**44**

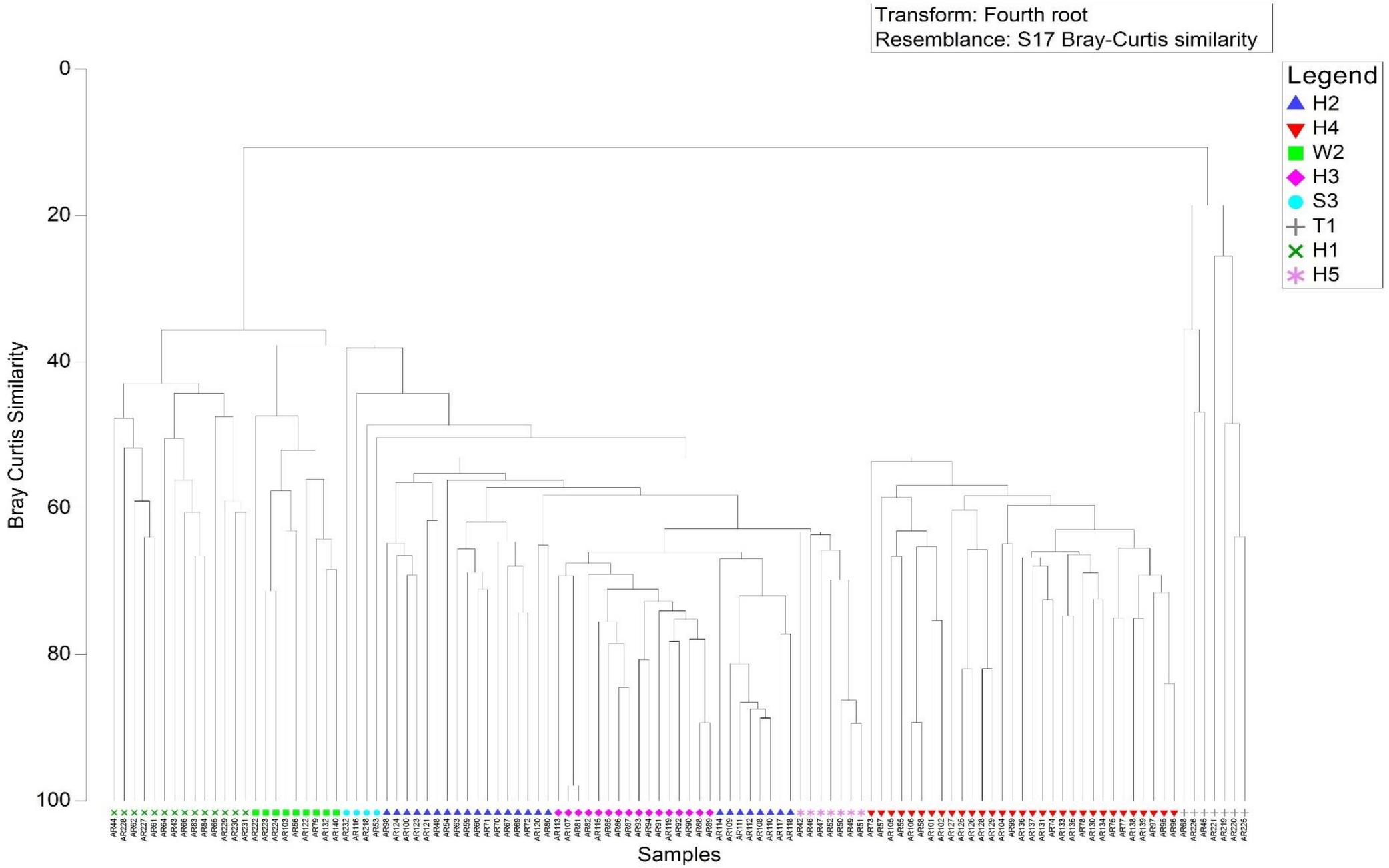


Figure 14a: Dendrogram of survey quadrats established within Arrowsmith North mine survey area

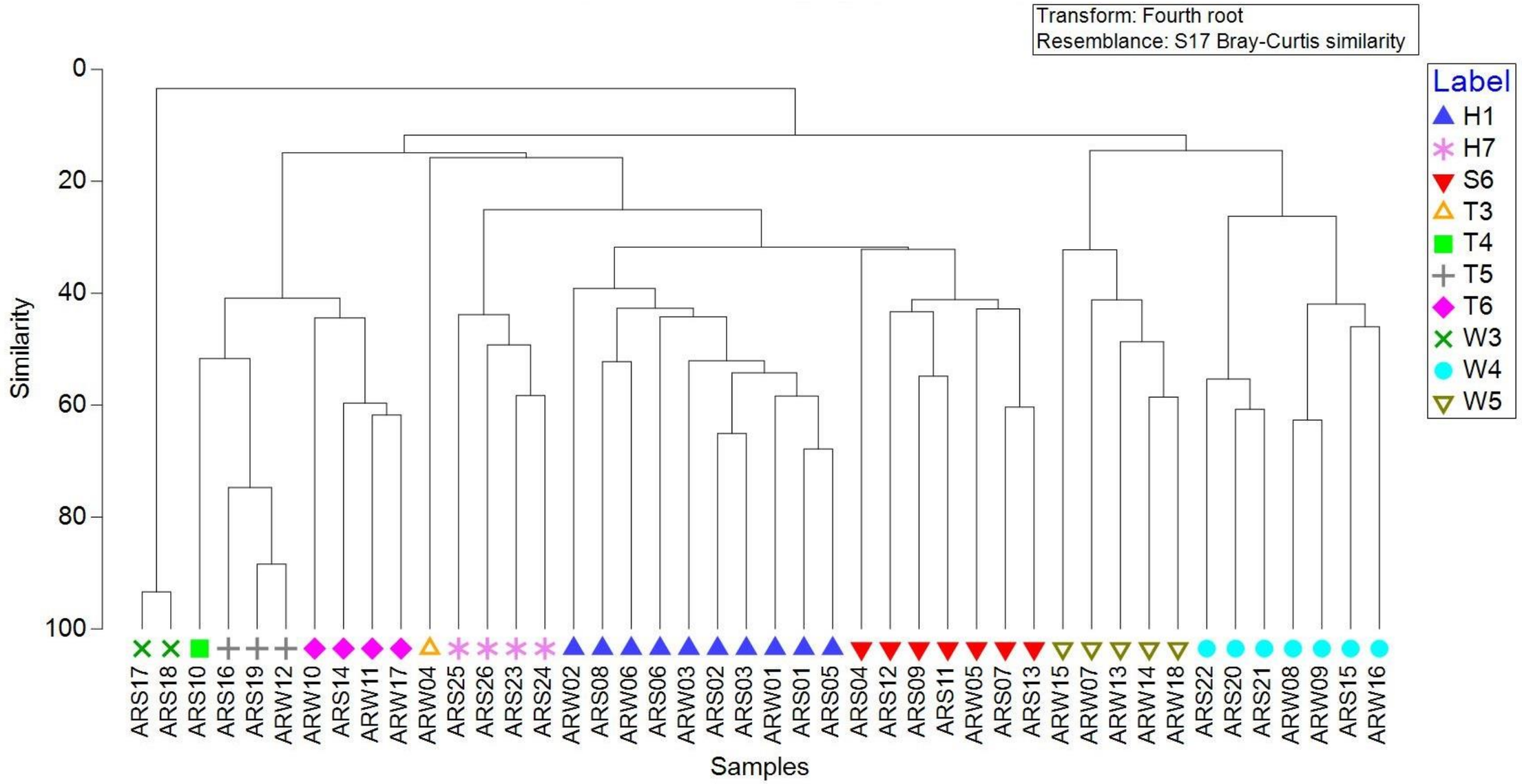
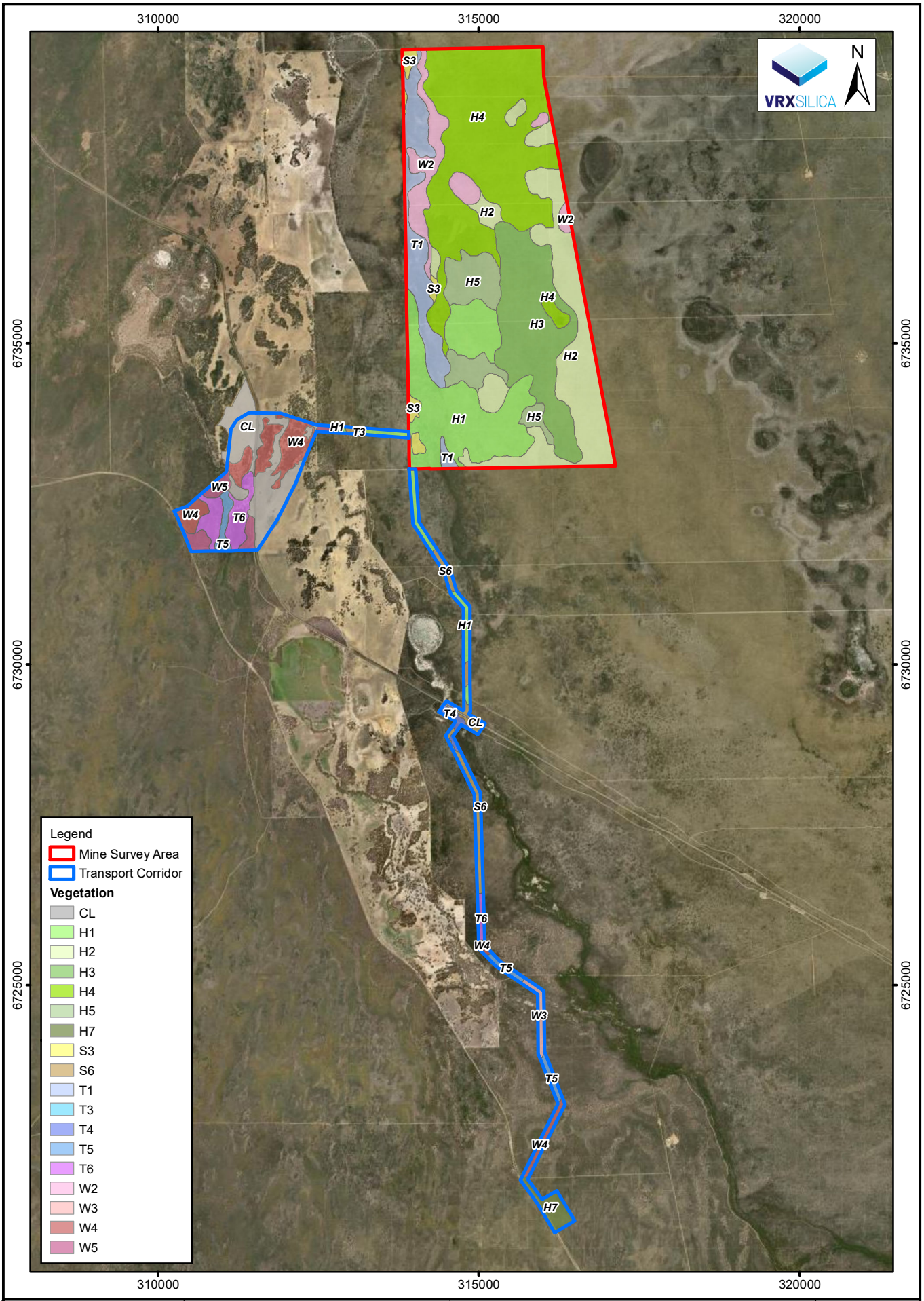


Figure 14b: Dendrogram of survey quadrats established within Arrowsmith North transport corridor



Imagery: ESRI, Maxar (July 2018)

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Scale: 1:80,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_12

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Arrowsmith North Project

Vegetation

Figure: **15**

5.2.3. Threatened and Priority Ecological Communities

No TECs, pursuant to Part 2, Division 2, and Subdivision 1 of the BC Act and as listed by the DBCA (2018b) or DAWE (2022e) were recorded within the Arrowsmith North survey area. No PECs as listed by the DBCA (2019) were recorded within the Arrowsmith survey area.

5.2.4. Vegetation Condition

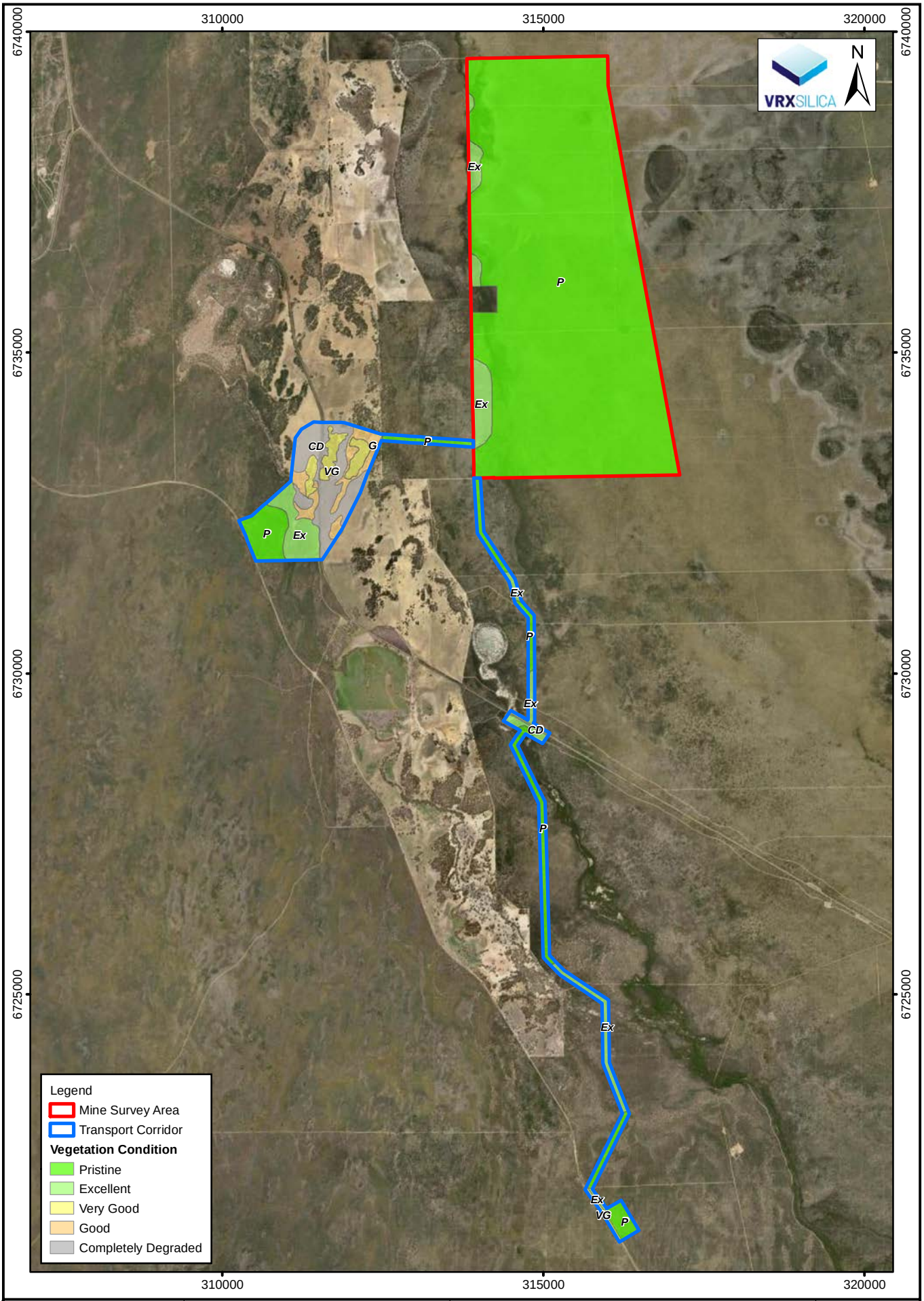
The vegetation within the Arrowsmith North mine survey area was in Pristine to Excellent condition (Table 12a), according to the Keighery scale (1994; Appendix A5), with the majority of the area considered Pristine. Some areas on the western part of the Arrowsmith North mine survey area, near tracks, were downgraded to Excellent. The condition of the vegetation within the Arrowsmith North transport corridor ranged from Pristine to Completely Degraded (Table 12b). The majority of the southern alignment area was considered Pristine to Excellent according to the Keighery (1994; Appendix A5) scale. Areas on the western alignment of the Arrowsmith North transport corridor survey area, varied in vegetation condition and contained large areas of Completely Degraded agricultural land. Figure 14 shows the vegetation condition of the Arrowsmith North mine survey area and Arrowsmith North transport corridor.

Table 12a: Condition rating of vegetation within Arrowsmith North survey area

Condition	Arrowsmith North survey area (ha)	Arrowsmith North survey area (%)
Pristine	1666.389	96.497
Excellent	60.491	3.503
Very Good	-	-
Good	-	-
Degraded	-	-
Completely Degraded	-	-
Total	**1726.880**	**100**

Table 12b: Condition rating of areas within Arrowsmith North transport corridor

Condition	Arrowsmith North transport corridor (ha)	Arrowsmith North transport corridor (%)
Pristine	159.502	35.584
Excellent	101.271	22.593
Very Good	40.435	9.021
Good	44.442	9.915
Degraded	-	-
Completely Degraded	102.588	22.887
Total	**448.238**	**100**



Imagery: ESRI, Maxar (July 2018)

0 1,280 m

Scale: 1:80,000
MGA94 (Zone 50)

CAD Ref: a2602_f51_13

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Arrowsmith North Project

Vegetation Condition

Figure: **16**

6. DISCUSSION

6.1. General

Mattiske Consulting was commissioned by VRX Silica Ltd to undertake detailed flora and vegetation surveys of the Arrowsmith North survey area. Over the period 2018 to 2021, a total of six separate surveys have been conducted. These surveys have amounted to a total of 138 field person days. The Arrowsmith North survey area occupies an area of approximately 2190 ha of mostly native vegetation, and is located between the towns of Eneabba and Dongara, Western Australia.

A total of 157 vegetation quadrats were established to sample all the apparent vegetation community types which were located within the Arrowsmith North survey area. These vegetation quadrats were established and monitored over multiple seasons. A total of 113 vegetation quadrats were established to sample all the apparent vegetation community types which were located within the Arrowsmith North mine area in 2018 and 2019. An additional 44 vegetation quadrats were established in 2020 within the Arrowsmith North transport corridor alignment options. In 2021, a total of 44 vegetation quadrats were remonitored, 33 from the original 133 in the Arrowsmith North mine area and 11 in the Arrowsmith North transport corridor to provide supplementary survey data.

Conservation significant flora have been extensively sampled in the Arrowsmith North survey area. Targeted threatened and priority flora surveys were carried out in 2020 and 2021, in addition to opportunistic records obtained in 2018 and 2019. The targeted threatened and priority surveys consisted of extensive (418 km), systematic meandering foot traverses over a 20 m grid covering an area of 420 ha.

The EPA (2016b) recommends a traverse width of 10 m in the South West, however states an effective search width will be determined by the distance over which a target species can be reasonable observed considering the general vegetation structure/density. It was determined that 20 m was an appropriate traverse width as the vegetation was primarily low Heath. There were no Thicket or Scrub communities present in the targeted threatened and priority surveys. As seen in Plate 1l, the dominant low heath vegetation is easy to observe target species even at a width of 20 m. This methodology of systematic meandering within a 20 m vegetation corridor width, results in a survey intensity of 50 % more than walking in a straight line. There were a number of small and cryptic priority species that were recorded during the targeted threatened and priority surveys which also indicates the survey intensity was adequate. *Comesperma rhadinocarpum* (P3) and *Stawellia dimorphantha* (P4) both grow to a height of only 35 cm and 20 cm respectively and were observed frequently, while *Leschenaultia juncea* (P3) a grass-like herb was also found. Survey design and intensity is considered adequate to observe *Paracaleana dixonii* (T) individuals, as its size (20 cm) is similar to other conservation significant species found during targeted threatened and priority surveys.

It is also noted that no Malleefowl or Malleefowl mounds were recorded during any fieldwork during the period 2018 to 2021. If Malleefowl mounds were present in the 2021 targeted survey area, the 20 m traverse width would have been adequate to identify their presence.

Plate 1l: Photograph showing open Heath community with 20 m measuring tape in background (Photo: S. Ruoss)

All surveys, except the May 2020 transport corridor survey, have been undertaken to align with the peak flower periods of conservation significant flora, including *Paracaleana dixonii* (T). While *Paracaleana dixonii* (T) is a late flowering orchid, the references to January flowering erroneously allude to what is now regarded as *Paracaleana brockmanii* (Hopper and Brown 2006). In an analysis of the 20 records held at the Western Australian herbarium, the vast majority of flowering *Paracaleana dixonii* (T) specimens were collected in October and November (95 %), while 5% were recorded from December. The vast majority of survey effort overlaps the peak flowering of *Paracaleana dixonii* (T).

Above average winter rainfalls were received prior to the October/November 2018 survey, October 2020 survey and September/October 2021 survey. In contrast rainfall preceding the October/November 2019 survey and September 2020 survey was below the long-term average rainfall for the area, based on Bureau of Meteorology data for Green Grove. It is apparent that the area is prone to large seasonal fluctuations in rainfall. Overall, based on a range of factors including the proportion of potential flora recorded (estimated at 83 %), proportion of annual taxa recorded (13.1 %), and vegetation quadrat distribution within the survey area, the survey has not been constrained by factors which would adversely affect the survey outcomes nor the conclusions derived from the data used to support vegetation analysis.

While many taxa were in flower during the various surveys, a proportion of plants encountered during the surveys were sterile and may impact the identification of some specimens to species level. None of the unidentified flora species are species of interest or likely to represent new species. Botanists that undertook the survey are experienced in the flora of the Geraldton Sandplains and identification of some taxa are possible even with sterile plants. A review of the potential constraints associated with these surveys determined that they were not subject to constraints that would adversely affect the outcome nor the conclusions formed from the results. Consequently, it is reasonable to conclude that the Arrowsmith North survey area have been adequately surveyed.

6.2. Flora

A total of 305 vascular plant taxa, representative of 136 genera and 52 families, were recorded within the Arrowsmith North survey area between 2018 and 2021 (Appendix E). The majority of the taxa recorded were widespread both locally and more broadly within the associated biogeographical subregion. The 305 taxa recorded during the survey, is lower than the 476 taxa recorded as being potentially present within the desktop assessment. The larger number of potential taxa can be attributed to the larger and more edaphically diverse tenement area which was searched. The area searched covers a greater number of landscape features and hence vegetation communities. The was a considerable increase in recorded taxa between quadrats established in 2018, 2019, 2020 to 2021 resurveyed quadrats. Species richness increasing by an average of 6.8 taxa per vegetation quadrat. This increase is likely due to more favourable seasonal conditions in Spring 2021 compared to previous years. While it is acknowledged that higher numbers of recorded taxa were noted during the 2021 survey, initial surveys were not unduly impacted by below average rainfall. Below average rainfall preceding the Spring 2019 and 2020 surveys, did not influence the formulation of vegetation communities or conservation significant flora recorded, and as such still meet EPA guidance and are suitable for use in any impact assessment.

Conservation significant taxa

Of the 13 threatened flora species and 44 priority taxa identified during the desktop assessment, eleven priority flora taxa were recorded in the Arrowsmith North survey area. The larger number of threatened and priority species identified as having the potential to occur within the survey area, can be attributed to the larger, and more edaphically diverse, tenement area which was searched. Many of these species are restricted to specific landscape features such as lateritic hills and outcrops that do not occur in the Arrowsmith North survey area.

An assessment of the likelihood of recording any of the listed threatened and priority taxa within the Arrowsmith survey area, was conducted based on factors including known soil type, topography and distribution. Based on this initial assessment, no threatened flora species, had a high likelihood of occurring in Arrowsmith North survey area. The likelihood of the presence of *Paracaleana dixonii* (T) has been ranked as low, even though there are records approximately 5 km to the east. This has been formulated in view of a number of factors, including, distribution of known records and preferred soil type.

The primary preferred soil type of *Paracaleana dixonii* (T) is described as grey sand over laterite (Brundrett 2014), while it has also been recorded less so on deep sandy soils (Brown 2022). WAH (1998-) has described the preferred soil as grey sand over granite, this is evidently erroneous, and may refer to *Paracaleana brockmanii*, in which *Paracaleana dixonii* (T) was grouped before 2006 (Hopper and Brown). In an analysis of the 20 *Paracaleana dixonii* (T) records held at the Western Australian herbarium, the majority of records indicate (60%) plants have been collected on grey sand over laterite or grey sand, while four records are from white sand. The dominant soil type in the Arrowsmith North survey area comprises deep white to pale yellow sand, no grey sand is present.

The closest *Paracaleana dixonii* (T) records (Figure 13h, Figure 17) are approximately 5 km to the east of the Arrowsmith North survey area near the Dampier to Pinjarra Natural Gas Pipeline. Mattiske has previously surveyed extensively between these records and the Arrowsmith North survey area for Beach Energy at the Beharra Springs Gas facility, no additional *Paracaleana dixonii* (T) records have been found in this area. There is a clear north-south line these records form, evidently due to landform and soil characteristics.

No threatened flora species pursuant to Part 2, Division 1, and Subdivision 2 of the BC Act and as listed by the DBCA (2018a), or pursuant to section 179 of the EPBC Act or listed by the DAWE (2020b), were recorded within the Arrowsmith North survey area.

Eleven priority flora species as listed by the WAH (1998-) were recorded within the Arrowsmith North survey area. These were: *Schoenus* sp. Eneabba (F. Obbens & C. Godden I154) (P2), *Beyeria gardneri* (P3), *Comesperma rhadinocarpum* (P3), *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3), *Leschenaultia juncea* (P3), *Hopkinsia anoectocolea* (P3), *Hypocalymma gardneri* (P3), *Persoonia rudis* (P3), *Banksia elegans* (P4), *Schoenus griffinianus* (P4) and *Stawellia dimorphantha* (P4). The following is a summary of the eleven priority flora species recorded within the Arrowsmith North survey area:

Schoenus sp. Eneabba (F. Obbens & C. Godden I154) (P2) was recorded in 30 locations within the Arrowsmith North mine survey area totalling 467 plants. The WAH houses 13 specimens of *Schoenus* sp. Eneabba (F. Obbens & C. Godden I154) (P2), distributed form Eneabba to Yardanogo Nature Reserve near Dongara. *Schoenus* sp. Eneabba (F.Obbens & C.Godden I154) (P2) occurs on grey, yellow or white sand (Plate 1a; WAH 1998-). This species has currently been recorded in two patches within different vegetation communities.

Beyeria gardneri (P3) was recorded from one population within the Arrowsmith North mine survey area. This population totalled 33 plants from eight locations. The WAH houses 37 specimens of *Beyeria gardneri* (P3), distributed from Cataby to Nerren Nerren. *Beyeria gardneri* (P3) often occurs on yellow sand (WAH 1998-). Observations from the Arrowsmith North survey area indicated plants were located on yellow/grey/white sand over shallow limestone on tops of rises.

Comesperma rhadinocarpum (P3) was recorded scattered in the southern portion of the Arrowsmith North mine survey area from 47 locations totalling 59 plants. The 17 records held at the WAH indicates *Comesperma rhadinocarpum* (P3) ranges from Perth to Kalbarri. *Comesperma rhadinocarpum* (P3) occurs on a wide range of habitats from sandy loams, sandy clay and sand, sometimes over laterite or limestone. This species appears to be associated mainly with the H1 community and preferred a lower position in the landscape.

Hemiandra sp. Eneabba (H. Demarz 3687) (P3) was recorded scattered throughout the Arrowsmith North mine survey area from 161 locations totalling 231 plants. The 35 records held at the WAH indicates *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3) ranges from Eneabba to Yardarino with a preference for sandplain habitat, often in disturbed areas. This species was found within the Arrowsmith North mine survey area growing in sandplains habitat from various vegetation communities.

Hopkinsia anoectocolea (P3) was recorded from the Arrowsmith North transport corridor, specifically in wet depressions adjacent to the Brand Highway. A total of 657 plants from 85 locations of *Hopkinsia anoectocolea* (P3) were recorded. The 47 records held at WAH indicate *Hopkinsia anoectocolea* (P3) is located in two disjunct populations, Cataby to Arrowsmith and Meckering to Tammin.

Hypocalymma gardneri (P3) was recorded scattered throughout the Arrowsmith North mine survey area from 152 locations totalling 274 plants. The 22 records held at the WAH indicates *Hypocalymma gardneri* (P3) ranges from Dandaragan to Dongara. *Hypocalymma gardneri* (P3) occurs on a wide range of habitat from grey to brown sand, often over laterite. This species is not restricted to a unique set of ecological conditions and is present in various vegetation communities within the Arrowsmith North mine survey area.

Leschenaultia juncea (P3) was recorded opportunistically within the Arrowsmith North mine survey area from a single locality totalling one plant. The 22 records held at the WAH indicates *Leschenaultia juncea* (P3) ranges from Hill River to Mingenew. *Leschenaultia juncea* (P3) occurs on a wide range of habitat including white, grey or yellow sand or sandy gravel. This species has currently only been recorded within the H6 vegetation community.

Persoonia rudis (P3) was recorded opportunistically in the north-western part of the Arrowsmith North mine survey area from a single locality totalling one plant. The 41 records held at the WAH indicates *Persoonia rudis* (P3) is a wide-ranging species which occurs from the Bullsbrook Nature Reserve to Three

Springs. *Persoonia rudis* (P3) occurs on a wide range of habitats from white, grey or yellow sand often over laterite. This species has currently only been recorded within the W2 vegetation community.

Banksia elegans (P4) was recorded in large numbers throughout the Arrowsmith North survey area from 741 locations totalling 3395 plants. The 44 records held at the WAH indicates *Banksia elegans* (P4) ranges from Moore River to Geraldton. *Banksia elegans* (P4) occurs on white or red sands, on sandplains and low dunes. This species is not restricted to a unique set of ecological conditions and is present in various vegetation communities within the survey area.

Schoenus griffinianus (P4) was recorded scattered throughout the Arrowsmith North mine survey area from five locations totalling nine plants. The 40 records held at the WAH indicates *Schoenus griffinianus* (P4) is a wide-ranging species which occurs from Perth to Geraldton with a preference for sandplain habitat. This species is not restricted to a unique set of ecological conditions and is present in various vegetation communities within the survey area.

Stawellia dimorphantha (P4) was recorded scattered in the south-western part of the Arrowsmith North survey area from 248 locations totalling 398 plants. The 23 records held at the WAH indicates *Stawellia dimorphantha* (P4) ranges from Eneabba to Allanooka. *Stawellia dimorphantha* (P4) occurs on a wide range of habitat from white, grey and yellow sand. This species was mostly recorded within the T1 community, although it does extend to other areas in patches. *Stawellia dimorphantha* (P4) was often found growing sympatrically with *Comesperma rhadinocarpum* (P3) and prefers a lower position in the landscape also.

Regional Distribution of Priority Flora

The eleven recorded priority species were added to regional distribution maps to gain an understanding of their distribution in a regional context. The regional maps illustrate that the majority of species (nine out of 11 priority species; *Schoenus* sp. Eneabba (F. Obbens & C. Godden I154) (P2), *Beyeria gardneri* (P3), *Hemiandra* sp. Eneabba (H. Demarz 3687) (P3), *Hopkinsia anoectocolea* (P3), *Hypocalymma gardneri* (P3), *Persoonia rudis* (P3), *Banksia elegans* (P4), *Schoenus griffinianus* (P4) and *Stawellia dimorphantha* (P4)) recorded in the Arrowsmith North survey area well represented in distribution in the surrounding region. There are widespread records of these species in the surrounding area.

Two priority species, *Comesperma rhadinocarpum* (P3) and *Leschenaultia juncea* (P3) have a much more restricted or varied distribution in the regional area. While a sizeable population of *Comesperma rhadinocarpum* (P3) was found to occur within the Arrowsmith North survey area, only two other populations are found within 30 km of the survey area. These populations are located east of the Parmelia gas pipeline, along the Mt Adams Road. One record (PERTH 09334424) consists of at least 104 plants growing in grey sand and the other record (PERTH 08810818) consisting of at least three plants. *Comesperma rhadinocarpum* (P3) has a very wide-ranging distribution with adjunct populations at Koolyanobbing and Pinjin Homestead in the Great Victoria Desert. *Leschenaultia juncea* (P3) is also distributed without large populations in the surrounding region. The nearest record to the Arrowsmith North survey area is 50 km south-east at Kadathinni. Core populations of *Leschenaultia juncea* (P3) are located between Watheroo to Coorow. While not a range extension, the record in the Arrowsmith survey area is the most north-west record. Of note for both species, is that they are small and inconspicuous. Even though they are both perennial species, without the plants being in full flower these taxa may be difficult to distinguish and could easily be overlooked. In view of their small size, it is expected that both species may be dependent on seed and also be shallow rooted.

Maps was also prepared for *Paracaleana dixonii* (T) to show its regional distribution, distribution in native vegetation extent and soil landscape mapping compared to the current Arrowsmith North survey area (Figures 13h, 17 and 18). The regional distribution map for *Paracaleana dixonii* (T) shows the nearest records to be approximately 5 km to the east of the Arrowsmith North survey area near the Parmelia gas pipeline (Figure 13h). Distribution in native vegetation shows the majority of observations 10 km to 20

km East of the Arrowsmith North area, closer records are more infrequent (Figure 17). Soil landscape mapping shows no *Paracaleana dixonii* (T) records in the Beharra 2 subsystem (221Be_3, level to gently undulating sandplain; yellow deep sand), with most records recorded in the Mount Adams 3 subsystem (224Ma_3, undulating rises to low hills with common minor lateritic outcrops; sandy gravels and pale and yellow deep sands).

Taxa representing range extensions

No species recorded at the Arrowsmith North survey area represented extensions to their current known distributions. In this report, 100 km has been used as a basis to determine an extension to the currently known range for a species.

6.3. Vegetation

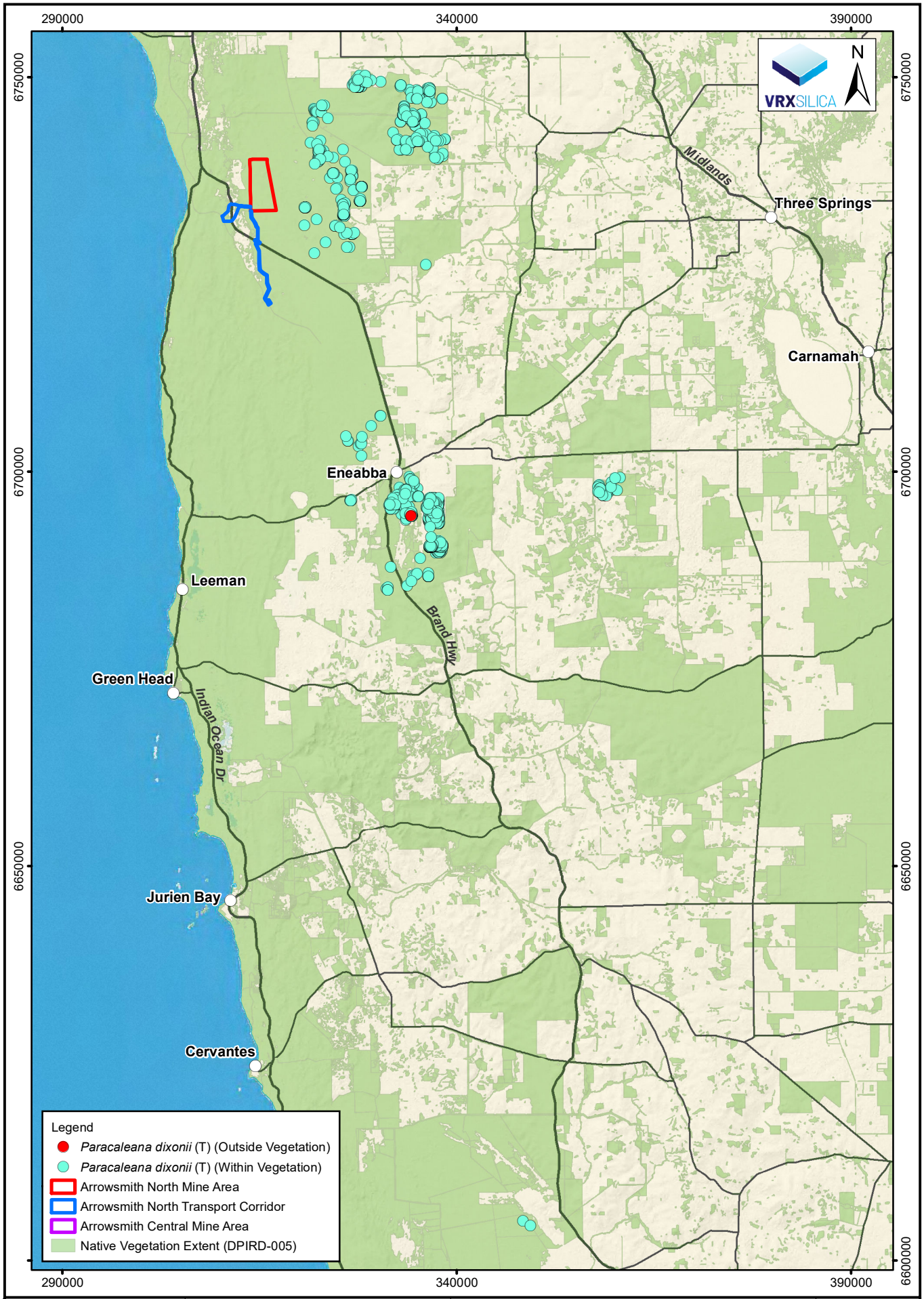
No TECs, pursuant to Part 2, Division 2, and Subdivision 1 of the BC Act and as listed by the DBCA (2018b) or DAWE (2020d) were recorded within the Arrowsmith North survey area. No PECs as listed by the DBCA (2019b) were recorded within the Arrowsmith North survey area.

The vegetation of the Arrowsmith North mine survey area was primarily in Pristine condition with little signs of disturbance caused by human activities. Some areas were downgraded to Excellent condition in the western part of the Arrowsmith North mine survey area, near tracks, where occasional non-aggressive weeds were observed. Condition of the vegetation within the Arrowsmith North transport corridor ranged from Pristine to Completely Degraded. The majority (58.2 %) of the Arrowsmith North transport corridor was considered to be in Pristine or Excellent condition due to little disturbance, tracks and weeds. Vegetation in areas close to the Brand Highway were impacted by low level disturbance and the presence of non-aggressive weed species. A large portion (22.9 %) of the Arrowsmith North transport corridor was located in agricultural land and considered in Completely Degraded condition.

Vegetation mapping of the Arrowsmith North mine survey area, based upon the quadrat-based species data, resulted in eight vegetation communities comprising one Low Open Woodland, one Thicket to Scrub, one Scrub and five Heath communities. The most dominant vegetation type was the H4 vegetation community which was present throughout the northern and central portion of the survey area. This community accounted for 29.70 % of the total area surveyed. The second most commonly represented vegetation was the H2 vegetation community which was present in the eastern, southern and central portion of the survey area and accounting for 18.03 % of the total area surveyed. The H1 community, primarily recorded in the south western portion of the survey area accounted for 16.57 % of the total area surveyed. The remaining five communities account for 35.69 % of the survey area. The most restricted vegetation community defined was the S3 community, accounting for 1.36 % of the survey area.

Vegetation mapping of the Arrowsmith North transport corridor, based upon the quadrat-based species data, resulted in ten vegetation communities comprising two Heathland, one Scrub, four Thicket and three Woodland communities. The most dominant vegetation type was the W4 vegetation community which was present throughout the western portion of the Arrowsmith North transport corridor survey area. This community accounted for 21.91 % of the total area surveyed. The second most commonly represented vegetation was the T6 vegetation community which was present in the western and central southern portion of the survey area and accounting for 12.36 % of the total area surveyed. The remaining eight communities account for 65.73 % of the survey area. The most restricted vegetation community defined was the T3 community, accounting for 0.24 % of the survey area.

Overall, the vegetation communities mapped and species recorded in the Arrowsmith North survey area corridor were consistent with the historical mapping of Beard (1976, 1990).



0 12 km

Scale: 1:650,000
MGA94 (Zone 50)

CAD Ref: a2602_f67_01

Date: December 2022 | Rev: A | A4

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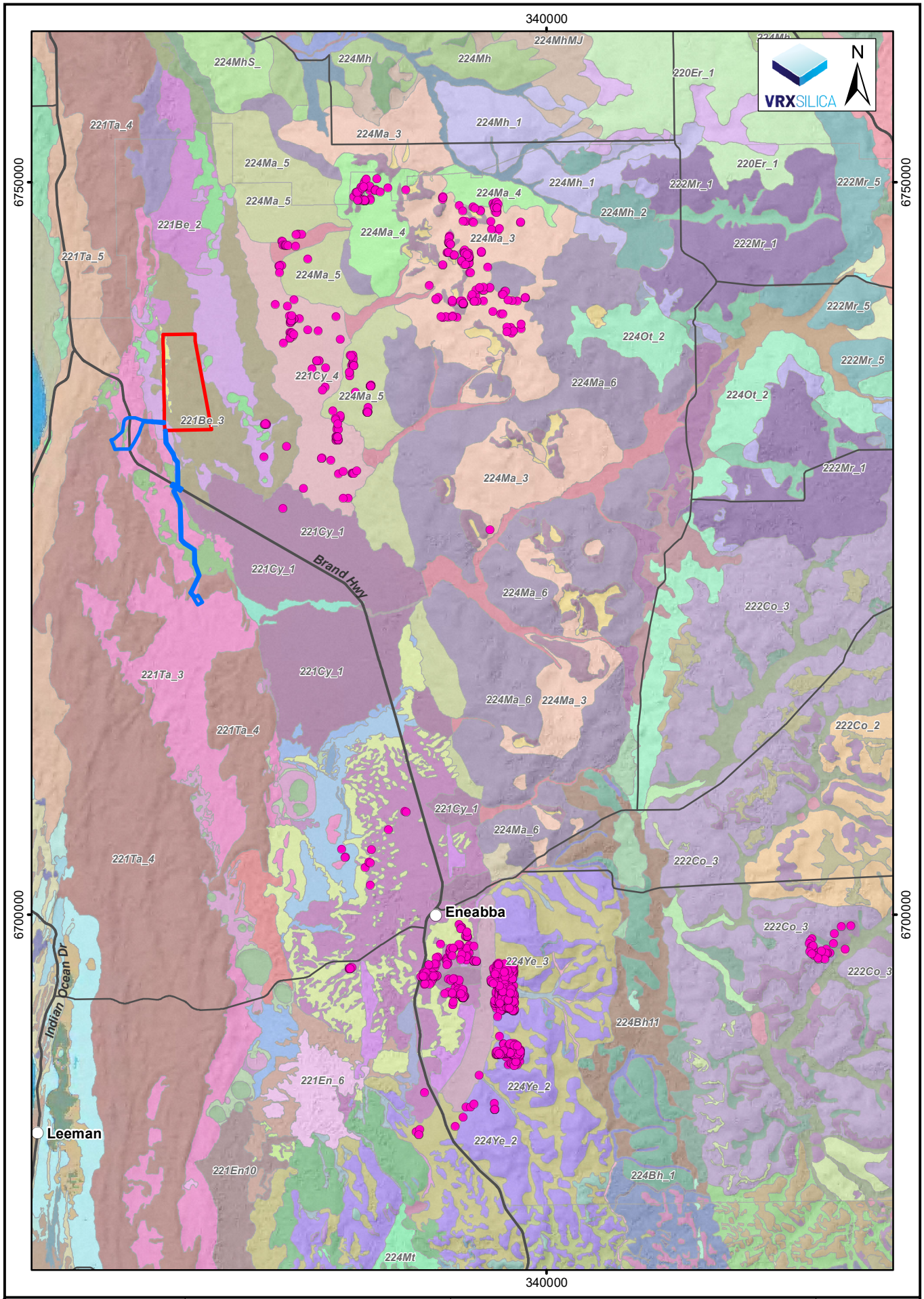
Paracaleana dixonii (T)

Figure: **17**



0 6 km

Scale: 1:350,000
MGA94 (Zone 50)

CAD Ref: a2602_f67_02

Date: December 2022 | Rev: A | A4

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Paracaleana dixonii (T)
Soil Landscape Mapping

Figure:
18

7. CONCLUSION

The Arrowsmith North survey area lies in a relatively floristically un-surveyed area between Eneabba and Dongara, with a high level of diversity. The vegetation in which this survey was undertaken was mostly consisted of native vegetation in a near-pristine condition that provides habitat for numerous conservation significant flora species. The desktop survey identified 13 threatened flora and 44 priority flora that have the potential to occur within the Arrowsmith North survey area. Of the 13 threatened flora species, none had a high likelihood, three had a moderate likelihood and ten a low likelihood of occurring in the Arrowsmith North survey area corridor based on preferred soil types.

Overall, the vegetation communities mapped and species recorded in the Arrowsmith North survey area were consistent with the historical mapping of Beard (1976, 1990). The majority of the survey area is situated on sand plains supporting mixed open to closed heath communities consisting of *Banksia attenuata, Banksia hookeriana*, *Melaleuca leuropoma* and *Conospermum triplinervium*, over mixed Myrtaceae, Restionaceae and Haemodoraceae species. The vegetation communities recorded within the survey area are not locally or regionally unique and are well represented in the wider area.

As a result of the extensive foot traverses, no threatened flora species pursuant to subsection (2) of section 23F of the WC Act and as listed by the DBCA (2018a), or pursuant to section 179 of the EPBC Act and listed by the DAWE (2022c), were recorded within the Arrowsmith North survey area. Orchids were found during surveys, however, no conservation listed species such as *Paracaleana dixonii* (T) and *Thelymitra stellata* (T) have been recorded. Orchids have the capacity to persist underground as tubers without emerging for one or more years (Brundrett 2014). This can make surveys for rare orchids difficult as the flowering plants are only a fraction of the plants remaining dormant underground (Brundrett 2014). Other surveying challenges include response (or lack of) to environmental conditions, and a small opportunity for capturing the species in flower – usually being a few weeks. Also, most orchids do not flower every year and flowering plants will likely be in different locations each year (Commonwealth of Australia 2013). The vegetation of the Arrowsmith North targeted survey area does not contain suitable habitat for *Thelymitra stellata* (T), which normally prefers lateritic slopes and ridges (WAH 1998-, Woodman Environmental Consulting 2013). Habitat for *Paracaleana dixonii* (T), also is unlikely to occur in the Arrowsmith North survey area, with no plants previously been recorded in the immediate vicinity over any past surveys (Mattiske 2019, 2020a, 2021a, 2021b). The nearest record of *Paracaleana dixonii* (T) occurs approximately 5 km to the east, near the Parmelia gas pipeline (WAH 1998-) on grey sand over laterite. The primary preferred soil type of *Paracaleana dixonii* (T) did not occur in the Arrowsmith North survey area.

Eleven priority flora species have been recorded within the Arrowsmith North survey area from 2018 to 2021. Locational details have been supplied in the sections above and should assist in the ongoing management of these species. Intensive targeted studies have been undertaken by experienced botanists and detailed regional maps have been produced to place these in a regional context.

8. ACKNOWLEDGEMENTS

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9. PERSONNEL

The following Mattiske Consulting Pty Ltd personnel were involved in this project:

NAME	POSITION	PROJECT INVOLVEMENT	FLORA COLLECTION PERMITS
Dr EM Mattiske	Managing Director & Principal Ecologist	Planning, management, report editing	N/A
Dr S Ruoss	Project Leader, Senior Botanist	Planning, fieldwork, plant identification, data analysis, reporting	FB62000031-3; Permit to Take Declared Rare Flora TFL17-1819
Ms L Cockram	Experienced Botanist	Fieldwork, reporting	FB62000266-2
Mr Z Sims	Experienced Botanist	Fieldwork	FB62000025-3
Mr A Pereira	Botanist	Fieldwork	FB62000145-3
Ms L McDermott	Botanist	Fieldwork	FB26000367

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APPENDIX A1: THREATENED AND PRIORITY FLORA DEFINITIONS

Under section 179 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), **threatened flora** are categorised as extinct, extinct in the wild, critically endangered, endangered, vulnerable and conservation dependent (Table A1.1).

Table A1.1 Federal definition of Threatened Flora Species

Note: Adapted from section 179 of the EPBC Act.

CODE	CATEGORY	DEFINITION
Ex	**Extinct**	Species which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
ExW	**Extinct in the Wild**	Species which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	**Critically Endangered**	Species which at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	**Endangered**	Species which is not critically endangered and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	**Vulnerable**	Species which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent**	Species which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

The *Biodiversity Conservation Act 2016* (BC Act) provides for (amongst other things) the protection of flora that is facing an extremely high risk of extinction in the wild in the immediate, near or medium-term future in Western Australia under Part 10 (Division 2).

Threatened flora are listed in the *Wildlife Conservation (Rare Flora) Notice 2018* (under Part 2, Division 1, Subdivision 2 of the BC Act; Department of Biodiversity, Conservation and Attractions 2018a) and are categorised under Schedules 1-3**.** A flora species is defined as **threatened** if it is facing an extremely high risk of extinction in the wild in the immediate, near or medium-term future, pursuant to sections 20, 21 and 22 of the BC Act (Department of Biodiversity, Conservation and Attractions 2019). Threatened species are categorised as critically endangered, endangered, and vulnerable (Table A1.2).

Table A1.2 State definition of Threatened Flora Species

Note: Adapted from Department of Biodiversity, Conservation and Attractions (2019a).

CODE	CATEGORY	DEFINITION
CR	**Critically endangered**	Species considered to be facing an extremely high risk of becoming extinct in the wild (listed under Schedule 1 of the *Wildlife Conservation (Rare Flora) Notice 2018*).
EN	**Endangered**	Species considered to be facing a very high risk of becoming extinct in the wild (listed under Schedule 2 of the *Wildlife Conservation (Rare Flora) Notice 2018*).
VU	**Vulnerable**	Species considered to be facing a high risk of becoming extinct in the wild (listed under Schedule 3 of the *Wildlife Conservation (Rare Flora) Notice 2018*).

Priority flora species are defined as "possibly threatened species that do not meet the survey criteria, or are otherwise data deficient" or species that are "adequately known, are rare but not threatened, meet criteria for near threatened or have recently been removed from the threatened species list" for other than taxonomic reasons" (Department of Biodiversity, Conservation and Attractions 2019). Priority species are not afforded additional protection under state or federal legislation, however are considered significant under the Environmental Protection Authority's *Environmental Factor Guideline: Flora and Vegetation* (Environmental Protection Authority 2016a). The Department of Biodiversity, Conservation and Attractions categorises priority flora into four categories: Priority 1; Priority 2, Priority 3 and Priority 4 (Table A1.3).

Table A1.3: State definition of Priority Flora Species

Note: Adapted from Department of Biodiversity, Conservation and Attractions (2019).

CODE	CATEGORY	DEFINITION
P1	**Priority 1:** Poorly-known species	Known from one or a few locations (< 5) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation; or are otherwise under threat of habitat destruction or degradation. In urgent need of further survey.
P2	**Priority 2:** Poorly-known species	Known from one or a few locations (< 5). Some occurrences are on lands managed primarily for nature conservation. In urgent need of further survey.
P3	**Priority 3:** Poorly-known species	Known from several locations and the species does not appear to be under imminent threat; or from few but widespread locations with either a large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. In need of further survey.
P4	**Priority 4:** Rare, Near Threatened, and other species in need of monitoring	**a) Rare -** Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These species are usually represented on conservation lands. **b) Near Threatened -** Species that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for Vulnerable. **c) Other -** Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

APPENDIX A2: THREATENED AND PRIORITY ECOLOGICAL COMMUNITY DEFINITIONS

Under section 181 of the EPBC Act, **threatened ecological communities** are categorised as critically endangered, endangered and vulnerable (Table A2.1).

Table A2.1 Federal definition of Threatened Ecological Communities

Note: Adapted from section 181 and section 182 of the EPBC Act.

CATEGORY	DEFINITION
Critically Endangered	If, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future.
Endangered	If, at that time, it is not critically endangered and is facing a very high risk of extinction in the wild in the near future.
Vulnerable	If, at that time, it is not critically endangered or endangered, and is facing a high risk of extinction in the wild in the medium-term future.

The *Biodiversity Conservation Act 2016* (BC Act) provides for (amongst other things) some protection of ecological communities at risk of collapse in Western Australia under Part 3 (Division 2).

Threatened ecological communities (TECs) are listed in the *List of Threatened Ecological Communities endorsed by the Western Australian Minister for Environment (28 June 2018)* (under Part 2, Division 2, Subdivision 1 of the BC Act; Department of Biodiversity, Conservation and Attractions 2018b). An ecological community is defined as **threatened** if it is facing an extremely high risk of collapse in the immediate, near or medium-term future, pursuant to sections 28, 29 and 30 of the BC Act. Threatened ecological communities are categorised as critically endangered, endangered, and vulnerable (Table A2.2). Some of these TECs are also endorsed by the Federal Minister as threatened, and some of these are listed under the EPBC Act and therefore afforded legislative protection at the Commonwealth level.

Table A2.2 State definition of Threatened Ecological Communities

Note: Adapted from Department of Environment and Conservation (2013).

CODE	CATEGORY	DEFINITION
CR	**Critically Endangered**	An ecological community will be listed as CR when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future, meeting **any one or more of** the following criteria: **1.** The estimated geographic range and distribution has been reduced by at least 90% and is either continuing to decline with total destruction imminent, or is unlikely to be substantially rehabilitated in the immediate future due to modification; **2.** The current distribution is limited i.e. highly restricted, having very few small or isolated occurrences, or covering a small area; or **3.** The ecological community is highly modified with potential of being rehabilitated in the immediate future.
EN	**Endangered**	An ecological community will be listed as EN when it has been adequately surveyed and is not CR, but is facing a very high risk of total destruction in the near future. The ecological community must meet **any one or more of** the following criteria: **1.** The estimated geographic range and distribution has been reduced by at least 70% and is either continuing to decline with total destruction imminent in the short term future, or is unlikely to be substantially rehabilitated in the short term future due to modification; **2.** The current distribution is limited i.e. highly restricted, having very few small or isolated occurrences, or covering a small area; or **3.** The ecological community is highly modified with potential of being rehabilitated in the short term future.
VU	**Vulnerable**	An ecological community will be listed as VU when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing high risk of total destruction in the medium to long term future. The ecological community must meet **any one or more of** the following criteria: **1.** The ecological community exists largely as modified occurrences that are likely to be able to be substantially restored or rehabilitated; **2.** The ecological community may already be modified and would be vulnerable to threatening process, and restricted in range or distribution; or **3.** The ecological community may be widespread but has potential to move to a higher threat category due to existing or impending threatening processes.

Priority ecological communities (PECs) are defined as possible threatened ecological communities that do not meet the stringent survey criteria for the assessment of threatened ecological communities, and are listed by the Department of Biodiversity, Conservation and Attractions (2021) in the *Priority Ecological Communities for Western Australia – Version 31 (20 March 2021)*. Similarly to priority flora, PECs are not afforded legislative protection, however are considered significant under the Environmental Protection Authority's (2016a) *Environmental Factor Guideline: Flora and Vegetation*. The Department of Biodiversity, Conservation and Attractions categorises priority ecological communities into five categories: Priority 1; Priority 2, Priority 3, Priority 4 and Priority 5 (Table A2.3).

Table A2.3 State definition of Priority Ecological Communities

Note: Adapted from Department of Environment and Conservation (2013).

CODE	CATEGORY	DEFINITION
P1	**Priority 1** (Poorly known ecological communities)	Ecological communities that are known from very few, restricted occurrences (generally ≤ 5 occurrences or a total area of ≤ 100 ha). Most of these occurrences are not actively managed for conservation (e.g. located within agricultural or pastoral lands, urban areas, or active mineral leases) and for which immediate threats exist.
P2	**Priority 2** (Poorly known ecological communities)	Communities that are known from few small occurrences (generally ≤ 10 occurrences or a total area of ≤ 200 ha). At least some occurrences are not believed to be under immediate threat of destruction or degradation.
P3	**Priority 3** (Poorly known ecological communities)	**1.** Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation; **2.** Communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat; or **3.** Communities made up of large, and/or widespread occurrences, that may or not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing and inappropriate fire regimes.
P4	**Priority 4** (Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring)	**1.** Rare – Communities known from few occurrences that are considered to have been adequately surveyed, sufficient knowledge is available, and are considered not to be currently threatened. **2.** Near Threatened – Communities considered to have been adequately surveyed and do not qualify for Conservation Dependent, but are close to qualifying for Vulnerable. **3.** Communities that have been removed from the list of threatened communities during the past five years.
P5	**Priority 5** (Conservation Dependent ecological communities)	Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

APPENDIX A3: CATEGORIES AND CONTROL MEASURES OF DECLARED PEST (PLANT) ORGANISMS IN WESTERN AUSTRALIA

Section 22 of Western Australia's *Biosecurity and Agriculture Management Act 2007* (BAM Act) makes provision for a plant taxon to be listed as a declared pest organism in respect to parts of, or the entire State. According to the BAM Act, a declared pest is defined as a prohibited organism (section 12), or an organism for which a declaration under section 22 (2) of the Act is in force.

Under the *Biosecurity and Agriculture Management Regulations 2013* (WA), declared pest plants are placed in one of three control categories, C1 (exclusion), C2 (eradication) or C3 (management), which determines the measures of control which apply to the declared pest (Table A4.1). The current listing of declared pest organisms and their control category is through the Western Australian Organism List (Department of Primary Industries and Regional Development 2021).

Table A3.1 Categories and Control Measures of Declared Pest (Plant) Organisms

Note: Adapted from *Biosecurity and Agriculture Management Regulations 2013*.

CONTROL CATEGORY	CONTROL MEASURES
C1 (Exclusion) '(a) Category 1 (C1) — Exclusion: if in the opinion of the Minister introduction of the declared pest into an area or part of an area for which it is declared should be prevented.' Pests will be assigned to this category if they are not established in Western Australia and control measures are to be taken, including border checks, in order to prevent them entering and establishing in the State.	In relation to a category 1 declared pest, the owner or occupier of land in an area for which an organism is a declared pest or a person who is conducting an activity on the land must take such of the control measures specified in subregulation (1) as are reasonable and necessary to destroy, prevent or eradicate the declared pest.
C2 (Eradication) '(b) Category 2 (C2) — Eradication: if in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is feasible.' Pests will be assigned to this category if they are present in Western Australia in low enough numbers or in sufficiently limited areas that their eradication is still a possibility.	In relation to a category 2 declared pest, the owner or occupier of land in an area for which an organism is a declared pest or a person who is conducting an activity on the land must take such of the control measures specified in subregulation (1) as are reasonable and necessary to destroy, prevent or eradicate the declared pest.
C3 (Management) '(c) Category 3 (C3) — Management: if in the opinion of the Minister eradication of the declared pest from an area or part of an area for which it is declared is not feasible but that it is necessary to: **(i)** alleviate the harmful impact of the declared pest in the area; or **(ii)** reduce the number or distribution of the declared pest in the area; or **(iii)** prevent or contain the spread of the declared pest in the area.' Pests will be assigned to this category if they are established in Western Australia but it is feasible, or desirable, to manage them in order to limit their damage. Control measures can prevent a C3 pest from increasing in population size or density or moving from an area in which it is established into an area which currently is free of that pest.	In relation to a category 3 declared pest, the owner or occupier of land in an area for which an organism is a declared pest or a person who is conducting an activity on the land must take such of the control measures specified in subregulation (1) as are reasonable and necessary to: **(a)** alleviate the harmful impact of the declared pest in the area for which it is declared; or **(b)** reduce the number or distribution of the declared pest in the area for which it is declared; or **(c)** prevent or contain the spread of the declared pest in the area for which it is declared.

APPENDIX A4: OTHER DEFINITIONS

Environmentally sensitive areas

Environmentally sensitive areas are declared by the State Minister under section 51B of the *Environmental Protection Act 1986* (EP Act) and are listed in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*, gazetted 8 April 2005. Specific environmentally sensitive areas relevant to this report include: a defined wetland and the area within 50 metres of the wetland; the area covered by vegetation within 50 metres of rare flora; the area covered by a threatened ecological community; a Bush Forever site – further areas and information are described in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*.

Conservation significant flora

Under the *Environmental Factor Guideline: Flora and Vegetation* (Environmental Protection Authority 2016a), flora may be considered significant for a range of reasons, including, but not limited to the following:

- being identified as threatened or priority species;
- locally endemic or associated with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems);
- new species or anomalous features that indicate a potential new species;
- representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range);
- unusual species, including restricted subspecies, varieties or naturally occurring hybrids; or
- relictual status, being representative of taxonomic groups that no longer occur widely in the broader landscape.

Conservation significant vegetation

Under the *Environmental Factor Guideline: Flora and Vegetation* (Environmental Protection Authority 2016a), vegetation may be considered significant for a range of reasons, including, but not limited to the following:

- being identified as threatened or priority ecological communities;
- restricted distribution;
- degree of historical impact from threatening processes;
- a role as a refuge; or
- providing an important function required to maintain ecological integrity of a significant ecosystem.

APPENDIX A5: DEFINITION OF VEGETATION CONDITION SCALE FOR THE SOUTH WEST AND INTERZONE BOTANICAL PROVINCES

Vegetation condition ratings relate to vegetation structure, level of disturbance at each structural layer and the ability of the vegetation unit to regenerate (Table A5.1). Vegetation condition provides complementary information for assessing the significance of potential impacts.

Table A5.1 Definition of Vegetation Condition Categories

Note: Adapted from Keighery (1994).

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

APPENDIX A6: NVIS STRUCTURAL FORMATION TERMINOLOGY

Note: Adapted from ESCAVI (2003).

COVER CHARACTERISTICS							
Foliage cover*	70-100	30-70	10-30	<10	≈0	0-5	unknown
Crown cover**	>80	50-80	20-50	0.25-20	<0.25	0-5	unknown
% cover***	>80	50-80	20-50	0.25-20	<0.25	0-5	unknown
Cover code	d	c	i	r	bi	bc	unknown

GROWTH FORM	HEIGHT RANGES (m)	STRUCTURAL FORMATION CLASSES						
tree, palm	<10, 10-30, >30	closed forest	open forest	woodland	open woodland	isolated trees	isolated clumps of trees	trees
tree mallee	<3, <10, 10-30	closed mallee forest	open mallee forest	mallee woodland	open mallee woodland	isolated mallee trees	isolated clumps of mallee trees	mallee trees
shrub, cycad, grass-tree, tree-fern	<1, 1-2, >2	closed shrubland	shrubland	open shrubland	sparse shrubland	isolated shrubs	isolated clumps of shrubs	shrubs
mallee shrub	<3, <10, 10-30	closed mallee shrubland	mallee shrubland	open mallee shrubland	sparse mallee shrubland	isolated mallee shrubs	isolated clumps of mallee shrubs	mallee shrubs
heath shrub	<1, 1-2, >2	closed heathland	heathland	open heathland	sparse heathland	isolated heath shrubs	isolated clumps of heath shrubs	heath shrubs
chenopod shrub	<1, 1-2, >2	closed chenopod shrubland	chenopod shrubland	open chenopod shrubland	sparse chenopod shrubland	isolated chenopod shrubs	isolated clumps of chenopod shrubs	chenopod shrubs
samphire shrub	<0.5, >0.5	closed samphire shrubland	samphire shrubland	open samphire shrubland	spare samphire shrubland	isolated samphire shrubs	isolated clumps of samphire shrubs	samphire shrubs
hummock grass	<2, >2	closed hummock grassland	hummock grassland	open hummock grassland	sparse hummock grassland	isolated hummock grasses	isolated clumps of hummock grasses	hummock grasses
tussock grass	<0.5, >0.5	closed tussock grassland	tussock grassland	open tussock grassland	sparse tussock grassland	isolated tussock grassland	isolated clumps of tussock grasses	tussock grasses
other grass	<0.5, >0.5	closed grassland	grassland	open grassland	sparse grassland	isolated grasses	isolated clumps of grasses	other grasses
sedge	<0.5, >0.5	closed sedgeland	sedgeland	open sedgeland	sparse sedgeland	isolated sedges	isolated clumps of sedges	sedges
rush	<0.5, >0.5	closed rushland	rushland	open rushland	sparse rushland	isolated rushes	isolated clumps of rushes	rushes
forb	<0.5, >0.5	closed forbland	forbland	open forbland	sparse forbland	isolated forbs	isolated clumps of forbs	forbs
fern	<1, 1-2, >2	closed fernland	fernland	open fernland	sparse fernland	isolated ferns	isolated clumps of ferns	ferns
bryophyte	<0.5	closed bryophyteland	bryophyteland	open bryophyteland	sparse bryophyteland	isolated bryophytes	isolated clumps of bryophytes	bryophytes
lichen	<0.5	closed lichenland	lichenland	open lichenland	sparse lichenland	isolated lichens	isolated clumps of lichens	lichens
vine	<10, 10-30, >30	closed vineland	vineland	open vineland	sparse vineland	isolated vines	isolated clumps of vines	vines
aquatic	0-0.5, <1	closed aquatic bed	aquatic bed	open aquatic bed	sparse aquatics	isolated aquatics	isolated clumps of aquatics	aquatics
seagrass	0-0.5, <1	closed seagrass bed	seagrass bed	open seagrass bed	sparse seagrasses	isolated seagrasses	isolated clumps of seagrasses	seagrasses

APPENDIX B: VASCULAR PLANT SPECIES WITH THE POTENTIAL TO OCCUR WITHIN THE ARROWSMITH NORTH SURVEY AREA (ARS) AND TRANSPORT CORRIDOR (SOUTH) and (WEST)

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a). SCC= State conservation code; FCC = Federal conservation code; CE = Critically Endangered; E = Endangered; [1] (DAWE 2020c); [2] (DBCA 2007-). 10 km buffer is applied to search area, considerably larger than Arrowsmith North survey area.

Family		Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Aizoaceae		*Carpobrotus modestus*				x	x		
Amaranthaceae		*Ptilotus manglesii*				x	x		
		Ptilotus stirlingii subsp. *stirlingii*				x			
Anarthriaceae		*Hopkinsia anoectocolea*	P3			x	x	x	
		Lyginia imberbis				x			
Apiaceae		*Eryngium pinnatifidum*				x	x	x	
		Eryngium pinnatifidum subsp. *pinnatifidum* ms				x		x	
		Platysace xerophila				x	x	x	
Araliaceae		*Trachymene coerulea* subsp. *leucopetala*				x		x	
		Trachymene pilosa				x			
Asparagaceae	*	*Asparagus asparagoides*			x		x	x	
		Laxmannia omnifertilis				x	x	x	
		Laxmannia sessiliflora subsp. *drummondii*				x			
		Thysanotus arenarius				x		x	x
		Thysanotus asper				x	x	x	
		Thysanotus manglesianus				x	x	x	
		Thysanotus rectantherus				x			
		Thysanotus spiniger				x			
		Thysanotus thyrsoideus				x	x	x	
		Thysanotus triandrus				x	x	x	
Asphodelaceae		*Bulbine semibarbata*				x	x	x	
Asteraceae		*Angianthus preissianus*				x		x	
		Asteridea pulverulenta				x		x	x
	*	*Cotula coronopifolia*				x		x	x
		Gnephosis angianthoides				x	x	x	
		Gnephosis tenuissima				x	x		
		Myriocephalus occidentalis				x	x	x	
		Myriocephalus oldfieldii				x	x	x	
		Olearia rudis				x	x		
		Podolepis gracilis				x	x		
		Podotheca chrysantha				x	x	x	
		Podotheca gnaphalioides				x	x		
		Rhodanthe oppositifolia subsp. *oppositifolia*				x	x		
		Senecio pinnatifolius var. *latilobus*				x	x		
		Waitzia podolepis				x	x	x	
Boraginaceae		*Halgania sericiflora*				x	x	x	
Boryaceae		*Borya sphaerocephala*				x	x	x	x
Byblidacae		*Byblis lamellata*				x	x	x	
Campanulaceae		*Lobelia rhytidosperma*				x	x	x	
Casuarinaceae		*Allocasuarina humilis*				x	x	x	

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Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a). SCC= State conservation code; FCC = Federal conservation code; CE = Critically Endangered; E = Endangered; [1] (DAWE 2020c); [2] (DBCA 2007-). 10 km buffer is applied to search area, considerably larger than Arrowsmith North survey area.

Family	Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Celastraceae	*Stackhousia pubescens*				x	x	x	
	Tripterococcus brunonis				x	x		
Centrolepidaceae	*Centrolepis alepyroides*				x	x	x	
	Centrolepis milleri	P3			x			
	Centrolepis polygyna				x	x	x	
Colchicaceae	*Wurmbea monantha*				x	x	x	x
	Wurmbea tubulosa	T	E	x		x		
Convolvulaceae	*Convolvulus remotus*				x	x	x	
	Wilsonia backhousei				x		x	
Cupressaceae	*Callitris arenaria*				x	x	x	x
	Callitris pyramidalis				x	x	x	
Cyperaceae	*Ammothryon grandiflorum*				x			
	Chaetospora curvifolia				x			
	Isolepis cyperoides				x		x	x
	Lepidosperma scabrum				x			
	Lepidosperma sp.				x	x		
	Mesomelaena pseudostygia				x			
	Morelotia microcarpa				x			
	Schoenus griffinianus	P4			x	x	x	
	Schoenus odontocarpus				x	x	x	
	Schoenus pleiostemoneus				x			
	Schoenus unispiculatus				x	x		
	Schoenus sp. A3 Ciliate Sheaths (K.R. Newbey 9402)				x	x		
	Schoenus sp. Eneabba (F. Obbens & C. Godden I154)	P2			x	x		
Dasypogonaceae	*Calectasia palustris*	P2			x	x		
Dilleniaceae	*Hibbertia acerosa*				x	x		
	Hibbertia hypericoides subsp. *hypericoides*				x	x	x	x
	Hibbertia hypericoides subsp. *septentrionalis*				x	x	x	
	Hibbertia racemosa				x		x	
	Hibbertia robur				x	x		
Droseraceae	*Drosera drummondii*				x	x	x	
	Drosera echinoblastus				x	x	x	
	Drosera eneabba				x	x		
	Drosera erythrorhiza				x	x		
	Drosera hirsuta				x	x		
	Drosera humilis				x	x	x	
	Drosera magna				x	x		
	Drosera menziesii				x	x		
	Drosera pedicellaris	P1			x		x	
	Drosera porrecta				x	x	x	
	Drosera spilos				x	x		
Ecdeiocoleaceae	*Ecdeiocolea monostachya*				x	x		

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Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a). SCC= State conservation code; FCC = Federal conservation code; CE = Critically Endangered; E = Endangered; [1] (DAWE 2020c); [2] (DBCA 2007-). 10 km buffer is applied to search area, considerably larger than Arrowsmith North survey area.

Family	Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Elaeocarpaceae	*Tetratheca confertifolia*				x	x		
	Tetratheca nephelioides	T	CE	x		x	x	
Embingiaceae	*Emblingia calceoliflora*				x	x	x	
Ericaceae	*Andersonia heterophylla*				x	x	x	
	Brachyloma preissii				x	x	x	
	Conostephium preissii				x	x	x	
	Leucopogon inflexus				x	x	x	x
	Leucopogon prolatus				x			
	Leucopogon sp. Northern ciliate (R. Davis 3393)				x	x	x	
	Lysinema pentapetalum				x	x	x	
	Styphelia filifolia	P3			x			
	Styphelia insularis				x		x	
	Styphelia microdonta				x	x	x	
	Styphelia obtecta	T	E	x	x	x	x	
	Styphelia planifolia				x	x		
	Styphelia stomarrhena				x	x	x	
	Styphelia xerophylla				x	x	x	
	Styphelia sp. Eneabba (N. Marchant s.n. PERTH 01291777)				x	x		
Euphorbiaceae	*Beyeria gardneri*	P3			x		x	
	Monotaxis bracteata				x	x	x	
	Stachystemon axillaris				x	x	x	
Fabaceae	*Acacia aciphylla*				x		x	
	Acacia alata var. *tetrantha*				x	x		
	Acacia auronitens				x			
	Acacia blakelyi				x	x	x	x
	Acacia cavealis				x	x	x	x
	Acacia dilatata				x	x	x	
	Acacia fagonioides				x	x	x	
	Acacia hopperiana				x	x	x	
	Acacia idiomorpha				x	x	x	x
	Acacia lasiocarpa var. *lasiocarpa*				x			
	Acacia latipes subsp. *latipes*				x			
	Acacia latipes subsp. *licina*	P3			x	x		
	Acacia neurophylla subsp. *neurophylla*				x	x		
	Acacia pulchella var. *glaberrima*				x	x		
	Acacia rostellifera				x	x	x	
	Acacia saligna				x		x	
	Acacia saligna subsp. Wheatbelt (B.R. Maslin 8602)				x	x	x	x
	Acacia scirpifolia				x		x	
	Acacia spathulifolia				x	x	x	x
	Acacia vittata	P2			x	x	x	x
	Acacia xanthina				x			
	Cristonia stenophylla				x	x		
	Daviesia divaricata subsp. *divaricata*				x	x	x	
	Daviesia incrassata subsp. *teres*				x			
	Daviesia nudiflora subsp. *hirtella*				x	x		
	Daviesia pedunculata				x	x		
	Daviesia podophylla				x			

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Family		Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Fabaceae		*Daviesia speciosa*	T	E	x		x		
(continued)		*Gastrolobium callistachys*				x	x		
		Gastrolobium plicatum				x	x		
		Gastrolobium polystachyum				x			
		Gompholobium muticum				x	x	x	
		Gompholobium tomentosum				x	x		
		Hovea stricta				x	x		
		Isotropis cuneifolia				x	x	x	
		Jacksonia floribunda				x			
		Jacksonia hakeoides				x	x	x	x
		Jacksonia lehmannii				x			
		Kennedia prostrata				x			
		Labichea lanceolata subsp. *lanceolata*				x	x	x	
		Leptosema aphyllum				x			
		Mirbelia trichocalyx				x			
		Sphaerolobium pulchellum				x	x		
		Viminaria juncea				x	x	x	
Gentianaceae	*	*Cicendia filiformis*				x	x	x	
Goodeniaceae		*Dampiera oligophylla*				x	x	x	
		Dampiera spicigera				x	x		
		Dampiera tephrea	P2			x			
		Goodenia corynocarpa				x		x	
		Goodenia micrantha				x		x	
		Goodenia pulchella				x	x	x	
		Goodenia reinwardtii				x	x	x	
		Goodenia trichophylla				x	x		
		Lechenaultia biloba				x	x		
		Lechenaultia floribunda				x	x	x	
		Lechenaultia hirsuta				x	x		
		Lechenaultia stenosepala				x	x	x	
		Scaevola canescens				x	x		
		Scaevola glandulifera				x	x	x	x
		Scaevola lanceolata				x	x	x	
		Scaevola phlebopetala				x	x		
		Scaevola repens subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445)				x	x	x	
		Scaevola sericophylla				x		x	
		Scaevola thesioides subsp. *thesioides*				x	x	x	
Gyrostemonaceae		*Gyrostemon ramulosus*				x	x	x	x
		Gyrostemon subnudus				x	x	x	
		Tersonia cyathiflora				x	x		
Haemodoraceae		*Anigozanthos humilis* subsp. *humilis*				x	x	x	x
		Anigozanthos manglesii subsp. *quadrans*				x	x	x	
		Anigozanthos pulcherrimus				x	x		
		Conostylis aculeata subsp. *breviflora*				x			
		Conostylis androstemma				x		x	x
		Conostylis aurea				x	x	x	x
		Conostylis candicans subsp. *candicans*				x	x	x	x
		Conostylis canteriata				x	x	x	

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Family	Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Haemodoraceae (continued)	*Conostylis crassinerva* subsp. *absens*				x	x	x	
	Conostylis dielsii subsp. *teres*	T	E	x		x	x	
	Conostylis hiemalis				x	x		
	Conostylis micrantha	T	E	x		x	x	
	Conostylis neocymosa				x	x		
	Conostylis prolifera				x	x		
	Conostylis resinosa				x	x		
	Conostylis teretiuscula				x	x	x	
	Conostylis tomentosa				x	x		
	Haemodorum simulans				x	x		
	Haemodorum spicatum				x	x		
	Phlebocarya filifolia				x			
Haloragaceae	*Glischrocaryon angustifolium*				x	x	x	
	Gonocarpus confertifolius var. *confertifolius*				x	x		
Hemerocallidaceae	*Arnocrinum preissii*				x	x		
	Chamaescilla versicolor				x	x	x	x
	Johnsonia pubescens subsp. *pubescens*				x	x	x	
	Stawellia dimorphantha	P4			x	x	x	x
	Tricoryne humilis				x		x	
Hypericaceae	*Hypericum japonicum*				x	x	x	
Iridaceae	*Orthrosanthus laxus* var. *laxus*				x	x	x	x
	Patersonia occidentalis var. *latifolia*				x	x	x	
Juncaginaceae	*Triglochin protuberans*	P3			x	x	x	
	Triglochin sp. A Flora of Australia (G.J. Keighery 2477)				x		x	
Lamiaceae	*Hemiandra gardneri*	T	E	x		x	x	
	Hemiandra rubriflora				x	x	x	
	Hemiandra sp. Eneabba (H. Demarz 3687)	P3			x	x	x	
	Hemiphora bartlingii				x	x	x	x
	Pityrodia hemigenioides				x	x	x	
	Quoya verbascina				x	x		
Lauraceae	*Cassytha glabella* forma *bicallosa*				x	x		
	Cassytha glabella forma *glabella*				x	x	x	
Loganiaceae	*Orianthera spermacocea*				x	x	x	
Loranthaceae	*Amyema miquelii*				x	x	x	
	Amyema preissii				x	x	x	
	Nuytsia floribunda				x	x	x	x
Macarthuriaceae	*Macarthuria apetala*				x	x		
	Macarthuria australis				x		x	x
Malvaceae	*Alyogyne hakeifolia*				x	x	x	x
	Alyogyne huegelii				x		x	x
	Guichenotia alba	P3			x	x		
	Guichenotia intermedia				x			

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Family	Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Malvaceae	*Guichenotia ledifolia*				x		x	x
(continued)	*Guichenotia macrantha*				x	x		
	Guichenotia micrantha				x	x	x	
	Guichenotia quasicalva	P2			x	x	x	
	Guichenotia sarotes				x	x		
	Lasiopetalum biloculatum				x	x	x	
	Lasiopetalum drummondii				x	x	x	
	Lasiopetalum ogilvieanum	P1			x	x		
	Lawrencia glomerata				x		x	
	Seringia hermanniifolia				x			
	Sida hookeriana				x	x	x	
Menyanthaceae	*Liparophyllum capitatum*				x	x		
Montiaceae	*Calandrinia baccata*				x	x		
	Calandrinia calyptrata				x	x		
	Calandrinia corrigioloides				x		x	x
	Calandrinia granulifera				x		x	
Myrtaceae	*Babingtonia grandiflora*				x	x		
	Beaufortia aestiva				x	x	x	x
	Beaufortia elegans				x	x	x	
	Calothamnus hirsutus				x		x	x
	Calothamnus longissimus				x	x		
	Calothamnus quadrifidus subsp. *angustifolius*				x	x	x	
	Calothamnus sanguineus				x	x	x	
	Calothamnus torulosus				x			
	Calytrix chrysantha	P4			x	x		
	Calytrix cravenii				x	x	x	
	Calytrix depressa				x	x	x	
	Calytrix ecalycata				x	x	x	
	Calytrix eneabbensis	P4			x	x		
	Calytrix sapphirina				x	x	x	
	Calytrix strigosa				x	x	x	
	Calytrix superba	P4			x	x		
	Darwinia speciosa				x	x	x	
	Eremaea asterocarpa subsp. *histoclada*				x	x		
	Eremaea atala				x	x		
	Eremaea beaufortioides				x	x	x	
	Eremaea beaufortioides var. *microphylla*				x	x		
	Eremaea brevifolia				x	x	x	
	Eremaea hadra				x	x	x	
	Eremaea violacea subsp. *raphiophylla*				x			
	Eremaea violacea subsp. *violacea*				x	x	x	
	Eremaea x phoenicea				x	x	x	
	Eucalyptus camaldulensis subsp. *obtusa*				x	x	x	
	Eucalyptus crispata	T	V	x		x		
	Eucalyptus decipiens				x			
	Eucalyptus erythrocorys				x	x	x	
	Eucalyptus flocktoniae				x	x	x	
	Eucalyptus foecunda				x		x	
	Eucalyptus horistes				x	x	x	

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Family	Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Myrtaceae	*Eucalyptus leprophloia*	T	E	x		x		
(continued)	*Eucalyptus macrocarpa* subsp. *elachantha*	P4			x	x		
	Eucalyptus macrocarpa x pyriformis	P3			x	x		
	Eucalyptus obtusiflora				x		x	x
	Eucalyptus pyriformis				x	x		
	Eucalyptus rudis				x	x	x	
	Eucalyptus todtiana				x	x	x	x
	Eucalyptus virella				x	x		
	Eucalyptus zopherophloia	P4			x		x	
	Eucalyptus x *balanites*	T	E	x		x		
	Eucalyptus x *impensa*	T	E	x		x	x	
	Hypocalymma angustifolium subsp. Swan Coastal Plain (G.J. Keighery 16777)				x	x	x	
	Hypocalymma tetrapterum	P3			x	x	x	
	Hypocalymma xanthopetalum				x	x		
	Leptospermum oligandrum				x	x		
	Malleostemon roseus				x	x		
	Melaleuca caeca				x	x		
	Melaleuca concreta				x			
	Melaleuca leuropoma				x	x	x	x
	Melaleuca rhaphiophylla				x	x	x	
	Melaleuca ryeae				x	x	x	
	Melaleuca systena				x			
	Melaleuca trichophylla				x	x	x	
	Melaleuca urceolaris				x	x		
	Melaleuca viminea subsp. *viminea*				x	x	x	
	Pileanthus filifolius				x	x		
	Scholtzia calcicola	P2			x	x	x	
	Scholtzia chapmanii				x	x	x	x
	Scholtzia laxiflora				x	x	x	
	Scholtzia trilocularis				x	x	x	
	Scholtzia umbellifera				x	x	x	x
	Scholtzia uniovulata				x	x	x	
	Thryptomene hyporhytis				x	x		
	Thryptomene racemulosa				x	x		
	Verticordia argentea	P2			x	x		
	Verticordia blepharophylla				x	x	x	
	Verticordia dasystylis subsp. *oestopoia*	P1			x	x	x	
	Verticordia densiflora var. *cespitosa*				x	x	x	
	Verticordia densiflora var. *densiflora*				x	x		
	Verticordia fragrans	P3			x			
	Verticordia grandis				x	x	x	
	Verticordia luteola var. *luteola*	P3			x		x	
	Verticordia luteola var. *rosea*	P1			x	x	x	
	Verticordia monadelpha var. *monadelpha*				x	x		
	Verticordia nobilis				x	x	x	
	Verticordia ovalifolia				x	x	x	x
	Verticordia pennigera				x	x	x	
Olacaceae	*Olax aurantia*				x		x	
	Olax scalariformis				x	x	x	

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Family		Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Orchidaceae		*Caladenia crebra*				x	x	x	x
		Caladenia denticulata subsp. *albicans*	P1			x	x	x	
		Caladenia x *coactescens*				x		x	x
		Diuris septentrionalis				x	x		
		Diuris setacea				x	x		
		Paracaleana dixonii	T	E	x		x	x	
		Paracaleana nigrita				x	x		
		Prasophyllum giganteum				x		x	
		Pterostylis recurva				x	x		
		Thelymitra stellata	T	E	x		x		
Phyllanthaceae		*Phyllanthus calycinus*				x	x	x	
		Poranthera asybosca	P1			x			
Pittosporaceae		*Billardiera coriacea*				x		x	
		Cheiranthera preissiana				x	x	x	
		Marianthus erubescens				x	x		
		Marianthus ringens				x	x	x	
		Pittosporum angustifolium				x		x	
Plantaginaceae	*	*Plantago coronopus* subsp. *commutata*				x	x	x	
Poaceae		*Amphipogon turbinatus*				x	x	x	
		Austrostipa compressa				x		x	x
	*	*Cenchrus ciliaris*			x		x	x	
	*	*Chloris gayana*				x		x	x
		Neurachne alopecuroidea				x		x	x
	*	*Vulpia myuros*				x	x	x	
Polygalaceae		*Comesperma calymega*				x	x	x	
		Comesperma drummondii				x	x		
		Comesperma griffinii	P2			x	x		
		Muehlenbeckia adpressa				x			
Primulaceae		*Samolus repens* var. *paucifolius*				x		x	
Proteaceae		*Adenanthos cygnorum* subsp. *cygnorum*				x	x		
		Adenanthos drummondii				x	x		
		Banksia attenuata				x		x	
		Banksia candolleana				x	x	x	
		Banksia dallanneyi				x			
		Banksia dallanneyi subsp. *media*				x	x		
		Banksia elegans	P4			x	x	x	
		Banksia fraseri var. *crebra*	P3			x	x		
		Banksia grossa				x	x		
		Banksia hewardiana				x			
		Banksia hookeriana				x	x	x	
		Banksia incana				x			
		Banksia leptophylla				x	x	x	
		Banksia leptophylla var. *melletica*				x		x	
		Banksia menziesii				x	x	x	
		Banksia scabrella	P4			x	x		
		Banksia shuttleworthiana				x	x	x	

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Family	Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Proteaceae (continued)	*Banksia tridentata*				x			
	Conospermum boreale				x	x	x	
	Conospermum boreale subsp. *ascendens*				x	x	x	
	Conospermum boreale subsp. *boreale*				x	x		
	Conospermum brachyphyllum				x	x	x	
	Conospermum canaliculatum				x	x	x	
	Conospermum crassinervium				x			
	Conospermum incurvum				x			
	Conospermum stoechadis				x	x	x	
	Conospermum unilaterale				x	x	x	
	Conospermum wycherleyi subsp. *glabrum*				x	x		
	Conospermum wycherleyi subsp. *wycherleyi*				x			
	Grevillea argyrophylla				x		x	x
	Grevillea biformis subsp. *biformis*				x	x		
	Grevillea biternata				x	x		
	Grevillea candelabroides				x			
	Grevillea didymobotrya subsp. *didymobotrya*				x	x		
	Grevillea dielsiana				x	x		
	Grevillea erinacea	P3			x	x	x	
	Grevillea exposita				x	x	x	
	Grevillea leucopteris				x	x	x	x
	Grevillea shuttleworthiana subsp. *canarina*				x	x		
	Grevillea umbellulata				x			
	Hakea auriculata				x	x	x	
	Hakea candolleana				x			
	Hakea costata				x	x	x	x
	Hakea cygnus subsp. *cygnus*				x	x		
	Hakea eneabba				x	x	x	
	Hakea incrassata				x			
	Hakea lissocarpha				x		x	
	Hakea marginata				x			
	Hakea neospathulata				x	x		
	Hakea polyanthema				x	x	x	
	Hakea prostrata				x	x	x	
	Hakea ruscifolia				x			
	Hakea varia				x		x	
	Isopogon adenanthoides				x		x	x
	Isopogon divergens				x	x		
	Isopogon tridens				x	x	x	
	Persoonia acicularis				x	x		
	Persoonia chapmaniana	P3			x	x		
	Persoonia filiformis	P3			x	x		
	Persoonia rudis	P3			x	x		
	Petrophile brevifolia				x	x	x	
	Petrophile conifera				x	x		
	Petrophile drummondii				x	x	x	x
	Petrophile macrostachya				x	x		
	Petrophile megalostegia				x	x		
	Petrophile scabriuscula				x	x	x	
	Stirlingia latifolia				x	x		
	Synaphea aephynsa				x	x		
	Synaphea oulopha	P3			x	x	x	

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Family		Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Restionaceae		*Alexgeorgea nitens*				x	x	x	
		Chordifex sinuosus				x	x	x	
		Desmocladus asper				x		x	x
		Desmocladus semiplanus				x			
		Lepidobolus preissianus subsp. *preissianus*				x	x		
Rhamnaceae		*Cryptandra pungens*				x	x		
		Cryptandra scoparia				x	x	x	
		Stenanthemum notiale subsp. *notiale*				x	x	x	x
Rubiaceae		*Opercularia vaginata*				x	x	x	x
Rutaceae		*Boronia cymosa*				x	x	x	
		Cyanothamnus busselliana				x	x	x	
		Cyanothamnus ramosus subsp. *anethifolius*				x	x		x
		Diplolaena ferruginea				x	x		
		Diplolaena leemaniana				x	x	x	
		Geleznowia verrucosa				x	x		
Santalaceae		*Exocarpos sparteus*				x	x	x	
		Leptomeria empetriformis				x	x		
		Santalum acuminatum				x	x	x	
Sapindaceae		*Diplopeltis huegelii*				x	x		
		Diplopeltis huegelii subsp. *lehmannii*				x	x	x	
		Diplopeltis huegelii subsp. *subintegra*				x	x	x	
Scrophulariaceae		*Eremophila glabra* subsp. *albicans*				x		x	x
		Eremophila oldfieldii subsp. *oldfieldii*				x	x	x	
		Myoporum caprarioides				x		x	
Selaginellaceae		*Selaginella gracillima*				x	x	x	
Solanaceae		*Anthocercis ilicifolia* subsp. *ilicifolia*				x	x	x	
		Anthocercis littorea				x	x	x	x
	*	*Lycium ferocissimum*			x		x	x	
Stylidaceae		*Levenhookia octomaculata*				x	x		
		Levenhookia stipitata				x	x		
		Stylidium adpressum				x	x	x	
		Stylidium bicolor				x	x	x	
		Stylidium carnosum subsp. Narrow leaves (J.A. Wege 490)	P1			x	x		
		Stylidium crossocephalum				x	x	x	
		Stylidium despectum				x	x	x	
		Stylidium diuroides subsp. *paucifoliatum*				x	x	x	
		Stylidium ecorne				x	x	x	
		Stylidium flagellum				x			
		Stylidium hesperium				x		x	
		Stylidium kalbarriense				x	x	x	
		Stylidium longitubum	P4			x	x	x	
		Stylidium maitlandianum				x	x	x	x
		Stylidium ponticulus				x	x	x	
		Stylidium purpureum				x	x	x	

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Family	Species	SCC	FCC	EPBC	Nature map	ARS	South	West
Stylidaceae	*Stylidium repens*				x	x		
(continued)	*Stylidium rigidulum*				x	x	x	
	Stylidium torticarpum	P3			x	x		
	Stylidium udusicola				x		x	
	Stylidium sp.				x	x		
Tamaricaceae	* *Tamarix aphylla*			x			x	
Thymelaeaceae	*Pimelea angustifolia*				x	x		
	Pimelea ferruginea				x		x	
	Pimelea floribunda				x		x	x
	Pimelea imbricata var. *piligera*				x	x		x
	Pimelea leucantha				x	x		
	Pimelea rosea				x			
Violaceae	*Hybanthus calycinus*				x	x	x	x
	Hybanthus floribundus subsp. *floribundus*				x		x	x
Xanthorrhoeaceae	*Xanthorrhoea drummondii*				x	x		
	Xanthorrhoea sp. Lesueur (G.J. Keighery 16404)				x	x		

APPENDIX C: ASSESSMENT OF THREATENED AND PRIORITY FLORA POTENTIALLY PRESENT IN THE ARROWSMITH NORTH SURVEY AREA

Note: Refer to Appendix A for State (SCC; Department of Biodiversity, Conservation and Attractions 2019) and Federal (FCC; EPBC Act) conservation code definitions. IBRA Distribution: AVW – Avon Wheatbelt; CAR – Carnarvon; COO – Coolgardie; ESP – Esperance Plains; GAS – Gascoyne; GES – Geraldton Sandplains; GVD – Great Victoria Desert; JAF – Jarrah Forest; MAL – Mallee; MUR – Murchison; SWA – Swan Coastal Plain; YAL – Yalgoo. 10 km buffer is applied to search area, considerably larger than Arrowsmith North survey area.

Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Conostylis dielsii subsp. *teres*	Haemodoraceae	T	Endangered	Habit: Shortly rhizomatous, tufted perennial, grass-like or herb, 0.13-0.33 m high, leaves terete. Flower colour: cream-yellow Flowering period (indicated in green): J F M A M J J A S O N D; ▲ Survey Soils: White, grey or yellow sand, gravel. Low open woodland. IBRA Distribution: GES Florabase records: 24	Low Habitat potentially occurs in survey area. Nearest record of this taxon is located approximately 32 km to the North of the survey area (ALA 2022).
Conostylis micrantha	Haemodoraceae	T	Endangered	Habit: Rhizomatous, tufted perennial, grass-like or herb, 0.13-0.24 m high. Flower colour: yellow-cream/red Flowering period (indicated in green): J F M A M J J A S O N D; ▲ Survey Soils: White or grey sand. Sandplains. IBRA Distribution: AVW, GES Florabase records: 22	Low Habitat potentially occurs in survey area. Nearest record of this taxon is located approximately 33 km to the North of the survey area (ALA 2022).
Daviesia speciosa	Fabaceae	T	Endangered	Habit: Many-stemmed shrub, 0.3-0.8 m high. Flower colour: red Flowering period (indicated in green): J F M A M J J A S O N D; ▲ Survey Soils: Gravelly lateritic soils. Undulating plains, rises. IBRA Distribution: AVW, GES Florabase records: 19	Low Habitat unlikely to occur in survey area. Nearest record of this taxon is located approximately 16 km to the North East of the survey area (ALA 2022).

APPENDIX C: ASSESSMENT OF THREATENED AND PRIORITY FLORA POTENTIALLY PRESENT IN THE ARROWSMITH NORTH SURVEY AREA

Note: Refer to Appendix A for State (SCC; Department of Biodiversity, Conservation and Attractions 2019) and Federal (FCC; EPBC Act) conservation code definitions. IBRA Distribution: AVW – Avon Wheatbelt; CAR – Carnarvon; COO – Coolgardie; ESP – Esperance Plains; GAS – Gascoyne; GES – Geraldton Sandplains; GVD – Great Victoria Desert; JAF – Jarrah Forest; MAL – Mallee; MUR – Murchison; SWA – Swan Coastal Plain; YAL – Yalgoo. 10 km buffer is applied to search area, considerably larger than Arrowsmith North survey area.

Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Eucalyptus crispata	Myrtaceae	T	Vulnerable	Habit: (Mallee), 3-7 m high, bark rough on the trunk, in partly decorticated curls. Flower colour: yellow-cream Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand, loam with lateritic gravel. Lateritic breakaways. IBRA Distribution: GES Florabase records: 25	Low Habitat unlikely to occur in survey area. Nearest record of this taxon is located approximately 21 km to the East of the survey area (ALA 2022).
Eucalyptus leprophloia	Myrtaceae	T	Endangered	Habit: (Mallee), 2-5(-8) m high, bark rough loose & flaky to 1 m. Flower colour: cream-white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White or grey sand over laterite. Valley slopes. IBRA Distribution: AVW, GES Florabase records: 22	Low Habitat unlikely to occur in survey area. Nearest record of this taxon is located approximately 23 km to the North East of the survey area (ALA 2022).
Eucalyptus x *balanites*	Myrtaceae	T	Endangered	Habit: (Mallee), to 5 m high, bark rough, flaky. Flower colour: white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sandy soils with lateritic gravel. IBRA Distribution: GES, SWA Florabase records: 11	Low Habitat unlikely to occur in survey area. Nearest record of this taxon is located approximately 100 km to the South of the survey area (ALA 2022).

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Eucalyptus x impensa	Myrtaceae	T	Endangered	Habit: (Straggly mallee), to 1.5 m high, bark smooth. Flower colour: pink Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Yellow sand. Lateritic hills. IBRA Distribution: GES Florabase records: 13	Low Habitat unlikely to occur in survey area. Nearest record of this taxon is located approximately 48 km to the South East of the survey area (ALA 2022).
Hemiandra gardneri	Lamiaceae	T	Endangered	Habit: Prostrate, pungent shrub, 0.1-0.2 m high, to 1 m wide. Flower colour: red/pink-red Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Grey or yellow sand, clayey sand. Sandplains. IBRA Distribution: AVW, GES Florabase records: 21	Low Habitat potentially occurs in survey area. Nearest record of this taxon is located approximately 68 km to the South of the survey area near Lesueur National Park (ALA 2022).
Paracaleana dixonii	Orchidaceae	T	Endangered	Habit: Tuberous, perennial, herb, 0.09-0.2 m high. Flower colour: yellow-brown Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Shallow sand over laterite (Primary). Deep sandy soils (Secondary). IBRA Distribution: GES, SWA Florabase records: 20	Low Primary Habitat unlikely to occur in survey area. Secondary Habitat potentially occurs in survey area. Nearest record of this taxon is located approximately 5 km to the East of the survey area (ALA 2022).

APPENDIX C: ASSESSMENT OF THREATENED AND PRIORITY FLORA POTENTIALLY PRESENT IN THE ARROWSMITH NORTH SURVEY AREA

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Styphelia obtecta	Ericaceae	T	Endangered	Habit: Erect shrub, 0.5-1.7 m high. Flower colour: cream-yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Grey sand. IBRA Distribution: GES Florabase records: 19	Low Habitat unlikely to occur in survey area. Nearest record of this taxon is located approximately 26 km to the South East of the survey area (WAH 1998-).
Tetratheca nephelioides	Elaeocarpaceae	T	Critically Endangered	Habit: Caespitose, dwarf shrub, to 0.3 m high. Flower colour: purple Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White-grey sand, yellow-brown clayey sand, gravel, laterite. Outcrops, undulating hills, ridges. IBRA Distribution: AVW, GES Florabase records: 17	Low Habitat unlikely to occur in survey area. Nearest record of this taxon is located approximately 50 km to the South East of the survey area (ALA 2022).
Thelymitra stellata	Orchidaceae	T	Endangered	Habit: Tuberous, perennial, herb, 0.15-0.25 m high. Flower colour: yellow & brown Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand, gravel, lateritic loam. IBRA Distribution: GES, JAF, SWA Florabase records: 20	Low Habitat unlikely to occur in survey area. Nearest record of this taxon is located approximately 23 km to the North East of the survey area (ALA 2022).

APPENDIX C: ASSESSMENT OF THREATENED AND PRIORITY FLORA POTENTIALLY PRESENT IN THE ARROWSMITH NORTH SURVEY AREA

Note: Refer to Appendix A for State (SCC; Department of Biodiversity, Conservation and Attractions 2019) and Federal (FCC; EPBC Act) conservation code definitions. IBRA Distribution: AVW – Avon Wheatbelt; CAR – Carnarvon; COO – Coolgardie; ESP – Esperance Plains; GAS – Gascoyne; GES – Geraldton Sandplains; GVD – Great Victoria Desert; JAF – Jarrah Forest; MAL – Mallee; MUR – Murchison; SWA – Swan Coastal Plain; YAL – Yalgoo. 10 km buffer is applied to search area, considerably larger than Arrowsmith North survey area.

Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Wurmbea tubulosa	Colchicaceae	T	Endangered	Habit: Cormous, perennial, herb, 0.01-0.03 m high Flower colour: white-pink Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Clay, loam. River banks, seasonally-wet places. IBRA Distribution: AVW, GES Florabase records: 19	Low Habitat unlikely to occur in survey area. Nearest record of this taxon is located approximately 34 km to the North of the survey area (ALA 2022).
Caladenia denticulata subsp. *albicans*	Orchidaceae	P1	-	Habit: Tuberous herb to 0.30 m high. Flower colour: creamy white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand, moist depressions. Undulating limestone country. IBRA Distribution: GES, SWA Florabase records: 5	Low Habitat unlikely to occur in survey area.
Drosera pedicellaris	Droseraceae	P1	-	Habit: Fibrous-rooted perennial herb to 0.15m high. Flower colour: white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Deep beige sand. IBRA Distribution: GES Florabase records: 3	Moderate Habitat potentially occurs in survey area.

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Lasiopetalum ogilvieanum	Malvaceae	P1	-	Habit: Shrub, 0.45-1.5 m high. Flower colour: pink-white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White/grey or yellow sand, stony loam. Undulating plains, lateritic rises. IBRA Distribution: AVW, GES Florabase records: 18	Moderate Habitat potentially occurs in survey area.
Poranthera asybosca	Phyllanthaceae	P1	-	Habit: Erect herb, 0.2-0.45 m high. Flower colour: pink-green Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White sand over laterite. IBRA Distribution: GES Florabase records: 1	Moderate Habitat potentially occurs in survey area.
Stylidium carnosum subsp. Narrow leaves (J.A. Wege 490)	Stylidiaceae	P1	-	Habit: Perennial herb, to 0.7 m high. Flower colour: white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand over laterite. Lateritic hills, lower and mid slopes. IBRA Distribution: GES, SWA Florabase records: 13	Low Habitat unlikely to occur in survey area.

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Verticordia dasystylis subsp. *oestopoia*	Myrtaceae	P1	-	Habit: Spreading shrub, 0.1-0.4 m high. Flower colour: cream-yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Gritty soils over granite. Outcrops. IBRA Distribution: AVW, GES Florabase records: 15	Low Habitat unlikely to occur in survey area.
Verticordia luteola var. *rosea*	Myrtaceae	P1	-	Habit: Slender shrub, 0.3-2 m high. Flower colour: pink/green-cream-brown Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White sand. Flats. IBRA Distribution: GES Florabase records: 17	Moderate Habitat potentially occurs in survey area.
Acacia vittata	Fabaceae	P2	-	Habit: Dense, rounded shrub, 1-4 m high. Flower colour: yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Grey sand, sandy clay. Margins of seasonal lakes. IBRA Distribution: AVW, GES Florabase records: 15	Low Habitat unlikely to occur in survey area.

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Calectasia palustris	Dasypogonaceae	P2	-	Habit: Stilt-rooted herb (undershrub), stems to 0.7m high. Flower colour: blue Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White or grey sand. Seasonally inundated swamplands. IBRA Distribution: AVW, GES Florabase records: 12	Low Habitat unlikely to occur in survey area.
Comesperma griffinii	Polygalaceae	P2	-	Habit: Annual or perennial, herb, to 0.15 m high. Flower colour: white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Yellow or grey sand. Plains. IBRA Distribution: AVW, ESP, GES, MAL, SWA Florabase records: 15	Moderate Habitat potentially occurs in survey area.
Dampiera tephrea	Goodeniaceae	P2	-	Habit: Ascending to erect perennial, herb or shrub, 0.3-0.6 m high. Flower colour: blue Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand, gravelly loam. IBRA Distribution: GES, SWA Florabase records: 28	Low Habitat unlikely to occur in survey area.

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Guichenotia quasicalva	Malvaceae	P2	-	Habit: Erect, compact shrub, to 0.5 m high. Flower colour: blue-purple Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sandy clay over laterite. Drainage line. IBRA Distribution: AVW, GES Florabase records: 20	Low Habitat unlikely to occur in survey area.
Schoenus sp. Eneabba (F. Obbens & C. Godden I154)	Cyperaceae	P2	-	Habit: Erect, clumped rhizomatous, perennial, grass-like or herb (sedge), to 0.75 m high. Flower colour: - Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Grey, yellow or white sand. Undulating sandplains, mid slopes, tops of rises. IBRA Distribution: GES Florabase records: 13	Moderate Habitat potentially occurs in survey area.
Scholtzia calcicola	Myrtaceae	P2	-	Habit: Perennial shrub to 1.10 m high. Flower colour: pink Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand. Slopes. IBRA Distribution: GES Florabase records: 7	Moderate Habitat potentially occurs in survey area.

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Stylidium pseudocaespitosum	Stylidiaceae	P2	-	Habit: Rosetted perennial, herb, 0.1-0.3 m high. Flower colour: yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White, grey or yellow sand over laterite. Breakaways and hillslopes. IBRA Distribution: AVW, GES Florabase records: 20	Low Habitat unlikely to occur in survey area.
Verticordia argentea	Myrtaceae	P2	-	Habit: Erect, open shrub, 0.9-2 m high. Flower colour: pink & white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White, grey or yellow sand. Sand ridges, undulating plains. IBRA Distribution: GES Florabase records: 39	Moderate Habitat potentially occurs in survey area.
Acacia latipes subsp. *licina*	Fabaceae	P3	-	Habit: Pungent shrub, 0.4-1.2 m high. Flower colour: yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White sand, granitic soils. Limestone hills, sandplains. IBRA Distribution: AVW, GES Florabase records: 21	Moderate Habitat potentially occurs in survey area.

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Banksia fraseri var. *crebra*	Proteaceae	P3	-	Habit: Shrub to 0.7 m high. Flower colour: cream, pale-golden yellow, yellow & brown Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand, sandy clay, sandy gravel, gravelly loam. Slopes, lateritic hilltop, sandplain. IBRA Distribution: GES, SWA Florabase records: 16	Moderate Habitat potentially occurs in survey area.
Beyeria gardneri	Euphorbiaceae	P3	-	Habit: Shrub, 0.25-0.5 m high. Flower colour: yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Yellow sand. IBRA Distribution: AVW, GES, SWA, YAL Florabase records: 37	Moderate Habitat potentially occurs in survey area.
Centrolepis milleri	Centrolepidaceae	P3	-	Habit: Annual, to 6 cm tall Flower colour: - Flowering period (indicated in green): *Flowering period unknown J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand, sandy clay. Sandplain. IBRA Distribution: ESP, GES Florabase records: 8	Moderate Habitat potentially occurs in survey area.

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Comesperma rhadinocarpum	Polygalaceae	P3	-	Habit: Perennial herb to 0.30 m high. Flower colour: blue Flowering period: October to November Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sandy soils IBRA Distribution: COO, GES, GVD, JAF, SWA Florabase records: 17	High Habitat occurs in survey area. Previously recorded by Mattiske (2020a).
Eucalyptus macrocarpa x pyriformis	Myrtaceae	P3	-	Habit: Erect, open mallee tree, 1.2-6 m high. Flower colour: red Flowering period: April or August to October Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand, lateritic sandy soils. Hills, rocky ironstone ridges, sandplains. IBRA Distribution: AVW, GES, JAF, SWA Florabase records: 45	Low Habitat unlikely to occur in survey area.

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Guichenotia alba	Malvaceae	P3	-	Habit: Slender, lax, few-branched shrub, 0.1-0.45 m high. Flower colour: white Flowering period: July to August Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ Survey (▲) Soils: Sandy & gravelly soils. Low-lying flats, depressions. IBRA Distribution: AVW, GES, SWA Florabase records: 38	Low Habitat unlikely to occur in survey area.
Grevillea erinacea	Proteaceae	P3	-	Habit: Spindly, prickly, sparingly branched shrub, (0.3-) 0.6-1.8 m high. Flower colour: green-white-cream Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ Survey (▲) Soils: White, grey or yellow sand, often with lateritic gravel. IBRA Distribution: AVW, GES Florabase records: 36	Moderate Habitat potentially occurs in survey area.
Hemiandra sp. Eneabba (H. Demarz 3687)	Lamiaceae	P3	-	Habit: Straggly, erect shrub, 0.5-0.9 m high, to 0.4 m wide. Flower colour: blue/violet Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ Survey (▲) Soils: Sand. Disturbed sites. IBRA Distribution: GES Florabase records: 35	High Habitat occurs in survey area. Previously recorded by Mattiske (2020a).

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Hopkinsia anoectocolea	Anarthriaceae	P3	-	Habit: Rhizomatous, tufted perennial, herb, 0.5-1 m high, to 1 m in diameter. Flower colour: brown Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White or grey sand, often saline. Winter-wet depressions, floodplains, salt-lakes. IBRA Distribution: AVW, GES, SWA Florabase records: 50	Moderate Habitat potentially occurs in survey area.
Hypocalymma gardneri	Myrtaceae	P3	-	Habit: Shrub to 0.3 m high. Flower colour: Yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Grey-brown sand, laterite. IBRA Distribution: GES Florabase records: 22	High Habitat occurs in survey area. Previously recorded by Mattiske (2020a).
Hypocalymma tetrapterum	Myrtaceae	P3	-	Habit: Shrub, 0.4-0.9 m high. Flower colour: white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Grey sand, loam, lateritic gravel. Riverbanks, breakaways. IBRA Distribution: GES, SWA Florabase records: 26	Low Habitat unlikely to occur in survey area.

APPENDIX C: ASSESSMENT OF THREATENED AND PRIORITY FLORA POTENTIALLY PRESENT IN THE ARROWSMITH NORTH SURVEY AREA

Note: Refer to Appendix A for State (SCC; Department of Biodiversity, Conservation and Attractions 2019) and Federal (FCC; EPBC Act) conservation code definitions. IBRA Distribution: AVW – Avon Wheatbelt; CAR – Carnarvon; COO – Coolgardie; ESP – Esperance Plains; GAS – Gascoyne; GES – Geraldton Sandplains; GVD – Great Victoria Desert; JAF – Jarrah Forest; MAL – Mallee; MUR – Murchison; SWA – Swan Coastal Plain; YAL – Yalgoo. 10 km buffer is applied to search area, considerably larger than Arrowsmith North survey area.

Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Leschenaultia juncea	Goodeniaceae	P3	-	Habit: Erect perennial herb to 0.5 m. Flower colour: Blue Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White, grey or yellow sand, sandy gravel. IBRA Distribution: AVW, GES Florabase records: 22	High Habitat occurs in survey area. Previously recorded by Mattiske (2020a).
Persoonia chapmaniana	Proteaceae	P3	-	Habit: Erect, spreading shrub, 1-2 m high. Flower colour: yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White sandy clay, yellow sand. Vicinity of salt lakes. IBRA Distribution: AVW, GES, SWA Florabase records: 26	Low Habitat unlikely to occur in survey area.
Persoonia filiformis	Proteaceae	P3	-	Habit: Erect, spreading, lignotuberous shrub, 0.07-0.4 m high. Flower colour: yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Yellow or white sand over laterite. IBRA Distribution: GES Florabase records: 24	Low Habitat unlikely to occur in survey area.

APPENDIX C: ASSESSMENT OF THREATENED AND PRIORITY FLORA POTENTIALLY PRESENT IN THE ARROWSMITH NORTH SURVEY AREA

Note: Refer to Appendix A for State (SCC; Department of Biodiversity, Conservation and Attractions 2019) and Federal (FCC; EPBC Act) conservation code definitions. IBRA Distribution: AVW – Avon Wheatbelt; CAR – Carnarvon; COO – Coolgardie; ESP – Esperance Plains; GAS – Gascoyne; GES – Geraldton Sandplains; GVD – Great Victoria Desert; JAF – Jarrah Forest; MAL – Mallee; MUR – Murchison; SWA – Swan Coastal Plain; YAL – Yalgoo. 10 km buffer is applied to search area, considerably larger than Arrowsmith North survey area.

Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Persoonia rudis	Proteaceae	P3	-	Habit: Erect, often spreading shrub, 0.2-1 m high. Flower colour: yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White, grey or yellow sand, often over laterite. IBRA Distribution: GES, JAF, SWA Florabase records: 41	High Habitat occurs in survey area. Previously recorded by Mattiske (2020a).
Stylidium torticarpum	Stylidiaceae	P3	-	Habit: Caespitose perennial, herb, 0.12-0.27 m high. Flower colour: pink Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sandy clay and clay loam over laterite. Adjacent to creeklines, depressions, and beneath breakaways. IBRA Distribution: AVW, GES, SWA Florabase records: 49	Low Habitat unlikely to occur in survey area.
Styphelia filifolia	Ericaceae	P3	-	Habit: Shrub, to 0.7 m high, to 0.9 m wide. Flower colour: white, cream Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand, sandy soil. Swamp, seasonally wet area, drainage line, flat, slopes. IBRA Distribution: GES, SWA Florabase records: 37	Low Habitat unlikely to occur in survey area.

APPENDIX C: ASSESSMENT OF THREATENED AND PRIORITY FLORA POTENTIALLY PRESENT IN THE ARROWSMITH NORTH SURVEY AREA

Note: Refer to Appendix A for State (SCC; Department of Biodiversity, Conservation and Attractions 2019) and Federal (FCC; EPBC Act) conservation code definitions. IBRA Distribution: AVW – Avon Wheatbelt; CAR – Carnarvon; COO – Coolgardie; ESP – Esperance Plains; GAS – Gascoyne; GES – Geraldton Sandplains; GVD – Great Victoria Desert; JAF – Jarrah Forest; MAL – Mallee; MUR – Murchison; SWA – Swan Coastal Plain; YAL – Yalgoo. 10 km buffer is applied to search area, considerably larger than Arrowsmith North survey area.

Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Synaphea oulopha	Proteaceae	P3	-	Habit: Compact shrub, ca 0.2 m high. Flower colour: yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Grey sand, gravelly loam, clay. Lateritic breakaways & rises. IBRA Distribution: GES Florabase records: 16	Low Habitat unlikely to occur in survey area.
Triglochin protuberans	Juncaginaceae	P3	-	Habit: Annual, herb, 0.03-0.13 m high. Flower colour: - Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Red loam, grey mud over clay. Winter-wet sites, claypans, near salt lakes, margins of pools. IBRA Distribution: AVW, GES, MUR, YAL Florabase records: 10	Low Habitat unlikely to occur in survey area.
Verticordia fragrans	Myrtaceae	P3	-	Habit: Openly branched shrub, 1-3 m high. Flower colour: pink-white Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White, grey or yellow sand, clay loam. Low-lying areas, sandplains. IBRA Distribution: GES Florabase records: 30	Moderate Habitat potentially occurs in survey area.

APPENDIX C: ASSESSMENT OF THREATENED AND PRIORITY FLORA POTENTIALLY PRESENT IN THE ARROWSMITH NORTH SURVEY AREA

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Verticordia luteola var. *luteola*	Myrtaceae	P3	-	Habit: Slender shrub, 0.5-1.4 m high. Flower colour: white-yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Grey sand over gravel. Flats. IBRA Distribution: AVW, GES Florabase records: 20	Moderate Habitat potentially occurs in survey area.
Banksia elegans	Proteaceae	P4	-	Habit: Shrub (with fire-tolerant rootstock, often suckering), 1-4 m high. Flower colour: yellow/green-yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Yellow, white or red sand. Sandplains, low consolidated dunes. IBRA Distribution: AVW, GES Florabase records: 44	High Habitat occurs in survey area. Previously recorded by Mattiske (2020a).
Banksia scabrella	Proteaceae	P4	-	Habit: Much-branched, lignotuberous shrub, 0.6-2 m high. Flower colour: yellow & cream & purple Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White, grey or yellow sand, sometimes with lateritic gravel. Sandplains, lateritic ridges. IBRA Distribution: GES Florabase records: 52	Moderate Habitat potentially occurs in survey area.

APPENDIX C: ASSESSMENT OF THREATENED AND PRIORITY FLORA POTENTIALLY PRESENT IN THE ARROWSMITH NORTH SURVEY AREA

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Calytrix chrysantha	Myrtaceae	P4	-	Habit: Shrub, 0.3-1.3 m high. Flower colour: yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White, grey or yellow/brown sand. Flats. IBRA Distribution: AVW, GES Florabase records: 38	Moderate Habitat potentially occurs in survey area.
Calytrix eneabbensis	Myrtaceae	P4	-	Habit: Shrub, 0.3-1 m high. Flower colour: purple & pink & yellow Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White, grey or yellow sand over laterite. Sandplains. IBRA Distribution: GES Florabase records: 31	Moderate Habitat potentially occurs in survey area.
Calytrix superba	Myrtaceae	P4	-	Habit: Shrub, 0.2-1 m high. Flower colour: pink-red Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sand over laterite. Flats. IBRA Distribution: GES Florabase records: 37	Moderate Habitat potentially occurs in survey area.

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Eucalyptus macrocarpa subsp. *elachantha*	Myrtaceae	P4	-	Habit: (Spreading or sprawling mallee), 0.8-4 m high, bark smooth, grey over salmon pink. Flower colour: red-pink Flowering period (indicated in green): J F M A M J J A S O N D; ▲ ▲ ▲ ▲ ▲ ▲ (Survey (▲)) Soils: White or grey sand over laterite. Hillslopes. Ridges sandplains. IBRA Distribution: GES, SWA Florabase records: 58	Low Habitat unlikely to occur in survey area.
Eucalyptus zopherophloia	Myrtaceae	P4	-	Habit: Spreading mallee, 2.5-4 m high. Flower colour: cream-white Flowering period (indicated in green): J F M A M J J A S O N D; ▲ ▲ ▲ ▲ ▲ ▲ (Survey (▲)) Soils: Grey/white sand with limestone rubble. Coastal areas. IBRA Distribution: CAR, GES, SWA Florabase records: 64	Low
Schoenus griffinianus	Cyperaceae	P4	-	Habit: Small, tufted perennial, grass-like or herb (sedge), to 0.1 m high. Flower colour: - Flowering period (indicated in green): J F M A M J J A S O N D; ▲ ▲ ▲ ▲ ▲ ▲ (Survey (▲)) Soils: White sand. IBRA Distribution: AVW, GES, SWA Florabase records: 40	High Habitat occurs in survey area. Previously recorded by Mattiske (2020a).

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Species	Family	SCC	FCC	Description and Habitat	Likelihood of Occurrence
Stawellia dimorphantha	Hemerocallidaceae	P4	-	Habit: Stilt-rooted perennial, herb, 0.05-0.2 m high. Flower colour: purple/cream Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: White, grey, yellow sand. IBRA Distribution: GES Florabase records: 23	High Habitat occurs in survey area. Previously recorded by Mattiske (2020a).
Stylidium longitubum	Stylidiaceae	P4	-	Habit: Erect annual (ephemeral), herb, 0.05-0.12 m high. Flower colour: pink Flowering period (indicated in green): J F M A M J J A S O N D ▲ ▲ ▲ ▲ Survey (▲) Soils: Sandy clay, clay. Seasonal wetlands IBRA Distribution: GES, JAF, SWA Florabase records: 46	Low Habitat unlikely to occur in survey area.

APPENDIX D: LOCATION OF VEGETATION SURVEY QUADRATS ESTABLISHED IN THE ARROWSMITH NORTH SURVEY AREA 2018 to 2021

Note: AR denotes Arrowsmith North mine area, ARS denotes Arrowsmith North transport corridor alignment (South) and ARW denotes Arrowsmith North transport corridor (West)

QUADRAT	LOCATION (GDA94, Zone 50)		SURVEYED			
	EASTING	NORTHING	2018	2019	2020	2021
AR42	315898	6733800	x			x
AR43	314297	6733800	x			
AR44	314502	6733844	x			
AR45	314292	6734612	x			
AR46	315090	6734604	x			x
AR47	314701	6734600	x			x
AR48	314300	6736197	x			
AR49	314703	6736202	x			
AR50	315097	6736197	x			
AR51	315100	6735803	x			
AR52	314699	6735798	x			
AR53	314308	6735805	x			
AR54	315095	6737000	x			
AR55	314700	6737000	x			
AR56	314296	6738202	x			
AR57	314692	6738200	x			
AR58	315094	6738199	x			
AR59	315898	6733401	x			x
AR60	315500	6733400	x			x
AR61	314302	6733400	x			
AR62	314701	6733400	x			
AR63	315100	6733396	x			x
AR64	315102	6733801	x			x
AR65	314288	6734207	x			
AR66	314630	6734224	x			
AR67	315100	6734198	x			x
AR68	314298	6734996	x			x
AR69	314700	6735000	x			x
AR70	315099	6734999	x			x
AR71	315101	6735401	x			
AR72	314701	6735403	x			
AR73	314276	6735459	x			
AR74	314301	6736600	x			
AR75	314697	6736603	x			
AR77	315100	6736596	x			
AR78	314300	6737403	x			
AR79	314720	6737390	x			x
AR80	316698	6733399	x			x
AR81	316299	6733797	x			x
AR82	315900	6734199	x			x
AR83	315504	6733800	x			x
AR84	315502	6734199	x			x
AR85	315899	6734599	x			x
AR86	315500	6734596	x			x
AR87	315503	6735000	x			x
AR88	315904	6735405	x			
AR89	315503	6735394	x			
AR90	315503	6735795	x			
AR91	315904	6735800	x			
AR92	315900	6736199	x			
AR93	315506	6736201	x			
AR94	315498	6736604	x			
AR95	315901	6736997	x			
AR96	315499	6736993	x			
AR97	315500	6737399	x			
AR98	315909	6738203	x			
AR99	315901	6738595	x			
AR100	315479	6738548	x			
AR101	315104	6738605	x			
AR102	314707	6738599	x			

APPENDIX D: LOCATION OF VEGETATION SURVEY QUADRATS ESTABLISHED IN THE ARROWSMITH NORTH SURVEY AREA 2018 to 2021

Note: AR denotes Arrowsmith North mine area, ARS denotes Arrowsmith North transport corridor alignment (South) and ARW denotes Arrowsmith North transport corridor (West)

QUADRAT	LOCATION (GDA94, Zone 50)		SURVEYED			
	EASTING	NORTHING	2018	2019	2020	2021
AR103	314300	6738603	x			
AR104	314303	6739396	x			
AR105	314700	6739403	x			
AR106	315080	6737819	x			
AR107	316298	6733401	x			x
AR108	316701	6733802	x			x
AR109	316299	6734200	x			x
AR110	316697	6734196	x			
AR111	316701	6734602	x			
AR112	316300	6734601	x			x
AR113	316301	6735001	x			x
AR114	316703	6735000	x			
AR115	315904	6735000	x			x
AR116	316301	6735406	x			x
AR117	316700	6735399	x			
AR118	316306	6735804	x			
AR119	316300	6736202	x			
AR120	316302	6736603	x			
AR121	315904	6736600	x			
AR122	316300	6737000	x			x
AR123	316303	6737401	x			
AR124	315899	6737398	x			
AR125	315901	6737801	x			
AR126	315501	6737794	x			
AR127	315499	6738199	x			
AR128	315500	6739398	x			
AR129	315500	6738998	x			
AR130	315099	6737400	x			
AR131	314710	6737796	x			
AR132	314301	6737799	x			x
AR133	314308	6738997	x			
AR134	314700	6739000	x			
AR135	315089	6738995	x			
AR136	314301	6737000	x			
AR137	315102	6739402	x			
AR138	315900	6739399	x			
AR139	315901	6739002	x			
AR140	315967	6738520	x			
AR218	313918	6739368		x		x
AR219	313908	6738965		x		
AR220	313911	6738569		x		x
AR221	313997	6738148		x		
AR222	314002	6737762		x		
AR223	314009	6737364		x		
AR224	314017	6736976		x		
AR225	313994	6736640		x		
AR226	313945	6736202		x		x
AR227	313995	6735378		x		
AR228	314034	6734979		x		
AR229	314047	6734573		x		
AR230	314077	6734180		x		
AR231	314073	6733789		x		
AR232	314064	6733400		x		x
ARS01	313971	6732848			x	x
ARS02	314008	6732274			x	x
ARS03	314238	6731823			x	x
ARS04	314605	6731164			x	x
ARS05	314796	6730627			x	x
ARS06	314812	6730193			x	x
ARS07	314802	6729862			x	x

APPENDIX D: LOCATION OF VEGETATION SURVEY QUADRATS ESTABLISHED IN THE ARROWSMITH NORTH SURVEY AREA 2018 to 2021

Note: AR denotes Arrowsmith North mine area, ARS denotes Arrowsmith North transport corridor alignment (South) and ARW denotes Arrowsmith North transport corridor (West)

QUADRAT	LOCATION (GDA94, Zone 50)		SURVEYED			
	EASTING	NORTHING	2018	2019	2020	2021
ARS08	314800	6729567			x	x
ARS09	314936	6729029			x	
ARS09a	314947	6729064				x
ARS10	314642	6729044			x	
ARS10a	314630	6729243				x
ARS11	314677	6728587			x	
ARS11a	314558	6729372				x
ARS12	314821	6728279			x	
ARS13	315008	6726943			x	
ARS14	315041	6726107			x	
ARS15	315051	6725552			x	
ARS16	315495	6725190			x	
ARS17	315946	6724800			x	
ARS18	315957	6724157			x	
ARS19	316144	6723488			x	
ARS20	316191	6723042			x	
ARS21	315992	6722571			x	
ARS22	315825	6722187			x	
ARS23	315819	6721822			x	
ARS24	316077	6721568			x	
ARS25	316349	6721449			x	
ARS26	316230	6721221			x	
ARW01	313800	6733570			x	
ARW02	313536	6733582			x	
ARW03	313305	6733610			x	
ARW04	313132	6733608			x	
ARW05	313012	6733637			x	
ARW06	312819	6733630			x	
ARW07	312580	6733653			x	
ARW08	312131	6733324			x	
ARW09	311741	6733582			x	
ARW10	311374	6732845			x	
ARW11	311272	6732009			x	
ARW12	311068	6732156			x	
ARW13	310944	6732697			x	
ARW14	310744	6732135			x	
ARW15	310544	6731848			x	
ARW16	310378	6732338			x	
ARW17	310625	6732155			x	
ARW18	311389	6732056			x	

APPENDIX E: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT MAPPING SITES WITHIN THE ARROWSMITH NORTH SURVEY AREA, 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a).

Family	Species	2018	2019	2020	2021
Amaranthaceae	*Ptilotus stirlingii* subsp. *stirlingii*	x			
Anarthriaceae	*Hopkinsia anoectocolea* (P3)			x	x
	Lyginia imberbis	x	x		x
Apiaceae	*Xanthosia huegelii*	x			x
Araliaceae	*Trachymene pilosa*	x	x		x
Asparagaceae	*Acanthocarpus* ?*canaliculatus*	x			
	Acanthocarpus preissii	x	x	x	
	Acanthocarpus sp. Ajana (C.A. Gardner 8596)				x
	Laxmannia omnifertilis	x			x
	Laxmannia sessiliflora subsp. *drummondii*	x	x		x
	Lomandra hastilis	x			
	Thysanotus manglesianus				x
	Thysanotus patersonii				x
	Thysanotus rectantherus	x	x		x
	Thysanotus sparteus	x			
	Thysanotus spiniger		x	x	x
	Thysanotus thyrsoideus				x
	Thysanotus ?*triandrus*				x
	Thysanotus sp.	x		x	x
	Thysanotus sp. (Climbing)	x	x		x
Asteraceae	*Asteridea pulverulenta*	x			
	Gnephosis tenuissima			x	
	Hyalosperma cotula	x	x		x
	* *Hypochaeris glabra*		x		x
	Olearia ?sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)	x		x	x
	Panaetia lessonii				x
	Podotheca angustifolia	x			x
	Podotheca chrysantha				x
	Podotheca gnaphalioides	x	x		
	Pterochaeta paniculata	x	x	x	x
	* *Sonchus oleraceus*				x
	* *Ursinia anthemoides*	x		x	x
	Waitzia acuminata			x	
	Waitzia acuminata var. *acuminata*		x		
	Waitzia acuminata var. *albicans*	x			x
	Asteraceae sp.			x	
Brassicaceae	* Brassicaceae sp.			x	
Campanulaceae	*Isotoma hypocrateriformis*	x	x		x
	Lobelia ?*rarifolia*		x		
	Lobelia rhytidosperma	x			
	* *Wahlenbergia capensis*	x	x		x
	Wahlenbergia gracilenta		x		x
	Wahlenbergia preissii				x
Casuarinaceae	*Allocasuarina campestris*	x	x	x	x
	Allocasuarina humilis	x	x	x	x
	Allocasuarina microstachya	x			
	Allocasuarina sp.	x			x
Celastraceae	*Stackhousia dielsii*				x
	Tripterococcus brunonis	x	x		x
Centrolepidaceae	*Centrolepis pilosa*	x			x

APPENDIX E: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT MAPPING SITES WITHIN THE ARROWSMITH NORTH SURVEY AREA, 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a).

Family	Species	2018	2019	2020	2021
Colchicaceae	*Burchardia congesta*	x	x		x
Crassulaceae	*Crassula colorata*	x	x		x
Cupressaceae	*Callitris arenaria*	x		x	x
Cyperaceae	*Chaetospora curvifolia*				x
	Isolepis marginata				x
	Lepidosperma aff. apricola			x	
	Lepidosperma apricola sens. lat.		x		
	Lepidosperma scabrum sens. lat.	x			x
	Lepidosperma squamatum sens. lat.		x		
	Lepidosperma tenue sens. lat.	x			x
	Lepidosperma sp.			x	x
	Mesomelaena pseudostygia	x	x	x	x
	Morelotia octandra				x
	Schoenus brevisetis	x			
	Schoenus clandestinus	x			x
	Schoenus griffinianus (P4)		x		
	Schoenus latitans			x	
	Schoenus nanus	x			x
	Schoenus pleiostemoneus	x			x
	Schoenus sp.	x		x	
	Cyperaceae sp.	x			
Dasypogonaceae	*Calectasia narragara*				x
	Calectasia sp.	x			
Dilleniaceae	*Hibbertia acerosa*				x
	Hibbertia crassifolia	x	x		x
	Hibbertia hypericoides subsp. *hypericoides*	x	x	x	x
	Hibbertia striata	x	x		x
	Hibbertia subvaginata			x	
Droseraceae	*Drosera eneabba*	x	x		x
	Drosera erythrorhiza				x
	Drosera humilis				x
	Drosera sp.	x	x		x
	Drosera sp. (climbing)	x	x		x
Ecdeiocoleaceae	*Ecdeiocolea monostachya*	x	x	x	x
	Georgeantha hexandra	x			
Ericaceae	*Conostephium preissii*	x	x		x
	Conostephium sp.	x			
	Leucopogon inflexus	x	x	x	x
	Leucopogon sp.	x			
	Leucopogon sp. Northern ciliate (R. Davis 3393)	x			x
	Lysinema pentapetalum	x	x		x
	Styphelia hamulosa	x	x		x
	Styphelia insularis			x	
	Styphelia leptantha	x	x		x
	Styphelia microdonta	x	x		x
	Styphelia tortifolia	x	x		x
	Styphelia xerophylla	x	x		x
	Styphelia sp.				x
Euphorbiaceae	*Monotaxis grandiflora*	x	x		x

APPENDIX E: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT MAPPING SITES WITHIN THE ARROWSMITH NORTH SURVEY AREA, 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a).

Family	Species	2018	2019	2020	2021
Fabaceae	*Acacia blakelyi*	x	x	x	x
	Acacia cavealis	x	x	x	x
	Acacia comans			x	
	Acacia idiomorpha			x	x
	Acacia lasiocarpa			x	
	Acacia ?lineolata		x		
	Acacia pulchella	x			x
	Acacia pulchella var. *glaberrima*	x			x
	Acacia rostellifera		x	x	x
	Acacia saligna		x	x	x
	Acacia scirpifolia	x			x
	Acacia spathulifolia	x	x	x	x
	Acacia xanthina			x	
	Acacia sp.	x			
	Bossiaea eriocarpa			x	
	Daviesia divaricata subsp. *divaricata*	x	x	x	x
	Daviesia nudiflora		x	x	x
	Daviesia triflora	x	x		x
	Daviesia sp.	x			x
	Gompholobium tomentosum	x	x	x	x
	Isotropis cuneifolia	x			x
	Jacksonia calcicola			x	
	Jacksonia hakeoides	x	x	x	x
	Jacksonia ?nutans	x			
	Jacksonia sp.	x		x	
	Labichea cassioides			x	
	Mirbelia ?spinosa			x	
	Sphaerolobium gracile	x			
	* *Trifolium arvense* var. *arvense*		x		
	Fabaceae sp.			x	
Goodeniaceae	*Dampiera oligophylla*				x
	Dampiera spicigera	x	x		x
	Dampiera sp.		x		
	Goodenia pulchella				x
	Goodenia reinwardtii	x	x	x	x
	Lechenaultia juncea (P3)	x			
	Lechenaultia linarioides	x	x	x	x
	Scaevola canescens	x	x		x
	Scaevola phlebopetala				x
	Scaevola repens subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445)	x	x	x	x
	Scaevola sericophylla			x	
	Scaevola sp.			x	
Gyrostemonaceae	*Gyrostemon ramulosus*	x		x	x
	Gyrostemon sp.		x		
Haemodoraceae	*Anigozanthos humilis*	x			x
	Anigozanthos pulcherrimus		x		
	Conostylis aurea		x		
	Conostylis candicans				x
	Conostylis candicans subsp. *calcicola*	x			x
	Conostylis candicans subsp. *candicans*	x	x	x	x
	Conostylis candicans subsp. *procumbens*	x		x	
	Conostylis neocymosa	x	x		x
	Conostylis resinosa	x	x		x
	Conostylis sp.	x	x		
	Haemodorum sp.				x

APPENDIX E: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT MAPPING SITES WITHIN THE ARROWSMITH NORTH SURVEY AREA, 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a).

Family	Species	2018	2019	2020	2021
Hemerocallidaceae	*Arnocrinum preissii*	x			
	Corynotheca micrantha	x			x
	Dianella revoluta		x	x	x
	Stawellia dimorphantha (P4)	x	x		x
	Tricoryne elatior	x	x		
	Tricoryne humilis	x			x
	Tricoryne sp.		x		x
Iridaceae	*Patersonia occidentalis*			x	x
Lamiaceae	*Hemiandra* sp. Eneabba (H. Demarz 3687) (P3)	x			x
	Lachnostachys eriobotrya			x	
	Quoya verbascina	x			
Lauraceae	*Cassytha* ?*aurea* var. *aurea*			x	
	Cassytha flava	x			
	Cassytha glabella forma *bicallosa*		x		x
	Cassytha pomiformis	x	x		x
	Cassytha sp.	x	x	x	x
Loganiaceae	*Orianthera flaviflora*				x
	Orianthera spermacocea	x	x		x
Loranthaceae	*Amyema preissii*				x
Malvaceae	*Guichenotia ledifolia*		x		x
	Guichenotia sp.	x		x	
	Lasiopetalum drummondii	x			
Montiaceae	*Calandrinia polyandra*				x
	Calandrinia sp.				x
Myrtaceae	*Babingtonia grandiflora*	x			x
	Beaufortia ?*aestiva*			x	
	Beaufortia elegans	x	x	x	x
	Calothamnus blepharospermus	x	x	x	x
	Calothamnus quadrifidus subsp. *angustifolius*	x	x	x	x
	Calothamnus sanguineus	x		x	x
	Calytrix sapphirina	x	x		x
	Calytrix strigosa	x	x	x	x
	Calytrix sp.	x		x	x
	Darwinia pauciflora	x	x		x
	Darwinia speciosa	x			x
	Eremaea beaufortioides			x	x
	Eremaea beaufortioides var. *beaufortioides*	x	x		x
	Eremaea beaufortioides var. *microphylla*			x	
	Eremaea ectadioclada	x	x		x
	Eremaea violacea			x	
	Eremaea violacea subsp. *violacea*	x	x		x
	Eucalyptus camaldulensis				x
	Eucalyptus drummondii			x	
	Eucalyptus erythrocorys			x	
	Eucalyptus todtiana	x	x	x	x
	Hypocalymma gardneri (P3)	x	x		x
	Leptospermum oligandrum	x	x	x	x
	Leptospermum spinescens	x	x	x	x
	Melaleuca concreta		x		
	Melaleuca huegelii subsp. *huegelii*		x		
	Melaleuca leuropoma	x	x	x	x
	Melaleuca ?*systena*	x		x	

APPENDIX E: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT MAPPING SITES WITHIN THE ARROWSMITH NORTH SURVEY AREA, 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a).

Family	Species	2018	2019	2020	2021
Myrtaceae	*Melaleuca rhaphiophylla*				x
(continued)	*Melaleuca viminea* subsp. *viminea*		x		
	Pileanthus filifolius	x	x	x	x
	Scholtzia laxiflora	x	x	x	x
	Scholtzia sp.			x	
	Verticordia densiflora var. *densiflora*	x	x	x	x
	Verticordia grandis	x	x	x	x
	Verticordia ovalifolia	x			x
	Verticordia sp.				x
Olacaceae	*Olax benthamiana*				x
	Olax scalariformis	x			
Orchidaceae	*Caladenia crebra*				x
	Caladenia sp.				x
	Pterostylis sp.	x			
	Pyrorchis nigricans				x
	Orchidaceae sp.				x
Phyllanthaceae	*Phyllanthus* ?*calycinus*			x	
	Poranthera microphylla	x	x		x
Poaceae	* *Aira caryophyllea*		x	x	x
	Amphipogon turbinatus	x	x		x
	Amphipogon sp.	x			
	Austrostipa ?*crinita*		x		
	Austrostipa macalpinei	x	x	x	x
	Austrostipa sp.	x		x	x
	* *Briza maxima*			x	
	* *Eragrostis curvula*				x
	Eragrostis dielsii				x
	Neurachne alopecuroidea	x	x	x	x
	* *Vulpia myuros forma myuros*				x
	Poaceae sp.		x	x	
Polygalaceae	*Comesperma calymega*		x		
Polygonaceae	*Muehlenbeckia adpressa*		x	x	x
Primulaceae	* *Lysimachia arvensis*		x		x
Proteaceae	*Banksia attenuata*	x	x	x	x
	Banksia dallanneyi subsp. *media*			x	
	Banksia elegans (P4)	x		x	x
	Banksia hookeriana	x	x		x
	Banksia leptophylla var. *melletica*	x	x	x	x
	Banksia menziesii	x	x	x	x
	Banksia prionotes	x		x	x
	Banksia sessilis			x	
	Banksia shuttleworthiana	x			x
	Banksia sp.			x	
	Conospermum brachyphyllum	x			
	Conospermum ?*stoechadis* subsp. *stoechadis*			x	
	Conospermum triplinervium	x	x	x	x
	Grevillea candelabroides	x			
	Grevillea eriostachya	x		x	x
	Grevillea leucopteris	x	x	x	x
	Grevillea preissii subsp. *preissii*			x	
	Hakea costata	x	x	x	x
	Hakea incrassata			x	

APPENDIX E: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT MAPPING SITES WITHIN THE ARROWSMITH NORTH SURVEY AREA, 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a).

Family	Species	2018	2019	2020	2021
Proteaceae	*Hakea lissocarpha*			x	
(continued)	*Hakea polyanthema*	x	x	x	x
	Hakea trifurcata			x	
	Persoonia acicularis	x	x	x	x
	Petrophile axillaris	x			
	Petrophile brevifolia	x	x	x	x
	Petrophile drummondii	x	x	x	x
	Petrophile macrostachya	x	x	x	x
	Stirlingia abrotanoides				x
	Stirlingia latifolia	x	x		x
	Synaphea spinulosa subsp. *spinulosa*	x	x		x
	Synaphea sp.	x		x	
	Xylomelum angustifolium	x			x
	Proteaceae sp.		x		
Restionaceae	*Alexgeorgea nitens*	x	x		x
	Chordifex sinuosus	x	x	x	x
	Desmocladus asper			x	x
	Lepidobolus preissianus subsp. *preissianus*	x	x	x	x
	Lepidobolus sp.	x			
	?Loxocarya striata	x	x		
	Restionaceae sp.	x		x	
Rhamnaceae	*Cryptandra myriantha*	x		x	
	Stenanthemum notiale subsp. *notiale*	x	x	x	x
Rubiaceae	*Opercularia vaginata*				x
Rutaceae	*Cyanothamnus ramosus* subsp. *anethifolius*	x	x		x
	Diplolaena leemaniana			x	
	Geleznowia verrucosa	x	x	x	
Solanaceae	*Solanum ?lasiophyllum*			x	
Stylidiaceae	*Levenhookia octomaculata*	x			x
	Levenhookia pusilla	x			x
	Levenhookia stipitata	x			x
	Stylidium adpressum	x		x	x
	Stylidium crossocephalum	x	x	x	x
	Stylidium dichotomum	x			x
	Stylidium diuroides subsp. *paucifoliatum*	x			x
	Stylidium kalbarriense				x
	Stylidium maitlandianum				x
	Stylidium ponticulus	x			x
	Stylidium purpureum	x	x		x
	Stylidium repens	x	x	x	x
	Stylidium rigidulum	x			x
	Stylidium sp.	x	x		x
Thymelaeaceae	*Pimelea angustifolia*	x	x		x
	Pimelea sp.		x		x
Vitaceae	*?Clematicissus angustissima*			x	
Xanthorrhoeaceae	*Xanthorrhoea drummondii*	x	x	x	x
Zamiaceae	*Macrozamia fraseri*			x	x

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora (DBCA 2019a), list does not contain opportunistic taxa.

SPECIES	AR42	AR43	AR44	AR45	AR46	AR47	AR48	AR49	AR50	AR51	AR52	AR53	AR54	AR55	AR56	AR57	AR58	AR59	AR60	AR61	AR62	AR63	AR64	AR65	AR66	AR67	AR68	AR69	AR70	AR71
Acacia blakelyi		x	x	x			x				x	x		x						x	x				x		x			
Acacia cavealis		x	x		x	x														x	x	x	x	x	x	x				
Acacia comans																														
Acacia idiomorpha																														
Acacia lasiocarpa																														
Acacia ?lineolata																														
Acacia pulchella															x															
Acacia pulchella var. *glaberrima*																														
Acacia rostellifera																														
Acacia saligna																														
Acacia scirpifolia																														
Acacia spathulifolia		x		x		x																		x						
Acacia xanthina																														
Acacia sp.																														
Acanthocarpus ?canaliculatus																		x	x	x		x				x		x		x
Acanthocarpus preissii		x	x			x	x	x	x	x	x		x	x		x	x													
Acanthocarpus sp. Ajana (C.A. Gardner 8596)	x					x												x	x			x				x	x	x		
* *Aira caryophyllea*																														
Alexgeorgea nitens						x	x							x	x	x														
Allocasuarina campestris					x																	x		x				x		
Allocasuarina humilis									x																					x
Allocasuarina microstachya																			x											
Allocasuarina sp.																x														
Amphipogon turbinatus	x				x								x	x			x		x											
Amphipogon sp.							x																							
Amyema preissii																														
Anigozanthos humilis								x			x		x	x	x	x	x				x									
Anigozanthos pulcherrimus																														
Arnocrinum preissii	x																													
Asteraceae sp.																														
Asteridea pulverulenta																											x			
Austrostipa ?crinita																														

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora (DBCA 2019a), list does not contain opportunistic taxa.

SPECIES	AR42	AR43	AR44	AR45	AR46	AR47	AR48	AR49	AR50	AR51	AR52	AR53	AR54	AR55	AR56	AR57	AR58	AR59	AR60	AR61	AR62	AR63	AR64	AR65	AR66	AR67	AR68	AR69	AR70	AR71
Austrostipa macalpinei	x	x	x												x			x		x			x			x			
Austrostipa sp.																				x			x	x	x		x			
Babingtonia grandiflora																														
Banksia attenuata	x		x	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x	x	x				x		x	x	x
Banksia dallanneyi subsp. *media*																														
Banksia elegans (P4)																														
Banksia hookeriana			x		x	x	x	x		x	x	x		x		x				x	x					x		x	x	
Banksia leptophylla var. *melletica*			x																											
Banksia menziesii	x					x		x	x	x	x				x		x		x			x				x			x	
Banksia prionotes																											x			
Banksia sessilis																														
Banksia shuttleworthiana	x				x	x		x	x	x	x			x			x	x								x		x	x	x
Banksia sp.																														
Beaufortia ?*aestiva*																														
Beaufortia elegans					x	x		x	x	x	x		x	x	x		x	x	x	x	x	x		x		x		x	x	x
Bossiaea eriocarpa																														
* Brassicaceae sp.																														
* *Briza maxima*																														
Burchardia congesta	x	x	x			x					x							x	x				x		x	x		x	x	
Caladenia crebra																														
Caladenia sp.																														
Calandrinia polyandra																														
Calandrinia sp.																														
Calectasia narragara																														
Calectasia sp.																														
Callitris arenaria																														
Calothamnus blepharospermus	x	x	x	x	x	x			x		x	x		x				x	x	x	x	x	x	x	x	x		x	x	x
Calothamnus quadrifidus subsp. *angustifolius*		x	x	x																				x		x				
Calothamnus sanguineus																														
Calytrix sapphirina							x								x															
Calytrix strigosa	x	x	x								x	x	x					x	x			x	x	x	x	x				x
Calytrix sp.												x																		

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora (DBCA 2019a), list does not contain opportunistic taxa.

SPECIES	AR42	AR43	AR44	AR45	AR46	AR47	AR48	AR49	AR50	AR51	AR52	AR53	AR54	AR55	AR56	AR57	AR58	AR59	AR60	AR61	AR62	AR63	AR64	AR65	AR66	AR67	AR68	AR69	AR70	AR71
Cassytha ?*aurea* var. *aurea*																														
Cassytha flava											x	x	x	x	x	x	x													
Cassytha glabella forma *bicallosa*					x	x												x	x			x				x	x	x	x	
Cassytha pomiformis				x																										
Cassytha sp.	x		x			x	x		x									x	x	x		x	x			x				
Centrolepis pilosa																							x							
Chaetospora curvifolia																														
Chordifex sinuosus						x									x	x	x													
?*Clematicissus angustissima*																														
Comesperma calymega																														
Conospermum ?*stoechadis* subsp. *stoechadis*																														
Conospermum brachyphyllum														x		x	x													
Conospermum triplinervium	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
Conostephium preissii																x														
Conostephium sp.															x															
Conostylis aurea																														
Conostylis candicans																														
Conostylis candicans subsp. *calcicola*																								x						
Conostylis candicans subsp. *candicans*																														
Conostylis candicans subsp. *procumbens*				x			x								x		x													
Conostylis neocymosa							x					x								x						x				
Conostylis resinosa	x				x	x		x	x	x	x			x		x		x	x									x	x	x
Conostylis sp.																						x								
Corynotheca micrantha			x																											
Crassula colorata															x															
Cryptandra myriantha	x																													
Cyanothamnus ramosus subsp. *anethifolius*															x															
Cyperaceae sp.																														
Dampiera oligophylla					x																									
Dampiera spicigera	x					x			x		x		x			x	x	x	x											
Dampiera sp.																														

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora (DBCA 2019a), list does not contain opportunistic taxa.

SPECIES	AR42	AR43	AR44	AR45	AR46	AR47	AR48	AR49	AR50	AR51	AR52	AR53	AR54	AR55	AR56	AR57	AR58	AR59	AR60	AR61	AR62	AR63	AR64	AR65	AR66	AR67	AR68	AR69	AR70	AR71
Darwinia pauciflora		x	x		x	x		x	x	x											x	x	x	x	x	x		x	x	
Darwinia speciosa																														
Daviesia divaricata subsp. *divaricata*	x				x	x	x	x	x	x	x	x	x	x	x		x	x	x		x	x				x		x	x	x
Daviesia nudiflora																														
Daviesia triflora														x	x	x	x													
Daviesia sp.																														
Desmocladus asper																														
Dianella revoluta																														
Diplolaena leemaniana																														
Drosera eneabba						x	x		x		x	x						x				x						x		
Drosera erythrorhiza																														
Drosera humilis																		x				x					x	x		
Drosera sp.											x								x				x							
Drosera sp. (climbing)	x		x		x	x										x		x												
Ecdeiocolea monostachya	x	x	x		x	x		x	x	x			x	x				x	x	x	x	x	x	x	x	x	x	x	x	x
* *Eragrostis curvula*																														
Eragrostis dielsii																														
Eremaea beaufortioides																														
Eremaea beaufortioides var. *beaufortioides*	x	x	x		x	x	x	x	x	x	x		x	x	x	x	x	x	x			x	x		x	x		x	x	x
Eremaea beaufortioides var. *microphylla*																														
Eremaea ectadioclada								x					x	x					x							x			x	
Eremaea violacea																														
Eremaea violacea subsp. *violacea*					x	x		x	x	x	x			x			x	x	x		x	x				x		x	x	x
Eucalyptus camaldulensis																														
Eucalyptus drummondii																														
Eucalyptus erythrocorys																														
Eucalyptus todtiana			x																	x	x						x			
Fabaceae sp.																														
Geleznowia verrucosa																								x	x					
Georgeantha hexandra																		x	x	x		x	x	x	x					
Gnephosis tenuissima																														
Gompholobium tomentosum															x						x			x						

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

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SPECIES	AR42	AR43	AR44	AR45	AR46	AR47	AR48	AR49	AR50	AR51	AR52	AR53	AR54	AR55	AR56	AR57	AR58	AR59	AR60	AR61	AR62	AR63	AR64	AR65	AR66	AR67	AR68	AR69	AR70	AR71
Goodenia pulchella																														
Goodenia reinwardtii						x																								
Grevillea candelabroides																				x							x			
Grevillea eriostachya					x																							x		
Grevillea leucopteris			x	x	x				x					x													x			
Grevillea preissii subsp. *preissii*																														
Guichenotia ledifolia																														
Guichenotia sp.			x	x																										
Gyrostemon ramulosus				x																										
Gyrostemon sp.																														
Haemodorum sp.	x																													
Hakea costata			x			x					x		x					x												
Hakea incrassata																														
Hakea lissocarpha																														
Hakea polyanthema	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
Hakea trifurcata																														
Hemiandra sp. Eneabba (H. Demarz 3687) (P3)																	x													
Hibbertia acerosa																														
Hibbertia crassifolia					x					x	x	x				x	x											x	x	x
Hibbertia hypericoides subsp. *hypericoides*	x		x	x		x	x	x	x	x	x	x	x	x		x		x	x	x	x	x	x	x		x	x	x		
Hibbertia striata																														
Hibbertia subvaginata																														
Hopkinsia anoectocolea (P3)																														
Hyalosperma cotula		x	x																								x			
Hypocalymma gardneri (P3)									x				x	x			x													
* *Hypochaeris glabra*																														
Isolepis marginata																														
Isotoma hypocrateriformis																		x					x				x			
Isotropis cuneifolia																		x												
Jacksonia calcicola																														
Jacksonia hakeoides			x																x	x			x							

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Jacksonia ?nutans													x																	
Jacksonia sp.	x																													
Labichea cassioides																														
Lachnostachys eriobotrya																														
Lasiopetalum drummondii								x	x	x	x		x	x		x	x													
Laxmannia omnifertilis														x																
Laxmannia sessiliflora subsp. *drummondii*						x	x		x			x										x			x				
Lechenaultia juncea (P3)																														
Lechenaultia linarioides		x	x																				x		x					
Lepidobolus preissianus subsp. *preissianus*	x	x	x		x	x		x	x	x	x	x	x					x	x			x	x			x	x	x	x	
Lepidobolus sp.																		x	x	x	x	x	x	x	x	x	x	x	x	x
Lepidosperma aff. apricola																														
Lepidosperma apricola sens. lat.																														
Lepidosperma scabrum sens. lat.		x							x							x	x			x										
Lepidosperma squamatum sens. lat.																														
Lepidosperma tenue sens. lat.																														
Lepidosperma sp.																						x				x		x		
Leptospermum oligandrum	x				x	x			x	x	x			x		x												x	x	
Leptospermum spinescens	x				x	x		x	x	x	x	x		x		x	x		x		x					x			x	
Leucopogon inflexus	x				x	x	x	x		x	x	x		x	x	x	x	x	x			x	x			x		x	x	
Leucopogon sp.																														
Leucopogon sp. Northern ciliate (R. Davis 3393)							x					x	x		x	x										x				x
Levenhookia octomaculata																														
Levenhookia pusilla	x							x	x											x										
Levenhookia stipitata	x	x													x		x	x			x			x	x					
Lobelia ?rarifolia																														
Lobelia rhytidosperma		x																					x		x		x			
Lomandra hastilis																					x									
?*Loxocarya striata*																														
Lyginia imberbis															x	x							x							
* *Lysimachia arvensis*																														

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Lysinema pentapetalum										x			x	x		x	x											x		
Macrozamia fraseri																														
Melaleuca concreta																														
Melaleuca huegelii subsp. *huegelii*																														
Melaleuca leuropoma	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
Melaleuca ?systena																								x						
Melaleuca rhaphiophylla																														
Melaleuca viminea subsp. *viminea*																														
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		x	x	x	x	x
Mirbelia ?spinosa																														
Monotaxis grandiflora	x	x	x		x	x		x	x	x	x	x	x	x				x	x	x						x		x		x
Morelotia octandra																							x							
Muehlenbeckia adpressa																														
Neurachne alopecuroidea	x	x	x		x	x				x			x						x	x	x	x	x	x		x	x	x	x	
Olax benthamiana																											x			
Olax scalariformis		x																												
Olearia ?sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)																								x			x			
Opercularia vaginata	x																													
Orchidaceae sp.																											x			
Orianthera flaviflora																														
Orianthera spermacocea																												x		
Panaetia lessonii																														
Patersonia occidentalis																														
Persoonia acicularis	x	x			x	x	x				x	x	x	x		x	x	x	x	x	x	x	x		x	x	x	x	x	x
Petrophile axillaris			x																											
Petrophile brevifolia				x							x	x		x						x	x					x	x		x	
Petrophile drummondii					x	x	x	x	x	x				x	x		x											x		
Petrophile macrostachya	x	x	x			x	x	x	x	x	x		x		x	x	x	x		x	x	x				x		x		
Phyllanthus ?calycinus																														
Pileanthus filifolius	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
Pimelea angustifolia			x			x	x				x		x		x		x		x		x									x

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Pimelea sp.																														
Poaceae sp.																														
Podotheca angustifolia																							x				x			
Podotheca chrysantha																														
Podotheca gnaphalioides	x																						x				x			
Poranthera microphylla							x	x				x											x			x			x	
Proteaceae sp.																														
Pterochaeta paniculata																							x				x			
Pterostylis sp.		x																												
Ptilotus stirlingii subsp. *stirlingii*								x	x											x										
Pyrorchis nigricans																														
Quoya verbascina																														
Restionaceae sp.																								x						
Scaevola canescens																		x												
Scaevola phlebopetala																														
Scaevola repens subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445)	x	x	x		x	x							x					x	x		x	x			x	x		x	x	
Scaevola sericophylla																														
Scaevola sp.																														
Schoenus brevisetis																														
Schoenus clandestinus	x		x		x	x		x	x	x	x		x					x	x	x	x	x	x			x	x	x	x	x
Schoenus griffinianus (P4)																														
Schoenus latitans																														
Schoenus nanus															x								x							
Schoenus pleiostemoneus					x	x				x				x		x	x													
Schoenus sp.																														
Scholtzia laxiflora	x	x	x		x		x	x	x	x		x	x	x		x	x	x	x	x	x	x	x	x	x	x			x	x
Scholtzia sp.																														
Solanum ?lasiophyllum																														
* *Sonchus oleraceus*																														
Sphaerolobium gracile																								x						
Stackhousia dielsii																														

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Stawellia dimorphantha (P4)				x																			x				x			
Stenanthemum notiale subsp. *notiale*	x	x	x	x	x			x	x	x	x		x					x	x	x	x		x			x		x	x	x
Stirlingia abrotanoides						x																	x					x		
Stirlingia latifolia															x		x													
Stylidium adpressum																		x				x				x				
Stylidium crossocephalum	x				x	x	x	x	x	x	x		x	x	x	x	x											x		
Stylidium dichotomum	x																													
Stylidium diuroides subsp. *paucifoliatum*	x				x	x		x	x	x	x		x						x			x								x
Stylidium kalbarriense																														
Stylidium maitlandianum																														
Stylidium ponticulus	x					x		x	x	x			x	x												x		x	x	x
Stylidium purpureum							x	x	x	x				x			x			x						x				
Stylidium repens					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x							x		x	x	x
Stylidium rigidulum							x						x	x		x	x													
Stylidium sp.	x							x	x	x									x											
Styphelia hamulosa																														
Styphelia insularis																														
Styphelia leptantha																				x		x				x				
Styphelia microdonta					x											x			x									x		
Styphelia tortifolia						x		x	x	x	x							x				x		x						
Styphelia xerophylla							x								x	x	x													
Styphelia sp.																														
Synaphea spinulosa subsp. *spinulosa*					x													x								x		x		
Synaphea sp.					x	x																								
Thysanotus manglesianus																														
Thysanotus patersonii																														
Thysanotus rectantherus		x					x	x	x	x						x	x			x						x		x		
Thysanotus sparteus			x	x																										
Thysanotus spiniger																														
Thysanotus thyrsoideus																														
Thysanotus ?triandrus																														
Thysanotus sp.	x																	x					x		x	x	x	x		x

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Thysanotus sp. (Climbing)	x		x	x					x		x						x													
Trachymene pilosa		x	x	x																	x		x		x		x			
Tricoryne elatior			x																											
Tricoryne humilis																			x							x				
Tricoryne sp.					x																									
* *Trifolium arvense* var. *arvense*																														
Tripterococcus brunonis																	x													
* *Ursinia anthemoides*		x	x	x																							x			
Verticordia densiflora var. *densiflora*						x	x							x			x			x								x		
Verticordia grandis	x	x			x		x	x	x	x	x			x		x			x	x	x	x				x	x	x	x	x
Verticordia ovalifolia																														
Verticordia sp.																														
* *Vulpia myuros* forma *myuros*																														
* *Wahlenbergia capensis*			x												x															
Wahlenbergia gracilenta																														
Wahlenbergia preissii																														
Waitzia acuminata																														
Waitzia acuminata var. *acuminata*																														
Waitzia acuminata var. *albicans*	x																						x	x	x		x			
Xanthorrhoea drummondii		x	x																											
Xanthosia huegelii																					x									
Xylomelum angustifolium			x														x				x									

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Acacia blakelyi		x				x	x				x	x																		
Acacia cavealis											x	x																		
Acacia comans																														
Acacia idiomorpha																														
Acacia lasiocarpa																														
Acacia ?lineolata																														
Acacia pulchella							x																				x			
Acacia pulchella var. *glaberrima*																														
Acacia rostellifera																														
Acacia saligna																														
Acacia scirpifolia												x																		
Acacia spathulifolia																														
Acacia xanthina																														
Acacia sp.												x																		
Acanthocarpus ?canaliculatus	x	x	x	x	x	x		x	x		x	x	x	x	x	x	x	x		x	x	x		x	x	x		x		
Acanthocarpus preissii																													x	x
Acanthocarpus sp. Ajana (C.A. Gardner 8596)								x	x		x	x	x	x	x															
* *Aira caryophyllea*																														
Alexgeorgea nitens							x																						x	
Allocasuarina campestris												x		x													x	x		
Allocasuarina humilis					x	x																								
Allocasuarina microstachya																														
Allocasuarina sp.																														
Amphipogon turbinatus									x	x					x															
Amphipogon sp.																														
Amyema preissii																														
Anigozanthos humilis				x		x	x		x	x					x							x	x	x			x		x	x
Anigozanthos pulcherrimus																														
Arnocrinum preissii																														
Asteraceae sp.																														
Asteridea pulverulenta											x																			
Austrostipa ?crinita																														

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Austrostipa macalpinei							x	x			x	x																		
Austrostipa sp.							x		x								x													
Babingtonia grandiflora																														
Banksia attenuata	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
Banksia dallanneyi subsp. *media*																														
Banksia elegans (P4)		x	x	x											x					x							x			
Banksia hookeriana	x	x	x	x	x	x		x	x	x			x	x	x	x	x			x	x	x	x	x	x	x		x	x	x
Banksia leptophylla var. *melletica*																														
Banksia menziesii								x		x														x			x		x	x
Banksia prionotes																														
Banksia sessilis																														
Banksia shuttleworthiana	x			x		x			x	x			x	x	x		x	x	x	x	x	x	x	x						
Banksia sp.																														
Beaufortia ?*aestiva*																														
Beaufortia elegans			x	x	x	x	x		x	x			x	x		x	x	x		x		x	x	x	x				x
Bossiaea eriocarpa																														
* Brassicaceae sp.																														
* *Briza maxima*																														
Burchardia congesta								x			x	x	x	x	x														x	
Caladenia crebra																														
Caladenia sp.																														
Calandrinia polyandra																														
Calandrinia sp.																														
Calectasia narragara									x																					
Calectasia sp.																														
Callitris arenaria																														
Calothamnus blepharospermus	x				x			x	x		x	x		x	x	x	x	x	x	x	x				x	x				
Calothamnus quadrifidus subsp. *angustifolius*												x																		
Calothamnus sanguineus																		x											x	
Calytrix sapphirina			x				x																						x	
Calytrix strigosa	x					x		x	x	x	x	x	x		x				x								x			
Calytrix sp.																														

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Cassytha ?*aurea* var. *aurea*																														
Cassytha flava																													x	x
Cassytha glabella forma *bicallosa*								x						x																
Cassytha pomiformis																														
Cassytha sp.		x	x			x	x	x	x	x			x					x		x	x	x	x	x	x	x	x		
Centrolepis pilosa																														
Chaetospora curvifolia							x																							
Chordifex sinuosus													x		x														x	
?*Clematicissus angustissima*																														
Comesperma calymega																														
Conospermum ?*stoechadis* subsp. *stoechadis*																														
Conospermum brachyphyllum						x																				x			x	
Conospermum triplinervium	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
Conostephium preissii						x	x																							x
Conostephium sp.																														
Conostylis aurea																														
Conostylis candicans																														
Conostylis candicans subsp. *calcicola*						x	x																							
Conostylis candicans subsp. *candicans*								x																			x			
Conostylis candicans subsp. *procumbens*																													x	x
Conostylis neocymosa											x	x			x								x		x	x		x		
Conostylis resinosa	x	x	x	x	x	x			x	x		x		x	x	x	x								x		x	x		
Conostylis sp.																														
Corynotheca micrantha																														
Crassula colorata																														
Cryptandra myriantha																														
Cyanothamnus ramosus subsp. *anethifolius*							x																							
Cyperaceae sp.																														
Dampiera oligophylla																														
Dampiera spicigera			x	x	x	x	x	x	x	x			x	x				x	x		x	x	x	x	x	x	x	x	x	x
Dampiera sp.																														

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

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SPECIES	AR72	AR73	AR74	AR75	AR77	AR78	AR79	AR80	AR81	AR82	AR83	AR84	AR85	AR86	AR87	AR88	AR89	AR90	AR91	AR92	AR93	AR94	AR95	AR96	AR97	AR98	AR99	AR100	AR101	AR102
Darwinia pauciflora	x							x			x	x	x	x	x	x	x			x						x				
Darwinia speciosa																														x
Daviesia divaricata subsp. *divaricata*	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
Daviesia nudiflora																														
Daviesia triflora							x			x																	x		x	x
Daviesia sp.									x																					
Desmocladus asper																														
Dianella revoluta																														
Diplolaena leemaniana																														
Drosera eneabba							x		x	x			x	x			x					x		x					x	
Drosera erythrorhiza											x																			
Drosera humilis								x		x																				
Drosera sp.			x											x					x											
Drosera sp. (climbing)											x			x	x															
Ecdeiocolea monostachya	x							x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	
* *Eragrostis curvula*																														
Eragrostis dielsii																														
Eremaea beaufortioides																														
Eremaea beaufortioides var. *beaufortioides*	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
Eremaea beaufortioides var. *microphylla*																														
Eremaea ectadioclada		x					x			x						x	x	x		x		x						x	x	x
Eremaea violacea																														
Eremaea violacea subsp. *violacea*									x	x		x	x	x	x	x	x	x	x	x		x								
Eucalyptus camaldulensis																														
Eucalyptus drummondii																														
Eucalyptus erythrocorys																														
Eucalyptus todtiana																														
Fabaceae sp.																														
Geleznowia verrucosa																														
Georgeantha hexandra																														
Gnephosis tenuissima																														
Gompholobium tomentosum							x																							

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Goodenia pulchella																														
Goodenia reinwardtii																														
Grevillea candelabroides		x	x																		x			x		x		x		
Grevillea eriostachya									x					x																
Grevillea leucopteris																														
Grevillea preissii subsp. *preissii*																														
Guichenotia ledifolia																														
Guichenotia sp.																														
Gyrostemon ramulosus																														
Gyrostemon sp.																														
Haemodorum sp.																														
Hakea costata				x	x					x						x				x		x								
Hakea incrassata																														
Hakea lissocarpha																														
Hakea polyanthema	x	x	x	x	x	x		x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x					x	
Hakea trifurcata																														
Hemiandra sp. Eneabba (H. Demarz 3687) (P3)					x											x						x						x		
Hibbertia acerosa																														
Hibbertia crassifolia	x	x		x	x	x	x						x	x	x	x	x	x	x		x	x		x	x		x	x	x	x
Hibbertia hypericoides subsp. *hypericoides*		x	x			x		x	x	x	x	x	x	x		x	x	x							x				x	x
Hibbertia striata	x	x																												
Hibbertia subvaginata																														
Hopkinsia anoectocolea (P3)																														
Hyalosperma cotula								x																						
Hypocalymma gardneri (P3)				x	x													x				x	x	x	x		x			x
* *Hypochaeris glabra*																														
Isolepis marginata																														
Isotoma hypocrateriformis											x	x																		
Isotropis cuneifolia								x			x																			
Jacksonia calcicola																														
Jacksonia hakeoides		x					x	x			x	x												x		x	x			

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Jacksonia ?nutans																														
Jacksonia sp.						x	x																							
Labichea cassioides																														
Lachnostachys eriobotrya																														
Lasiopetalum drummondii			x		x	x		x													x	x	x	x	x		x	x	x	x
Laxmannia omnifertilis								x																						
Laxmannia sessiliflora subsp. *drummondii*		x							x																					
Lechenaultia juncea (P3)																														
Lechenaultia linarioides												x																		
Lepidobolus preissianus subsp. *preissianus*								x	x	x	x	x	x	x	x															
Lepidobolus sp.	x				x					x		x				x	x	x	x	x	x	x	x	x	x	x	x	x		
Lepidosperma aff. apricola																														
Lepidosperma apricola sens. lat.																														
Lepidosperma scabrum sens. lat.				x		x			x																				x	x
Lepidosperma squamatum sens. lat.																														
Lepidosperma tenue sens. lat.								x		x						x		x			x	x								
Lepidosperma sp.													x	x	x															
Leptospermum oligandrum							x		x	x				x	x		x				x	x						x		
Leptospermum spinescens	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	
Leucopogon inflexus	x	x	x	x		x	x		x				x	x	x	x	x		x				x				x	x	x	x
Leucopogon sp.																														
Leucopogon sp. Northern ciliate (R. Davis 3393)		x	x			x	x							x	x				x	x	x		x		x		x	x		
Levenhookia octomaculata											x																			
Levenhookia pusilla																														
Levenhookia stipitata												x			x															
Lobelia ?rarifolia																														
Lobelia rhytidosperma																														
Lomandra hastilis																														
?*Loxocarya striata*																														
Lyginia imberbis						x	x																							x
* *Lysimachia arvensis*																														

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Lysinema pentapetalum				x	x				x				x	x			x	x				x	x	x			x		x	x
Macrozamia fraseri																														
Melaleuca concreta																														
Melaleuca huegelii subsp. *huegelii*																														
Melaleuca leuropoma	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
Melaleuca ?systena																														
Melaleuca rhaphiophylla																														
Melaleuca viminea subsp. *viminea*																														
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	x	x	x	x	x
Mirbelia ?spinosa																														
Monotaxis grandiflora	x		x	x	x	x		x	x	x	x	x	x	x	x	x	x	x	x	x	x			x	x		x			
Morelotia octandra																														
Muehlenbeckia adpressa																														
Neurachne alopecuroidea				x				x	x	x	x	x	x	x					x								x		
Olax benthamiana																														
Olax scalariformis																														
Olearia ?sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)																														
Opercularia vaginata																														
Orchidaceae sp.																														
Orianthera flaviflora																														
Orianthera spermacocea																						x			x			x		
Panaetia lessonii																														
Patersonia occidentalis																														
Persoonia acicularis	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
Petrophile axillaris																														
Petrophile brevifolia		x	x	x				x		x					x								x	x	x	x				
Petrophile drummondii		x	x	x	x	x			x	x			x		x	x	x	x		x	x	x		x			x	x		
Petrophile macrostachya	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
Phyllanthus ?calycinus																														
Pileanthus filifolius	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
Pimelea angustifolia		x	x			x											x			x				x		x	x	x	x	x

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Pimelea sp.							x			x																				
Poaceae sp.											x																			
Podotheca angustifolia											x																			
Podotheca chrysantha											x																			
Podotheca gnaphalioides											x																			
Poranthera microphylla											x																			
Proteaceae sp.											x																			
Pterochaeta paniculata											x																			
Pterostylis sp.											x																			
Ptilotus stirlingii subsp. *stirlingii*											x																			
Pyrorchis nigricans											x																			
Quoya verbascina											x																			
Restionaceae sp.											x																			
Scaevola canescens											x																			
Scaevola phlebopetala											x																			
Scaevola repens subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445)	x							x	x	x	x	x		x	x				x	x	x			x	x	x	x	x		
Scaevola sericophylla											x																			
Scaevola sp.											x																			
Schoenus brevisetis											x																			
Schoenus clandestinus	x		x	x	x	x	x	x	x	x	x	x	x	x	x				x	x	x	x	x	x	x			x		
Schoenus griffinianus (P4)											x																			
Schoenus latitans											x																			
Schoenus nanus											x																			
Schoenus pleiostemoneus									x	x			x			x						x			x		x		x	x
Schoenus sp.										x								x												
Scholtzia laxiflora	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
Scholtzia sp.											x																			
Solanum ?lasiophyllum											x																			
* *Sonchus oleraceus*											x																			
Sphaerolobium gracile											x																			
Stackhousia dielsii											x																			

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Stawellia dimorphantha (P4)								x			x																			
Stenanthemum notiale subsp. *notiale*	x					x		x				x	x				x		x				x	x			x	x		
Stirlingia abrotanoides												x		x	x															
Stirlingia latifolia							x																							
Stylidium adpressum												x																		
Stylidium crossocephalum		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
Stylidium dichotomum															x															
Stylidium diuroides subsp. *paucifoliatum*									x	x			x	x	x	x	x	x	x	x	x	x	x	x						
Stylidium kalbarriense								x																						
Stylidium maitlandianum																														
Stylidium ponticulus	x									x					x	x	x	x	x		x		x	x						
Stylidium purpureum			x	x																							x			x
Stylidium repens	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
Stylidium rigidulum																							x	x						
Stylidium sp.										x														x						
Styphelia hamulosa								x			x	x																		
Styphelia insularis																														
Styphelia leptantha												x																		
Styphelia microdonta	x			x						x			x	x	x	x	x					x		x						
Styphelia tortifolia									x																					
Styphelia xerophylla							x																							
Styphelia sp.																														
Synaphea spinulosa subsp. *spinulosa*	x				x				x	x				x																
Synaphea sp.																														
Thysanotus manglesianus											x																			
Thysanotus patersonii																														
Thysanotus rectantherus	x	x	x					x						x				x				x	x	x						
Thysanotus sparteus																														
Thysanotus spiniger																														
Thysanotus thyrsoideus											x																			
Thysanotus ?triandrus													x																	
Thysanotus sp.		x							x																					

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Thysanotus sp. (Climbing)																														
Trachymene pilosa											x																			
Tricoryne elatior																														
Tricoryne humilis									x				x							x										
Tricoryne sp.																														
* *Trifolium arvense* var. *arvense*																														
Tripterococcus brunonis							x																						x	
* *Ursinia anthemoides*																														
Verticordia densiflora var. *densiflora*		x			x				x															x						x
Verticordia grandis		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
Verticordia ovalifolia																														
Verticordia sp.																														
* *Vulpia myuros* forma *myuros*																														
* *Wahlenbergia capensis*																														
Wahlenbergia gracilenta																														
Wahlenbergia preissii																														
Waitzia acuminata																														
Waitzia acuminata var. *acuminata*																														
Waitzia acuminata var. *albicans*																														
Xanthorrhoea drummondii																														
Xanthosia huegelii							x															x								x
Xylomelum angustifolium									x																	x				

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Acacia blakelyi																														
Acacia cavealis																														
Acacia comans																														
Acacia idiomorpha																														
Acacia lasiocarpa																														
Acacia ?lineolata																														
Acacia pulchella																														x
Acacia pulchella var. *glaberrima*																				x										
Acacia rostellifera																														
Acacia saligna																														
Acacia scirpifolia																		x												
Acacia spathulifolia																														
Acacia xanthina																														
Acacia sp.																														
Acanthocarpus ?canaliculatus					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x	
Acanthocarpus preissii		x	x	x																					x					
Acanthocarpus sp. Ajana (C.A. Gardner 8596)						x	x			x	x		x	x																
* *Aira caryophyllea*																														
Alexgeorgea nitens	x		x																	x			x	x		x		x		x
Allocasuarina campestris														x																
Allocasuarina humilis		x	x	x							x	x		x	x								x	x	x					
Allocasuarina microstachya																														
Allocasuarina sp.		x			x				x					x															x	
Amphipogon turbinatus	x			x	x		x			x			x	x																x
Amphipogon sp.																														
Amyema preissii																														
Anigozanthos humilis	x		x	x	x	x				x		x				x					x					x				
Anigozanthos pulcherrimus																														
Arnocrinum preissii																												x		
Asteraceae sp.																														
Asteridea pulverulenta																														
Austrostipa ?crinita																														

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Austrostipa macalpinei	x																			x										x
Austrostipa sp.																														
Babingtonia grandiflora																														
Banksia attenuata	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
Banksia dallanneyi subsp. *media*																														
Banksia elegans (P4)	x	x			x															x				x				x	
Banksia hookeriana		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
Banksia leptophylla var. *melletica*																														
Banksia menziesii	x			x		x					x	x									x					x	x			x
Banksia prionotes																														
Banksia sessilis																														
Banksia shuttleworthiana				x	x	x	x	x	x	x	x	x	x		x	x	x		x			x								
Banksia sp.																														
Beaufortia ?*aestiva*																														
Beaufortia elegans		x	x	x	x				x	x	x	x	x		x						x	x	x	x		x	x	x	x	
Bossiaea eriocarpa																														
* Brassicaceae sp.																														
* *Briza maxima*																														
Burchardia congesta																														
Caladenia crebra																														
Caladenia sp.																														
Calandrinia polyandra																														
Calandrinia sp.																														
Calectasia narragara							x																							
Calectasia sp.															x															
Callitris arenaria																										x				
Calothamnus blepharospermus					x						x						x	x						x						
Calothamnus quadrifidus subsp. *angustifolius*																														
Calothamnus sanguineus														x																
Calytrix sapphirina	x																						x							x
Calytrix strigosa	x	x			x	x	x	x			x		x					x	x	x				x		x	x	x		
Calytrix sp.														x																

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Cassytha ?*aurea* var. *aurea*																														
Cassytha flava	x	x	x	x																										
Cassytha glabella forma *bicallosa*					x								x																	x
Cassytha pomiformis																				x						x				
Cassytha sp.					x	x	x	x	x	x			x		x			x				x	x	x	x	x	x	x	x	x
Centrolepis pilosa																														
Chaetospora curvifolia																														
Chordifex sinuosus	x		x	x						x										x										
?*Clematicissus angustissima*																														
Comesperma calymega																														
Conospermum ?*stoechadis* subsp. *stoechadis*																														
Conospermum brachyphyllum																							x	x	x		x		x	
Conospermum triplinervium	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	
Conostephium preissii						x														x										x
Conostephium sp.																														
Conostylis aurea																														
Conostylis candicans																														
Conostylis candicans subsp. *calcicola*																												x		x
Conostylis candicans subsp. *candicans*											x	x								x			x			x				
Conostylis candicans subsp. *procumbens*	x	x		x									x	x			x				x	x	x	x						
Conostylis neocymosa					x		x				x		x								x	x	x						x	
Conostylis resinosa																							x							
Conostylis sp.																														
Corynotheca micrantha																														
Crassula colorata																														
Cryptandra myriantha																														
Cyanothamnus ramosus subsp. *anethifolius*		x																x		x								x	x	x
Cyperaceae sp.																	x													
Dampiera oligophylla																														
Dampiera spicigera		x	x	x	x	x				x	x	x		x			x	x	x				x	x	x	x		x	x	x
Dampiera sp.																														

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SPECIES	AR103	AR104	AR105	AR106	AR107	AR108	AR109	AR110	AR111	AR112	AR113	AR114	AR115	AR116	AR117	AR118	AR119	AR120	AR121	AR122	AR123	AR124	AR125	AR126	AR127	AR128	AR129	AR130	AR131	AR132
Darwinia pauciflora											x		x	x			x	x			x	x			x					
Darwinia speciosa		x	x																							x				
Daviesia divaricata subsp. *divaricata*		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	
Daviesia nudiflora																														
Daviesia triflora	x	x	x	x	x								x							x							x			x
Daviesia sp.					x		x				x						x	x					x	x	x	x	x	x		x
Desmocladus asper																														
Dianella revoluta																														
Diplolaena leemaniana																														
Drosera eneabba		x				x			x				x			x				x										x
Drosera erythrorhiza																														
Drosera humilis					x		x				x																			
Drosera sp.																					x	x								
Drosera sp. (climbing)				x									x																	
Ecdeiocolea monostachya					x	x	x	x	x	x	x		x	x		x	x				x	x								
* *Eragrostis curvula*																														
Eragrostis dielsii																														
Eremaea beaufortioides																														
Eremaea beaufortioides var. *beaufortioides*		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
Eremaea beaufortioides var. *microphylla*																														
Eremaea ectadioclada	x		x						x	x		x	x		x	x				x			x				x			x
Eremaea violacea																														
Eremaea violacea subsp. *violacea*			x	x	x	x	x	x	x	x	x	x	x	x		x	x							x					x	
Eucalyptus camaldulensis																														
Eucalyptus drummondii																														
Eucalyptus erythrocorys																														
Eucalyptus todtiana																														
Fabaceae sp.																														
Geleznowia verrucosa																														
Georgeantha hexandra																														
Gnephosis tenuissima																														
Gompholobium tomentosum	x																			x								x		x

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Goodenia pulchella																														
Goodenia reinwardtii																														
Grevillea candelabroides																			x	x	x			x	x					
Grevillea eriostachya					x		x					x																		
Grevillea leucopteris	x		x	x																x										
Grevillea preissii subsp. *preissii*																														
Guichenotia ledifolia																														
Guichenotia sp.																														
Gyrostemon ramulosus																														
Gyrostemon sp.																														
Haemodorum sp.																														
Hakea costata										x				x																
Hakea incrassata																														
Hakea lissocarpha																														
Hakea polyanthema			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x		x			x	x			
Hakea trifurcata																														
Hemiandra sp. Eneabba (H. Demarz 3687) (P3)				x		x	x			x		x			x								x	x	x	x	x			
Hibbertia acerosa																														
Hibbertia crassifolia		x				x							x	x		x				x								x		
Hibbertia hypericoides subsp. *hypericoides*	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
Hibbertia striata																														
Hibbertia subvaginata																														
Hopkinsia anoectocolea (P3)																														
Hyalosperma cotula																														
Hypocalymma gardneri (P3)		x		x															x		x	x	x	x						x
* *Hypochaeris glabra*																														
Isolepis marginata																														
Isotoma hypocrateriformis																														
Isotropis cuneifolia		x			x																									
Jacksonia calcicola																														
Jacksonia hakeoides						x														x										

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Jacksonia ?nutans																														
Jacksonia sp.																														
Labichea cassioides																														
Lachnostachys eriobotrya																														
Lasiopetalum drummondii			x	x															x			x	x	x	x	x	x		x	
Laxmannia omnifertilis																														
Laxmannia sessiliflora subsp. *drummondii*							x									x	x					x								x
Lechenaultia juncea (P3)																								x						
Lechenaultia linarioides																														
Lepidobolus preissianus subsp. *preissianus*					x	x	x	x	x	x	x		x	x	x	x														
Lepidobolus sp.																	x	x	x		x	x				x	x			
Lepidosperma aff. apricola																														
Lepidosperma apricola sens. lat.																														
Lepidosperma scabrum sens. lat.				x	x		x		x	x											x							x		
Lepidosperma squamatum sens. lat.																														
Lepidosperma tenue sens. lat.															x															
Lepidosperma sp.																														
Leptospermum oligandrum					x	x	x	x	x			x	x	x				x		x	x	x			x					
Leptospermum spinescens		x	x	x	x	x	x	x	x	x	x		x	x	x	x	x			x		x	x	x	x	x	x	x	x	
Leucopogon inflexus	x	x	x	x	x		x			x	x		x	x		x	x			x	x	x	x	x	x	x	x		x	x
Leucopogon sp.																				x										
Leucopogon sp. Northern ciliate (R. Davis 3393)	x	x						x		x	x						x	x	x	x	x	x						x	x	x
Levenhookia octomaculata																														
Levenhookia pusilla														x																
Levenhookia stipitata				x																										
Lobelia ?rarifolia																														
Lobelia rhytidosperma																														
Lomandra hastilis			x																											
?*Loxocarya striata*																				x										
Lyginia imberbis	x	x	x																	x						x	x	x		x
* *Lysimachia arvensis*																														

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Lysinema pentapetalum			x	x	x	x			x	x		x	x																	
Macrozamia fraseri																														
Melaleuca concreta																														
Melaleuca huegelii subsp. *huegelii*																														
Melaleuca leuropoma	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
Melaleuca ?systena																														
Melaleuca rhaphiophylla																														
Melaleuca viminea subsp. *viminea*																														
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	x	x	x	x	x	
Mirbelia ?spinosa																														
Monotaxis grandiflora					x	x	x		x	x	x	x		x			x	x	x		x	x	x	x	x			x	x	
Morelotia octandra																														
Muehlenbeckia adpressa																														
Neurachne alopecuroidea		x		x	x		x	x			x		x				x						x			x				
Olax benthamiana																														
Olax scalariformis																														
Olearia ?sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)																														
Opercularia vaginata													x																	
Orchidaceae sp.																														
Orianthera flaviflora							x																							
Orianthera spermacocea																														
Panaetia lessonii																														
Patersonia occidentalis																														
Persoonia acicularis		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	
Petrophile axillaris																														
Petrophile brevifolia				x			x									x						x	x	x			x	x	x	
Petrophile drummondii	x	x	x		x	x	x	x	x	x	x	x	x	x	x		x		x			x	x		x	x	x			x
Petrophile macrostachya	x			x	x	x	x	x	x	x	x		x		x		x		x	x	x		x	x						x
Phyllanthus ?calycinus																														
Pileanthus filifolius	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
Pimelea angustifolia				x																			x			x	x	x		x

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Pimelea sp.						x	x			x										x										
Poaceae sp.																														
Podotheca angustifolia																														
Podotheca chrysantha																														
Podotheca gnaphalioides																														
Poranthera microphylla																													x	
Proteaceae sp.																														
Pterochaeta paniculata																														
Pterostylis sp.																														
Ptilotus stirlingii subsp. *stirlingii*																														
Pyrorchis nigricans																														
Quoya verbascina																											x			
Restionaceae sp.																							x	x						
Scaevola canescens																														
Scaevola phlebopetala																														
Scaevola repens subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445)					x		x	x			x							x	x		x	x		x	x					
Scaevola sericophylla																														
Scaevola sp.																														
Schoenus brevisetis																														
Schoenus clandestinus			x		x	x	x	x	x	x	x	x	x	x		x	x	x	x		x	x	x	x			x			
Schoenus griffinianus (P4)																														
Schoenus latitans																														
Schoenus nanus																														
Schoenus pleiostemoneus		x		x	x	x	x	x	x	x	x			x	x	x							x	x		x	x			
Schoenus sp.																														
Scholtzia laxiflora	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
Scholtzia sp.																														
Solanum ?lasiophyllum																														
* *Sonchus oleraceus*																														
Sphaerolobium gracile																														
Stackhousia dielsii														x																

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Stawellia dimorphantha (P4)																														
Stenanthemum notiale subsp. *notiale*		x								x												x		x				x	x	
Stirlingia abrotanoides																														
Stirlingia latifolia				x																x						x	x			x
Stylidium adpressum											x																			
Stylidium crossocephalum	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
Stylidium dichotomum																														
Stylidium diuroides subsp. *paucifoliatum*					x	x	x	x	x	x	x	x	x		x	x	x													
Stylidium kalbarriense																														
Stylidium maitlandianum							x																							
Stylidium ponticulus				x			x			x	x	x	x				x	x												
Stylidium purpureum		x		x																x							x	x		
Stylidium repens	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
Stylidium rigidulum				x							x									x				x	x					
Stylidium sp.																										x	x			
Styphelia hamulosa																														
Styphelia insularis																														
Styphelia leptantha																														
Styphelia microdonta											x		x									x								
Styphelia tortifolia					x	x	x	x		x	x	x		x	x				x											
Styphelia xerophylla	x	x	x	x								x								x			x	x		x	x			x
Styphelia sp.																														
Synaphea spinulosa subsp. *spinulosa*																								x						
Synaphea sp.																														
Thysanotus manglesianus																														
Thysanotus patersonii					x																									
Thysanotus rectantherus			x	x				x	x					x	x	x					x						x	x	x	
Thysanotus sparteus																														
Thysanotus spiniger																														
Thysanotus thyrsoideus																														
Thysanotus ?triandrus																														
Thysanotus sp.					x		x																							

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Thysanotus sp. (Climbing)				x																										
Trachymene pilosa																														
Tricoryne elatior																														
Tricoryne humilis					x					x						x	x									x				
Tricoryne sp.						x																								
* *Trifolium arvense* var. *arvense*																														
Tripterococcus brunonis			x	x																										
* *Ursinia anthemoides*																														
Verticordia densiflora var. *densiflora*	x		x	x			x			x						x	x													
Verticordia grandis		x	x		x	x	x	x	x	x	x				x	x	x	x	x		x					x		x		
Verticordia ovalifolia																														x
Verticordia sp.						x																								
* *Vulpia myuros* forma *myuros*																														
* *Wahlenbergia capensis*																														
Wahlenbergia gracilenta																														
Wahlenbergia preissii																														
Waitzia acuminata																														
Waitzia acuminata var. *acuminata*																														
Waitzia acuminata var. *albicans*																														
Xanthorrhoea drummondii																														
Xanthosia huegelii																														
Xylomelum angustifolium					x		x																							

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SPECIES	AR133	AR134	AR135	AR136	AR137	AR138	AR139	AR140	AR218	AR219	AR220	AR221	AR222	AR223	AR224	AR225	AR226	AR227	AR228	AR229	AR230	AR231	AR232	ARS01	ARS02	ARS03	ARS04	ARS05	ARS06	ARS07
Acacia blakelyi											x						x	x		x			x	x	x	x	x	x	x	x
Acacia cavealis																			x		x	x			x					
Acacia comans																								x						
Acacia idiomorpha																														
Acacia lasiocarpa																														
Acacia ?lineolata									x	x	x		x	x	x	x														
Acacia pulchella								x																						
Acacia pulchella var. *glaberrima*																														
Acacia rostellifera										x																	x		x	
Acacia saligna												x																		
Acacia scirpifolia									x																					
Acacia spathulifolia																				x	x	x	x	x						
Acacia xanthina																														
Acacia sp.																														
Acanthocarpus ?canaliculatus	x		x		x	x	x																							
Acanthocarpus preissii									x						x			x	x	x		x			x	x				
Acanthocarpus sp. Ajana (C.A. Gardner 8596)									x																x	x				
* *Aira caryophyllea*												x																		
Alexgeorgea nitens		x		x	x	x		x					x	x	x								x	x						
Allocasuarina campestris										x	x	x								x	x				x	x				x
Allocasuarina humilis					x				x					x	x					x		x	x							
Allocasuarina microstachya																														
Allocasuarina sp.	x																													
Amphipogon turbinatus								x						x	x				x				x							
Amphipogon sp.																														
Amyema preissii																														
Anigozanthos humilis	x	x	x	x		x			x														x	x				x	x	
Anigozanthos pulcherrimus													x																	
Arnocrinum preissii					x																									
Asteraceae sp.																														x
Asteridea pulverulenta																														
Austrostipa ?crinita										x	x	x				x														

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Austrostipa macalpinei									x		x			x			x					x	x	x	x	x	x	x	x
Austrostipa sp.																														
Babingtonia grandiflora																												x		
Banksia attenuata	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
Banksia dallanneyi subsp. *media*																														
Banksia elegans (P4)						x																								x
Banksia hookeriana	x	x	x	x	x	x	x		x					x	x			x	x											
Banksia leptophylla var. *melletica*																						x	x	x						
Banksia menziesii		x						x					x	x		x								x	x			x		
Banksia prionotes	x																							x					x	
Banksia sessilis																														
Banksia shuttleworthiana																														
Banksia sp.																														
Beaufortia ?*aestiva*																														
Beaufortia elegans	x	x		x	x	x	x		x												x		x		x					
Bossiaea eriocarpa																														
* Brassicaceae sp.																														
* *Briza maxima*																														
Burchardia congesta																		x	x	x	x		x	x	x	x				
Caladenia crebra																										x				
Caladenia sp.																														
Calandrinia polyandra																														
Calandrinia sp.																														
Calectasia narragara																							x							
Calectasia sp.																														
Callitris arenaria					x																									
Calothamnus blepharospermus																		x	x	x	x			x	x	x		x		x
Calothamnus quadrifidus subsp. *angustifolius*											x					x					x		x		x		x			
Calothamnus sanguineus																														
Calytrix sapphirina								x	x				x	x	x															
Calytrix strigosa	x	x	x						x											x	x	x	x	x	x	x		x		
Calytrix sp.																														

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

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Cassytha ?*aurea* var. *aurea*																														
Cassytha flava																														
Cassytha glabella forma *bicallosa*									x				x		x															
Cassytha pomiformis																				x			x							
Cassytha sp.	x		x	x	x		x	x										x	x					x	x			x	x	
Centrolepis pilosa																														
Chaetospora curvifolia																														
Chordifex sinuosus								x						x	x								x							
?*Clematicissus angustissima*																														
Comesperma calymega																x														
Conospermum ?*stoechadis* subsp. *stoechadis*																														
Conospermum brachyphyllum				x	x	x																								
Conospermum triplinervium	x	x	x	x	x	x	x		x				x		x			x	x		x		x	x		x			x	
Conostephium preissii								x					x	x									x							
Conostephium sp.																														
Conostylis aurea									x																					
Conostylis candicans																														
Conostylis candicans subsp. *calcicola*	x	x	x					x																						
Conostylis candicans subsp. *candicans*						x			x	x	x			x	x	x	x					x	x	x		x	x	x	x	x
Conostylis candicans subsp. *procumbens*																														
Conostylis neocymosa																		x	x											
Conostylis resinosa	x			x	x	x	x		x										x											
Conostylis sp.																				x	x									
Corynotheca micrantha																														
Crassula colorata																	x										x			
Cryptandra myriantha																														
Cyanothamnus ramosus subsp. *anethifolius*				x		x		x						x	x								x							
Cyperaceae sp.																														
Dampiera oligophylla									x																					
Dampiera spicigera	x	x	x	x	x	x	x		x				x	x	x						x		x							
Dampiera sp.														x																

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Darwinia pauciflora																							x							
Darwinia speciosa		x	x			x		x	x																					
Daviesia divaricata subsp. *divaricata*	x	x	x		x	x	x		x					x	x								x	x	x			x		
Daviesia nudiflora																							x							
Daviesia triflora						x		x					x																	
Daviesia sp.		x	x																											
Desmocladus asper																												x		
Dianella revoluta										x	x										x									
Diplolaena leemaniana																														
Drosera eneabba						x		x							x				x											
Drosera erythrorhiza																														
Drosera humilis																								x	x	x		x		
Drosera sp.													x												x	x	x			x
Drosera sp. (climbing)				x					x						x						x		x							
Ecdeiocolea monostachya					x												x	x	x	x	x	x		x	x	x	x	x		x
* *Eragrostis curvula*																														
Eragrostis dielsii																														
Eremaea beaufortioides																								x	x		x	x	x	
Eremaea beaufortioides var. *beaufortioides*	x	x	x	x	x	x	x	x	x				x	x	x				x	x	x	x	x							
Eremaea beaufortioides var. *microphylla*																														
Eremaea ectadioclada					x	x	x	x															x							
Eremaea violacea																								x	x				x	
Eremaea violacea subsp. *violacea*			x																x	x			x	x	x					
Eucalyptus camaldulensis																														
Eucalyptus drummondii																														
Eucalyptus erythrocorys																														
Eucalyptus todtiana																	x													x
Fabaceae sp.																														
Geleznowia verrucosa																					x									
Georgeantha hexandra																														
Gnephosis tenuissima																														
Gompholobium tomentosum								x				x	x	x	x								x						x	

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Goodenia pulchella																					x	x	x	x			x			
Goodenia reinwardtii	x		x																					x		x				
Grevillea candelabroides									x	x	x		x	x	x		x	x		x		x						x		
Grevillea eriostachya																								x		x	x			
Grevillea leucopteris											x	x				x	x	x												
Grevillea preissii subsp. *preissii*																														
Guichenotia ledifolia											x																			
Guichenotia sp.																														
Gyrostemon ramulosus				x							x																	x		
Gyrostemon sp.											x																			
Haemodorum sp.																														
Hakea costata				x															x				x							
Hakea incrassata																														
Hakea lissocarpha																														
Hakea polyanthema		x		x	x		x								x			x	x	x	x	x	x	x	x	x		x	x	
Hakea trifurcata																														
Hemiandra sp. Eneabba (H. Demarz 3687) (P3)																														
Hibbertia acerosa																														
Hibbertia crassifolia		x	x			x	x	x	x					x	x					x		x	x				x			
Hibbertia hypericoides subsp. *hypericoides*	x		x	x	x	x	x		x		x			x	x	x	x	x			x	x	x	x			x		x	
Hibbertia striata																				x			x	x						
Hibbertia subvaginata																														
Hopkinsia anoectocolea (P3)																														
Hyalosperma cotula																x					x	x								
Hypocalymma gardneri (P3)	x	x	x	x	x		x		x																					
* *Hypochaeris glabra*											x					x	x									x				
Isolepis marginata																												x	x	x
Isotoma hypocrateriformis																						x					x			
Isotropis cuneifolia																														
Jacksonia calcicola																														
Jacksonia hakeoides								x												x	x	x	x	x	x	x	x		x	x

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Jacksonia ?nutans																														
Jacksonia sp.																														
Labichea cassioides																														
Lachnostachys eriobotrya																														
Lasiopetalum drummondii	x	x	x	x	x		x																							
Laxmannia omnifertilis																														
Laxmannia sessiliflora subsp. *drummondii*														x	x				x											
Lechenaultia juncea (P3)																														
Lechenaultia linarioides																					x	x				x	x			x
Lepidobolus preissianus subsp. *preissianus*						x			x									x	x	x	x	x		x	x	x				x
Lepidobolus sp.	x		x		x		x																							
Lepidosperma aff. apricola																														
Lepidosperma apricola sens. lat.									x										x	x										
Lepidosperma scabrum sens. lat.		x																												
Lepidosperma squamatum sens. lat.																			x											
Lepidosperma tenue sens. lat.																														
Lepidosperma sp.																														
Leptospermum oligandrum	x								x														x	x					x	
Leptospermum spinescens		x	x	x	x	x	x		x						x					x			x						x	
Leucopogon inflexus	x	x	x	x	x	x	x	x	x					x	x										x			x	x	
Leucopogon sp.																														
Leucopogon sp. Northern ciliate (R. Davis 3393)		x		x			x																							
Levenhookia octomaculata																														
Levenhookia pusilla									x																					
Levenhookia stipitata								x																				x		
Lobelia ?rarifolia												x																		
Lobelia rhytidosperma																														
Lomandra hastilis																														
?*Loxocarya striata*										x																				
Lyginia imberbis				x	x			x					x	x																
* *Lysimachia arvensis*										x	x																			

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Lysinema pentapetalum		x	x		x	x	x		x														x				x		x	
Macrozamia fraseri												x															x		x	
Melaleuca concreta										x		x																		
Melaleuca huegelii subsp. *huegelii*	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
Melaleuca leuropoma																														
Melaleuca ?systena																														
Melaleuca rhaphiophylla												x																		
Melaleuca viminea subsp. *viminea*	x	x	x	x	x	x	x		x					x	x			x	x	x	x	x	x	x	x	x				x
Mesomelaena pseudostygia																														
Mirbelia ?spinosa			x			x												x							x	x				
Monotaxis grandiflora																														
Morelotia octandra										x																				
Muehlenbeckia adpressa							x		x									x				x	x		x	x		x		
Neurachne alopecuroidea																														
Olax benthamiana																							x							
Olax scalariformis																														
Olearia ?sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)																														
Opercularia vaginata									x																					
Orchidaceae sp.																							x							
Orianthera flaviflora																														
Orianthera spermacocea																							x							
Panaetia lessonii																														
Patersonia occidentalis																							x							
Persoonia acicularis	x	x	x	x	x	x	x		x									x	x	x	x	x	x	x	x	x	x	x	x	x
Petrophile axillaris																														
Petrophile brevifolia	x	x			x	x												x					x						x	
Petrophile drummondii	x	x	x	x	x		x	x	x				x	x	x			x		x			x	x						
Petrophile macrostachya	x		x	x		x	x		x					x	x			x	x	x	x		x	x				x		
Phyllanthus ?calycinus																														
Pileanthus filifolius	x	x	x	x	x	x	x	x	x				x	x	x			x	x	x	x		x	x	x	x		x		
Pimelea angustifolia	x	x	x	x	x			x	x														x							

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Pimelea sp.															x		x						x						x	
Poaceae sp.												x					x						x							
Podotheca angustifolia											x						x									x	x	x		
Podotheca chrysantha																														
Podotheca gnaphalioides																	x													
Poranthera microphylla											x													x		x		x		x
Proteaceae sp.																x														
Pterochaeta paniculata																x										x				
Pterostylis sp.																														
Ptilotus stirlingii subsp. *stirlingii*				x																										
Pyrorchis nigricans																							x	x						
Quoya verbascina																														
Restionaceae sp.																														
Scaevola canescens																					x	x								
Scaevola phlebopetala																										x	x	x	x	
Scaevola repens subsp. Northern Sandplains				x			x														x	x	x	x	x	x		x	x	
(R.J. Cranfield & P.J. Spencer 8445)																														
Scaevola sericophylla																											x			
Scaevola sp.																														
Schoenus brevisetis		x	x	x	x																									
Schoenus clandestinus																								x	x		x			
Schoenus griffinianus (P4)															x															
Schoenus latitans																														
Schoenus nanus																														
Schoenus pleiostemoneus						x	x																							
Schoenus sp.																														
Scholtzia laxiflora	x	x	x	x	x	x	x	x						x	x			x	x	x	x	x	x	x	x	x	x	x	x	
Scholtzia sp.																									x		x			
Solanum ?lasiophyllum																														
* *Sonchus oleraceus*											x																			
Sphaerolobium gracile																														
Stackhousia dielsii																														

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Stawellia dimorphantha (P4)																							x		x	x	x	x		
Stenanthemum notiale subsp. *notiale*	x	x		x		x			x									x	x	x	x	x	x	x	x	x		x	x	
Stirlingia abrotanoides																														
Stirlingia latifolia			x					x						x	x	x														
Stylidium adpressum																												x		
Stylidium crossocephalum	x	x	x	x	x	x	x	x	x					x	x			x		x			x					x		
Stylidium dichotomum																														
Stylidium diuroides subsp. *paucifoliatum*																														
Stylidium kalbarriense																														
Stylidium maitlandianum																														
Stylidium ponticulus							x		x																					
Stylidium purpureum		x		x				x							x								x							
Stylidium repens	x	x	x	x	x	x	x	x	x				x	x	x				x		x									
Stylidium rigidulum						x		x																						
Stylidium sp.									x															x						
Styphelia hamulosa																			x											
Styphelia insularis																														
Styphelia leptantha																			x											
Styphelia microdonta																							x							
Styphelia tortifolia																					x									
Styphelia xerophylla								x	x				x	x	x															
Styphelia sp.																								x						
Synaphea spinulosa subsp. *spinulosa*									x						x							x						x		
Synaphea sp.																														
Thysanotus manglesianus									x																					
Thysanotus patersonii																														
Thysanotus rectantherus		x	x	x	x	x	x												x	x										
Thysanotus sparteus																														
Thysanotus spiniger																			x					x						
Thysanotus thyrsoideus																														
Thysanotus ?triandrus																														
Thysanotus sp.																											x			x

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Thysanotus sp. (Climbing)											x						x	x		x										
Trachymene pilosa										x	x	x				x	x									x	x	x	x	x
Tricoryne elatior																		x												
Tricoryne humilis					x	x																								
Tricoryne sp.																		x	x	x			x					x		
* *Trifolium arvense* var. *arvense*											x																			
Tripterococcus brunonis														x																
* *Ursinia anthemoides*																										x	x			
Verticordia densiflora var. *densiflora*	x															x		x					x	x						
Verticordia grandis	x	x	x		x	x	x								x			x	x	x	x			x	x	x				
Verticordia ovalifolia								x																						
Verticordia sp.																														
* *Vulpia myuros* forma *myuros*																														
* *Wahlenbergia capensis*													x																	x
Wahlenbergia gracilenta										x																x	x	x		x
Wahlenbergia preissii											x						x													
Waitzia acuminata																										x				
Waitzia acuminata var. *acuminata*											x																			
Waitzia acuminata var. *albicans*											x															x				x
Xanthorrhoea drummondii													x										x					x		
Xanthosia huegelii					x			x																						
Xylomelum angustifolium																														

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Acacia blakelyi	x	x	x	x	x	x	x	x	x	x		x			x		x							x	x		x	x		
Acacia cavealis	x								x																					
Acacia comans																														
Acacia idiomorpha		x	x			x		x																						
Acacia lasiocarpa																								x						
Acacia ?*lineolata*																														
Acacia pulchella																														
Acacia pulchella var. *glaberrima*																														
Acacia rostellifera		x	x	x	x		x				x	x							x	x				x						
Acacia saligna		x	x	x	x		x	x				x	x	x	x															
Acacia scirpifolia																														
Acacia spathulifolia	x															x	x	x	x	x					x	x				
Acacia xanthina																													x	
Acacia sp.																														
Acanthocarpus ?*canaliculatus*																														
Acanthocarpus preissii											x															x	x		x	
Acanthocarpus sp. Ajana (C.A. Gardner 8596)																														
* *Aira caryophyllea*			x		x																									
Alexgeorgea nitens																														
Allocasuarina campestris	x	x				x		x																		x	x			
Allocasuarina humilis																				x										
Allocasuarina microstachya																														
Allocasuarina sp.																														
Amphipogon turbinatus																														
Amphipogon sp.																														
Amyema preissii							x																							
Anigozanthos humilis																														
Anigozanthos pulcherrimus																														
Arnocrinum preissii																														
Asteraceae sp.		x				x			x				x	x						x	x									
Asteridea pulverulenta																														
Austrostipa ?*crinita*																														

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Austrostipa macalpinei	x		x		x																			x						
Austrostipa sp.																														
Babingtonia grandiflora																														
Banksia attenuata									x														x	x						
Banksia dallanneyi subsp. *media*																								x						
Banksia elegans (P4)									x																					
Banksia hookeriana																														
Banksia leptophylla var. *melletica*					x														x	x	x	x		x						
Banksia menziesii																														
Banksia prionotes																														
Banksia sessilis																		x	x											
Banksia shuttleworthiana																														
Banksia sp.																												x		
Beaufortia ?*aestiva*																			x		x									
Beaufortia elegans																														
Bossiaea eriocarpa																					x									
* Brassicaceae sp.												x			x															
* *Briza maxima*												x																		
Burchardia congesta	x		x																											
Caladenia crebra																														
Caladenia sp.			x																											
Calandrinia polyandra			x																											
Calandrinia sp.					x																									
Calectasia narragara																														
Calectasia sp.																														
Callitris arenaria		x	x		x																				x	x				
Calothamnus blepharospermus	x																											x		
Calothamnus quadrifidus subsp. *angustifolius*																														
Calothamnus sanguineus						x														x		x								
Calytrix sapphirina																														
Calytrix strigosa	x																						x	x			x	x		
Calytrix sp.						x														x		x								

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora (DBCA 2019a), list does not contain opportunistic taxa.

SPECIES	ARS08	ARS09	ARS09a	ARS10	ARS10a	ARS11	ARS11a	ARS12	ARS13	ARS14	ARS15	ARS16	ARS17	ARS18	ARS19	ARS20	ARS21	ARS22	ARS23	ARS24	ARS25	ARS26	ARW01	ARW02	ARW03	ARW04	ARW05	ARW06	ARW07	ARW08
Cassytha ?*aurea* var. *aurea*																							x	x						
Cassytha flava																														
Cassytha glabella forma *bicallosa*																														
Cassytha pomiformis																														
Cassytha sp.																														
Centrolepis pilosa	x																													
Chaetospora curvifolia																														
Chordifex sinuosus																		x												
?*Clematicissus angustissima*																														x
Comesperma calymega																														
Conospermum ?*stoechadis* subsp. *stoechadis*																			x	x										
Conospermum brachyphyllum																														
Conospermum triplinervium	x																x			x		x	x		x				
Conostephium preissii																														
Conostephium sp.																														
Conostylis aurea																														
Conostylis candicans			x		x																									
Conostylis candicans subsp. *calcicola*																														
Conostylis candicans subsp. *candicans*								x	x	x							x		x	x			x				x			
Conostylis candicans subsp. *procumbens*											x					x	x	x												
Conostylis neocymosa																														
Conostylis resinosa																														
Conostylis sp.																														
Corynotheca micrantha					x																									
Crassula colorata			x																											
Cryptandra myriantha																						x								
Cyanothamnus ramosus subsp. *anethifolius*																														
Cyperaceae sp.																														
Dampiera oligophylla																														
Dampiera spicigera																														
Dampiera sp.																														

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SPECIES	ARS08	ARS09	ARS09a	ARS10	ARS10a	ARS11	ARS11a	ARS12	ARS13	ARS14	ARS15	ARS16	ARS17	ARS18	ARS19	ARS20	ARS21	ARS22	ARS23	ARS24	ARS25	ARS26	ARW01	ARW02	ARW03	ARW04	ARW05	ARW06	ARW07	ARW08
Darwinia pauciflora																														
Darwinia speciosa																														
Daviesia divaricata subsp. *divaricata*																						x	x							
Daviesia nudiflora																							x							
Daviesia triflora																														
Daviesia sp.																														
Desmocladus asper		x	x			x		x											x	x	x			x			x		x	
Dianella revoluta			x	x																		x								
Diplolaena leemaniana											x																			
Drosera eneabba																														
Drosera erythrorhiza																														
Drosera humilis																														
Drosera sp.																														
Drosera sp. (climbing)																														
Ecdeiocolea monostachya	x	x	x			x		x	x	x						x	x	x		x	x	x	x		x	x	x	x		
* *Eragrostis curvula*							x																							
Eragrostis dielsii							x																							
Eremaea beaufortioides																							x	x						
Eremaea beaufortioides var. *beaufortioides*																														
Eremaea beaufortioides var. *microphylla*																					x									
Eremaea ectadioclada																														
Eremaea violacea																							x					x		
Eremaea violacea subsp. *violacea*																														
Eucalyptus camaldulensis							x																							
Eucalyptus drummondii													x	x																
Eucalyptus erythrocorys											x					x	x	x									x	x	x	x
Eucalyptus todtiana								x																						
Fabaceae sp.		x																												
Geleznowia verrucosa																										x				
Georgeantha hexandra																														
Gnephosis tenuissima																								x						
Gompholobium tomentosum																								x						

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SPECIES	ARS08	ARS09	ARS09a	ARS10	ARS10a	ARS11	ARS11a	ARS12	ARS13	ARS14	ARS15	ARS16	ARS17	ARS18	ARS19	ARS20	ARS21	ARS22	ARS23	ARS24	ARS25	ARS26	ARW01	ARW02	ARW03	ARW04	ARW05	ARW06	ARW07	ARW08
Goodenia pulchella			x																											
Goodenia reinwardtii																												x		
Grevillea candelabroides																														
Grevillea eriostachya																														
Grevillea leucopteris	x																								x					
Grevillea preissii subsp. *preissii*																													x	
Guichenotia ledifolia																														
Guichenotia sp.																														
Gyrostemon ramulosus										x																				
Gyrostemon sp.																														
Haemodorum sp.																														
Hakea costata						x													x	x		x		x						
Hakea incrassata																			x			x								
Hakea lissocarpha		x		x												x		x	x	x								x		
Hakea polyanthema	x																						x	x	x			x		
Hakea trifurcata		x																	x	x	x	x								
Hemiandra sp. Eneabba (H. Demarz 3687) (P3)																														
Hibbertia acerosa					x																									
Hibbertia crassifolia																														
Hibbertia hypericoides subsp. *hypericoides*						x		x										x	x									x	x	
Hibbertia striata																														
Hibbertia subvaginata																					x								x	
Hopkinsia anoectocolea (P3)				x	x		x																							
Hyalosperma cotula	x																													
Hypocalymma gardneri (P3)																														
* *Hypochaeris glabra*	x		x		x																									
Isolepis marginata																														
Isotoma hypocrateriformis			x																											
Isotropis cuneifolia																														
Jacksonia calcicola																														
Jacksonia hakeoides	x	x	x		x	x			x								x			x		x	x	x	x		x	x		

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SPECIES	ARS08	ARS09	ARS09a	ARS10	ARS10a	ARS11	ARS11a	ARS12	ARS13	ARS14	ARS15	ARS16	ARS17	ARS18	ARS19	ARS20	ARS21	ARS22	ARS23	ARS24	ARS25	ARS26	ARW01	ARW02	ARW03	ARW04	ARW05	ARW06	ARW07	ARW08
Jacksonia ?nutans																														
Jacksonia sp.																										x				
Labichea cassioides																		x			x									
Lachnostachys eriobotrya																												x		
Lasiopetalum drummondii																														
Laxmannia omnifertilis																														
Laxmannia sessiliflora subsp. *drummondii*																														
Lechenaultia juncea (P3)																														
Lechenaultia linarioides			x																x			x				x				
Lepidobolus preissianus subsp. *preissianus*	x	x	x			x			x								x	x	x	x	x	x	x	x	x		x	x		
Lepidobolus sp.																														
Lepidosperma aff. apricola				x																										
Lepidosperma apricola sens. lat.																														
Lepidosperma scabrum sens. lat.																														
Lepidosperma squamatum sens. lat.																														
Lepidosperma tenue sens. lat.																														
Lepidosperma sp.			x						x														x							
Leptospermum oligandrum																							x	x						
Leptospermum spinescens		x																				x	x		x					
Leucopogon inflexus																														
Leucopogon sp.																														
Leucopogon sp. Northern ciliate (R. Davis 3393)																														
Levenhookia octomaculata																														
Levenhookia pusilla			x																											
Levenhookia stipitata	x																													
Lobelia ?rarifolia																														
Lobelia rhytidosperma																														
Lomandra hastilis																														
?*Loxocarya striata*																														
Lyginia imberbis																														
* *Lysimachia arvensis*	x		x		x																									

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Lysinema pentapetalum																														
Macrozamia fraseri								x		x		x			x	x	x	x												
Melaleuca concreta																														
Melaleuca huegelii subsp. *huegelii*																														
Melaleuca leuropoma	x	x				x			x								x	x	x	x	x	x	x	x	x					
Melaleuca ?systena																										x	x		x	
Melaleuca rhaphiophylla							x																							
Melaleuca viminea subsp. *viminea*																														
Mesomelaena pseudostygia	x					x		x	x														x		x		x			
Mirbelia ?spinosa						x																								
Monotaxis grandiflora																														
Morelotia octandra																														
Muehlenbeckia adpressa			x		x																									
Neurachne alopecuroidea		x	x																											
Olax benthamiana																														
Olax scalariformis																														
Olearia ?sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)																													x	x
Opercularia vaginata																														
Orchidaceae sp.					x																									
Orianthera flaviflora																														
Orianthera spermacocea																														
Panaetia lessonii			x																											
Patersonia occidentalis																		x												
Persoonia acicularis	x																						x		x	x		x		
Petrophile axillaris																														
Petrophile brevifolia	x																		x	x			x							
Petrophile drummondii																					x									
Petrophile macrostachya																							x	x	x					
Phyllanthus ?calycinus											x						x													
Pileanthus filifolius																							x		x					
Pimelea angustifolia																														

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Pimelea sp.																														
Poaceae sp.	x									x	x	x	x	x	x	x	x													x
Podotheca angustifolia	x				x																									
Podotheca chrysantha																														
Podotheca gnaphalioides																														
Poranthera microphylla	x																													
Proteaceae sp.																														
Pterochaeta paniculata		x																						x						
Pterostylis sp.																														
Ptilotus stirlingii subsp. *stirlingii*																														
Pyrorchis nigricans																														
Quoya verbascina																														
Restionaceae sp.								x											x			x								
Scaevola canescens																														
Scaevola phlebopetala																														
Scaevola repens subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445)																						x	x	x	x			x		
Scaevola sericophylla																				x		x								
Scaevola sp.																														
Schoenus brevisetis																														
Schoenus clandestinus	x																													
Schoenus griffinianus (P4)																														
Schoenus latitans																						x								
Schoenus nanus	x																													
Schoenus pleiostemoneus																														
Schoenus sp.																														
Scholtzia laxiflora		x		x	x	x	x		x													x								
Scholtzia sp.																		x	x	x	x		x	x	x	x	x			
Solanum ?lasiophyllum												x		x																x
* *Sonchus oleraceus*																														
Sphaerolobium gracile																														
Stackhousia dielsii																														

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SPECIES	ARS08	ARS09	ARS09a	ARS10	ARS10a	ARS11	ARS11a	ARS12	ARS13	ARS14	ARS15	ARS16	ARS17	ARS18	ARS19	ARS20	ARS21	ARS22	ARS23	ARS24	ARS25	ARS26	ARW01	ARW02	ARW03	ARW04	ARW05	ARW06	ARW07	ARW08
Stawellia dimorphantha (P4)	x																													
Stenanthemum notiale subsp. *notiale*	x	x	x														x	x	x	x	x	x	x	x	x					
Stirlingia abrotanoides																														
Stirlingia latifolia																														
Stylidium adpressum						x																			x					
Stylidium crossocephalum																						x								
Stylidium dichotomum																														
Stylidium diuroides subsp. *paucifoliatum*																														
Stylidium kalbarriense																														
Stylidium maitlandianum																														
Stylidium ponticulus																														
Stylidium purpureum																														
Stylidium repens																							x							
Stylidium rigidulum																														
Stylidium sp.																														
Styphelia hamulosa																														
Styphelia insularis																		x	x											
Styphelia leptantha																														
Styphelia microdonta																														
Styphelia tortifolia																														
Styphelia xerophylla																														
Styphelia sp.																														
Synaphea spinulosa subsp. *spinulosa*																														
Synaphea sp.																									x					
Thysanotus manglesianus																														
Thysanotus patersonii					x																									
Thysanotus rectantherus																														
Thysanotus sparteus																														
Thysanotus spiniger									x																					
Thysanotus thyrsoideus																														
Thysanotus ?triandrus																														
Thysanotus sp.	x											x							x											

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Thysanotus sp. (Climbing)																														
Trachymene pilosa	x		x		x																									
Tricoryne elatior																														
Tricoryne humilis																														
Tricoryne sp.																														
* *Trifolium arvense* var. *arvense*																														
Tripterococcus brunonis																														
* *Ursinia anthemoides*			x		x								x		x															
Verticordia densiflora var. *densiflora*	x			x			x													x			x							
Verticordia grandis																							x		x					
Verticordia ovalifolia																														
Verticordia sp.																														
* *Vulpia myuros* forma *myuros*			x		x																									
* *Wahlenbergia capensis*	x		x		x																									
Wahlenbergia gracilenta																														
Wahlenbergia preissii	x																													
Waitzia acuminata										x	x	x			x	x	x	x								x	x	x		
Waitzia acuminata var. *acuminata*																														
Waitzia acuminata var. *albicans*	x		x		x																									
Xanthorrhoea drummondii																								x			x			
Xanthosia huegelii																														
Xylomelum angustifolium																														

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SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Acacia blakelyi		x	x	x	x	x			x	
Acacia cavealis										
Acacia comans										
Acacia idiomorpha										x
Acacia lasiocarpa										x
Acacia ?lineolata										
Acacia pulchella										
Acacia pulchella var. *glaberrima*										
Acacia rostellifera								x		
Acacia saligna				x						
Acacia scirpifolia										
Acacia spathulifolia							x	x		
Acacia xanthina		x					x			x
Acacia sp.										
Acanthocarpus ?canaliculatus										
Acanthocarpus preissii										
Acanthocarpus sp. Ajana (C.A. Gardner 8596)										
* *Aira caryophyllea*		x		x					x	
Alexgeorgea nitens										
Allocasuarina campestris										
Allocasuarina humilis										
Allocasuarina microstachya										
Allocasuarina sp.										
Amphipogon turbinatus										
Amphipogon sp.										
Amyema preissii										
Anigozanthos humilis										
Anigozanthos pulcherrimus										
Arnocrinum preissii										
Asteraceae sp.	x			x				x		
Asteridea pulverulenta										
Austrostipa ?crinita										

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SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Austrostipa macalpinei										
Austrostipa sp.			x				x			
Babingtonia grandiflora										
Banksia attenuata										
Banksia dallanneyi subsp. *media*										x
Banksia elegans (P4)										
Banksia hookeriana										
Banksia leptophylla var. *melletica*										
Banksia menziesii										
Banksia prionotes										
Banksia sessilis					x		x	x		x
Banksia shuttleworthiana										
Banksia sp.										
Beaufortia ?*aestiva*						x				x
Beaufortia elegans										
Bossiaea eriocarpa										
* Brassicaceae sp.										
* *Briza maxima*		x	x							
Burchardia congesta										
Caladenia crebra										
Caladenia sp.										
Calandrinia polyandra										
Calandrinia sp.										
Calectasia narragara										
Calectasia sp.										
Callitris arenaria										
Calothamnus blepharospermus										
Calothamnus quadrifidus subsp. *angustifolius*										
Calothamnus sanguineus										
Calytrix sapphirina										
Calytrix strigosa										
Calytrix sp.										

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SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Cassytha ?*aurea* var. *aurea*										
Cassytha flava										
Cassytha glabella forma *bicallosa*										
Cassytha pomiformis										
Cassytha sp.							x			
Centrolepis pilosa										
Chaetospora curvifolia										
Chordifex sinuosus										
?*Clematicissus angustissima*										
Comesperma calymega										
Conospermum ?*stoechadis* subsp. *stoechadis*										
Conospermum brachyphyllum										
Conospermum triplinervium										
Conostephium preissii										
Conostephium sp.										
Conostylis aurea										
Conostylis candicans										
Conostylis candicans subsp. *calcicola*										
Conostylis candicans subsp. *candicans*			x		x	x		x	x	x
Conostylis candicans subsp. *procumbens*							x			
Conostylis neocymosa										
Conostylis resinosa										
Conostylis sp.										
Corynotheca micrantha										
Crassula colorata										
Cryptandra myriantha										
Cyanothamnus ramosus subsp. *anethifolius*										
Cyperaceae sp.										
Dampiera oligophylla										
Dampiera spicigera										
Dampiera sp.										

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SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Darwinia pauciflora										
Darwinia speciosa										
Daviesia divaricata subsp. *divaricata*										
Daviesia nudiflora										
Daviesia triflora										
Daviesia sp.										
Desmocladus asper	x	x			x	x				x
Dianella revoluta						x				x
Diplolaena leemaniana										
Drosera eneabba										
Drosera erythrorhiza										
Drosera humilis										
Drosera sp.										
Drosera sp. (climbing)										
Ecdeiocolea monostachya										
* *Eragrostis curvula*										
Eragrostis dielsii										
Eremaea beaufortioides										
Eremaea beaufortioides var. *beaufortioides*										
Eremaea beaufortioides var. *microphylla*										
Eremaea ectadioclada										
Eremaea violacea										
Eremaea violacea subsp. *violacea*										
Eucalyptus camaldulensis										
Eucalyptus drummondii										
Eucalyptus erythrocorys	x					x		x		
Eucalyptus todtiana										
Fabaceae sp.										
Geleznowia verrucosa										
Georgeantha hexandra										
Gnephosis tenuissima										
Gompholobium tomentosum							x			

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora (DBCA 2019a), list does not contain opportunistic taxa.

SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Goodenia pulchella										
Goodenia reinwardtii										
Grevillea candelabroides										
Grevillea eriostachya										
Grevillea leucopteris									x	
Grevillea preissii subsp. *preissii*										
Guichenotia ledifolia										
Guichenotia sp.						x	x	x		
Gyrostemon ramulosus		x								
Gyrostemon sp.										
Haemodorum sp.										
Hakea costata										
Hakea incrassata										
Hakea lissocarpha					x					x
Hakea polyanthema										
Hakea trifurcata										
Hemiandra sp. Eneabba (H. Demarz 3687) (P3)										
Hibbertia acerosa										
Hibbertia crassifolia										
Hibbertia hypericoides subsp. *hypericoides*		x	x		x	x	x			x
Hibbertia striata										
Hibbertia subvaginata							x			
Hopkinsia anoectocolea (P3)										
Hyalosperma cotula										
Hypocalymma gardneri (P3)										
* *Hypochaeris glabra*										
Isolepis marginata										
Isotoma hypocrateriformis										
Isotropis cuneifolia										
Jacksonia calcicola			x			x			x	x
Jacksonia hakeoides										

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

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SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Jacksonia ?nutans										
Jacksonia sp.										
Labichea cassioides					x	x				x
Lachnostachys eriobotrya										
Lasiopetalum drummondii										
Laxmannia omnifertilis										
Laxmannia sessiliflora subsp. *drummondii*										
Lechenaultia juncea (P3)										
Lechenaultia linarioides										
Lepidobolus preissianus subsp. *preissianus*						x				x
Lepidobolus sp.										
Lepidosperma aff. apricola										
Lepidosperma apricola sens. lat.										
Lepidosperma scabrum sens. lat.										
Lepidosperma squamatum sens. lat.										
Lepidosperma tenue sens. lat.										
Lepidosperma sp.										x
Leptospermum oligandrum										
Leptospermum spinescens										
Leucopogon inflexus										
Leucopogon sp.										
Leucopogon sp. Northern ciliate (R. Davis 3393)										
Levenhookia octomaculata										
Levenhookia pusilla										
Levenhookia stipitata										
Lobelia ?rarifolia										
Lobelia rhytidosperma										
Lomandra hastilis										
?*Loxocarya striata*										
Lyginia imberbis										
* *Lysimachia arvensis*										

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

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SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Lysinema pentapetalum										
Macrozamia fraseri			x	x						
Melaleuca concreta										
Melaleuca huegelii subsp. *huegelii*										
Melaleuca leuropoma								x		
Melaleuca ?systena		x	x		x	x	x			x
Melaleuca rhaphiophylla										
Melaleuca viminea subsp. *viminea*										
Mesomelaena pseudostygia										x
Mirbelia ?spinosa										
Monotaxis grandiflora										
Morelotia octandra										
Muehlenbeckia adpressa				x				x	x	
Neurachne alopecuroidea										
Olax benthamiana										
Olax scalariformis										
Olearia ?sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)										x
Opercularia vaginata										
Orchidaceae sp.										
Orianthera flaviflora										
Orianthera spermacocea										
Panaetia lessonii										
Patersonia occidentalis										
Persoonia acicularis										
Petrophile axillaris										
Petrophile brevifolia						x				x
Petrophile drummondii										
Petrophile macrostachya										
Phyllanthus ?calycinus										
Pileanthus filifolius										
Pimelea angustifolia										

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora (DBCA 2019a), list does not contain opportunistic taxa.

SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Pimelea sp.										
Poaceae sp.	x	x	x	x	x			x	x	
Podotheca angustifolia										
Podotheca chrysantha										
Podotheca gnaphalioides										
Poranthera microphylla										
Proteaceae sp.										
Pterochaeta paniculata										
Pterostylis sp.										
Ptilotus stirlingii subsp. *stirlingii*										
Pyrorchis nigricans										
Quoya verbascina										
Restionaceae sp.										
Scaevola canescens										
Scaevola phlebopetala										
Scaevola repens subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445)										
Scaevola sericophylla										
Scaevola sp.	x									
Schoenus brevisetis										
Schoenus clandestinus										
Schoenus griffinianus (P4)										
Schoenus latitans										
Schoenus nanus										
Schoenus pleiostemoneus										
Schoenus sp.	x									
Scholtzia laxiflora										
Scholtzia sp.		x			x	x				x
Solanum ?lasiophyllum										
* *Sonchus oleraceus*										
Sphaerolobium gracile										
Stackhousia dielsii										

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

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SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Stawellia dimorphantha (P4)										
Stenanthemum notiale subsp. *notiale*					x					
Stirlingia abrotanoides										
Stirlingia latifolia										
Stylidium adpressum										
Stylidium crossocephalum										
Stylidium dichotomum										
Stylidium diuroides subsp. *paucifoliatum*										
Stylidium kalbarriense										
Stylidium maitlandianum										
Stylidium ponticulus										
Stylidium purpureum										
Stylidium repens						x				
Stylidium rigidulum										
Stylidium sp.										
Styphelia hamulosa										
Styphelia insularis					x		x			
Styphelia leptantha										
Styphelia microdonta										
Styphelia tortifolia										
Styphelia xerophylla										
Styphelia sp.										
Synaphea spinulosa subsp. *spinulosa*										
Synaphea sp.										
Thysanotus manglesianus										
Thysanotus patersonii										
Thysanotus rectantherus										
Thysanotus sparteus										
Thysanotus spiniger										
Thysanotus thyrsoideus										
Thysanotus ?triandrus										
Thysanotus sp.										

APPENDIX F: SUMMARY OF VASCULAR PLANT SPECIES RECORDED IN EACH SURVEY QUADRAT IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

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SPECIES	ARW09	ARW10	ARW11	ARW12	ARW13	ARW14	ARW15	ARW16	ARW17	ARW18
Thysanotus sp. (Climbing)										
Trachymene pilosa										
Tricoryne elatior										
Tricoryne humilis										
Tricoryne sp.										
* *Trifolium arvense* var. *arvense*										
Tripterococcus brunonis										
* *Ursinia anthemoides*										
Verticordia densiflora var. *densiflora*										
Verticordia grandis										
Verticordia ovalifolia										
Verticordia sp.										
* *Vulpia myuros* forma *myuros*										
* *Wahlenbergia capensis*										
Wahlenbergia gracilenta										
Wahlenbergia preissii										
Waitzia acuminata			x		x				x	x
Waitzia acuminata var. *acuminata*										
Waitzia acuminata var. *albicans*										
Xanthorrhoea drummondii										x
Xanthosia huegelii										
Xylomelum angustifolium										

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Schoenus sp. Eneabba (F. Obbens & C. Godden I154)	P2	20	314649	6734909
		25	314656	6734891
		15	314657	6734936
		10	314662	6734949
		30	314665	6734913
		20	314666	6734889
		15	314669	6734928
		15	314674	6734946
		5	314677	6734952
		20	314677	6734892
		25	314679	6734906
		1	314685	6734941
		10	314685	6734927
		25	314688	6734893
		15	314690	6734905
		14	314692	6734925
		35	314700	6734909
		28	315039	6734571
		14	315048	6734521
		7	315048	6734531
		16	315050	6734509
		6	315051	6734583
		25	315057	6734567
		12	315060	6734540
		10	315067	6734505
		9	315069	6734523
		18	315072	6734545
		17	315073	6734566
		4	315086	6734551
		1	315089	6734535
Beyeria gardneri	P3	2	314748	6733999
		1	314753	6733970
		5	314759	6734029
		3	314807	6734023
		1	314814	6733996
		5	314838	6733998
		8	314845	6733886
		8	314858	6733971
Comesperma rhadinocarpum	P3	1	314721	6734133
		1	314735	6734226
		1	314750	6734184
		1	314751	6733896
		1	314766	6734096
		1	314773	6733842
		1	314781	6733969
		2	314786	6734187
		2	314793	6734118
		2	314799	6734122
		1	314799	6734112
		1	314800	6734195
		3	314801	6734150
		2	314804	6734172
		1	314805	6734127
		1	314808	6734133

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Comesperma rhadinocarpum (cont.)	P3	1	314811	6734137
		2	314812	6734085
		1	314821	6733820
		1	314825	6734120
		3	314830	6733617
		2	314857	6734111
		1	314857	6734146
		1	314861	6733782
		1	314870	6733786
		1	314870	6734048
		1	314888	6733791
		1	314888	6733796
		1	314941	6733788
		1	314941	6733925
		1	314953	6733694
		1	314954	6733631
		1	314956	6733834
		2	314963	6733842
		1	314967	6733841
		1	314969	6733779
		1	314973	6734043
		1	314974	6734025
		1	315048	6733853
		1	315068	6733810
		1	315089	6733820
		1	315093	6733864
		1	315098	6733863
		1	315513	6734205
		1	315530	6733726
		2	315586	6734135
		1	315629	6733811
Hemiandra sp. Eneabba (H. Demarz 3687)	P3	1	314122	6736716
		1	314262	6736656
		1	314265	6736654
		1	314295	6739476
		1	314369	6736595
		1	314409	6738977
		1	314644	6739427
		1	314706	6735015
		1	314707	6737008
		1	314713	6737836
		1	314718	6736211
		2	314722	6735015
		1	314740	6734670
		1	314751	6735047
		4	314769	6735118
		1	314772	6738618
		1	314773	6735118
		1	314782	6734681
		1	314793	6734458
		1	314816	6734688
		1	314864	6738065
		1	314869	6733457
		1	314892	6737410
		1	314894	6738111

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Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Hemiandra sp. Eneabba (H. Demarz 3687) (cont.)	P3	1	314934	6734608
		1	314977	6738114
		1	314990	6734771
		1	314995	6735000
		1	315010	6738115
		1	315014	6737557
		1	315029	6734625
		1	315035	6734607
		1	315046	6734485
		1	315050	6739418
		1	315055	6734599
		1	315056	6738596
		1	315078	6739516
		1	315080	6737819
		1	315080	6737819
		1	315093	6734639
		1	315093	6738116
		1	315094	6738199
		1	315098	6734457
		2	315100	6736596
		1	315103	6739562
		1	315107	6734639
		1	315111	6738116
		2	315118	6738125
		1	315135	6735113
		4	315147	6736824
		1	315148	6734393
		1	315148	6734639
		1	315166	6734381
		1	315179	6734386
		1	315199	6734999
		3	315212	6733959
		1	315296	6734602
		1	315376	6734394
		1	315425	6734568
		4	315476	6734416
		5	315479	6738548
		1	315481	6737884
		1	315498	6736604
		1	315499	6738199
		2	315500	6737929
		1	315500	6738539
		1	315500	6738998
		1	315500	6739398
		3	315501	6737794
		1	315508	6737804
		6	315510	6737245
		1	315512	6737806
		1	315534	6739401
		1	315534	6734636
		2	315535	6738216
		2	315543	6739502
		2	315549	6738501
		1	315550	6738585
		3	315555	6738495

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

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SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Hemiandra sp. Eneabba (H. Demarz 3687) (cont.)	P3	1	315570	6738492
		1	315601	6738245
		1	315622	6738477
		10	315622	6738477
		1	315637	6737393
		2	315639	6737832
		3	315640	6739395
		1	315678	6737409
		1	315684	6739006
		1	315689	6734803
		1	315696	6733750
		1	315718	6737820
		1	315732	6733653
		4	315737	6738587
		8	315751	6738583
		1	315752	6737822
		2	315778	6737830
		2	315782	6738240
		1	315790	6737828
		1	315842	6738229
		1	315855	6735052
		1	315861	6738213
		1	315865	6735052
		1	315872	6738210
		1	315873	6737810
		2	315889	6737810
		4	315898	6737803
		1	315900	6739042
		3	315901	6737801
		2	315904	6735405
		1	315975	6734948
		1	316013	6735107
		1	316026	6735013
		1	316037	6735133
		2	316044	6735002
		1	316048	6737859
		1	316061	6734964
		1	316092	6735050
		1	316105	6736400
		1	316122	6734576
		1	316126	6733647
		1	316128	6734372
		1	316128	6734696
		1	316231	6735730
		1	316236	6733801
		1	316256	6734611
		1	316299	6734200
		1	316300	6734601
		3	316300	6734601
		1	316306	6734580
		1	316316	6735193
		1	316321	6734249
		2	316321	6735186
		1	316389	6735025
		1	316401	6735027

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SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Hemiandra sp. Eneabba (H. Demarz 3687) (cont.)	P3	1	316411	6735033
		1	316432	6734970
		1	316434	6735003
		1	316444	6734995
		1	316445	6734978
		1	316453	6735088
		1	316470	6735045
		2	316477	6734880
		1	316480	6734996
		1	316491	6735642
		1	316492	6735017
		1	316495	6734494
		3	316496	6734896
		1	316503	6735045
		1	316503	6734995
		1	316510	6734173
		1	316521	6734170
		1	316542	6735523
		1	316551	6734240
		1	316561	6734852
		1	316591	6735018
		1	316621	6734203
		1	316622	6734465
		1	316631	6733965
		1	316694	6733534
		1	316700	6735399
		2	316701	6733802
		1	316703	6735000
Hopkinsia anoectocolea	P3	1	314495	6729374
		4	314496	6729418
		1	314498	6729400
		2	314505	6729418
		5	314510	6729402
		1	314512	6729322
		1	314513	6729372
		6	314515	6729391
		1	314519	6729331
		7	314522	6729404
		7	314526	6729314
		12	314527	6729373
		4	314530	6729307
		4	314532	6729392
		5	314536	6729293
		7	314537	6729302
		2	314541	6729393
		3	314542	6729301
		3	314542	6729323
		8	314545	6729291
		10	314546	6729307
		11	314548	6729299
		1	314550	6729318
		12	314554	6729278
		7	314557	6729290
		4	314558	6729367
		1	314558	6729372

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Hopkinsia anoectocolea (cont.)	P3	16	314560	6729288
		1	314563	6729371
		8	314563	6729266
		2	314567	6729358
		13	314567	6729276
		8	314567	6729300
		45	314570	6729267
		22	314571	6729293
		23	314571	6729342
		8	314574	6729277
		6	314580	6729280
		3	314581	6729289
		6	314581	6729293
		34	314585	6729356
		9	314586	6729273
		8	314586	6729280
		5	314587	6729341
		52	314588	6729371
		9	314589	6729257
		13	314596	6729272
		7	314609	6729274
		5	314609	6729242
		40	314610	6729263
		7	314611	6729330
		1	314613	6729311
		8	314614	6729354
		13	314615	6729249
		11	314615	6729253
		2	314617	6729321
		1	314623	6729275
		2	314627	6729303
		3	314628	6729245
		29	314628	6729259
		1	314630	6729317
		12	314630	6729243
		1	314630	6729231
		8	314630	6729250
		5	314632	6729238
		3	314632	6729327
		5	314638	6729333
		4	314639	6729253
		16	314647	6729321
		6	314651	6729306
		1	314654	6729333
		5	314655	6729246
		1	314655	6729254
		4	314663	6729286
		3	314665	6729305
		1	314669	6729213
		3	314670	6729238
		3	314673	6729299
		5	314686	6729235
		3	314688	6729203
		3	314688	6729227
		10	314691	6729217

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Hopkinsia anoectocolea (cont.)	P3	1	314705	6729191
		1	314642	6729044
		2	314732	6729247
Hypocalymma gardneri	P3	1	313918	6739368
		2	313918	6739368
		1	314301	6737799
		1	314307	6739396
		1	314601	6737773
		1	314734	6736212
		1	314971	6739406
		1	315481	6737872
		1	315483	6737886
		1	315500	6737096
		2	315504	6737088
		2	315504	6737090
		1	315505	6736205
		4	315505	6737112
		1	315505	6738072
		1	315506	6737279
		1	315507	6736604
		1	315508	6737118
		1	315509	6737282
		2	315512	6737244
		1	315512	6738016
		2	315517	6737305
		2	315532	6735789
		2	315536	6736989
		1	315539	6735791
		1	315541	6736607
		1	315548	6736609
		1	315548	6736988
		1	315557	6736608
		1	315562	6736611
		9	315563	6736988
		1	315580	6738230
		1	315581	6736603
		1	315592	6737004
		1	315593	6737820
		1	315596	6736599
		1	315599	6738481
		3	315619	6737012
		1	315622	6736602
		1	315629	6738474
		7	315634	6736602
		1	315638	6737395
		1	315639	6738250
		2	315657	6736598
		2	315660	6739009
		1	315662	6736598
		1	315674	6737406
		1	315678	6737406
		4	315680	6736603
		2	315682	6737001
		1	315687	6737000
		1	315687	6737001
		8	315690	6736999

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Hypocalymma gardneri (cont.)	P3	2	315695	6736998
		8	315698	6737002
		1	315712	6736607
		1	315718	6737820
		1	315728	6736606
		3	315732	6736604
		1	315732	6737821
		4	315737	6737009
		2	315744	6736606
		3	315749	6738266
		1	315751	6738583
		1	315755	6736607
		1	315760	6736608
		1	315764	6738250
		1	315770	6736609
		1	315779	6738411
		2	315781	6736610
		2	315789	6739023
		1	315797	6738236
		3	315817	6739017
		1	315822	6736607
		2	315829	6737002
		3	315849	6739017
		1	315879	6736600
		1	315885	6739014
		1	315886	6736191
		1	315898	6737803
		1	315916	6736605
		1	315936	6736591
		1	315936	6737806
		2	315956	6734889
		1	315960	6736611
		1	315968	6736592
		1	315969	6734889
		1	315976	6736593
		1	316026	6737864
		2	316032	6736594
		1	316034	6736595
		1	316052	6737272
		3	316062	6736996
		1	316074	6737305
		1	316078	6736609
		1	316078	6737330
		3	316079	6737252
		1	316082	6737112
		2	316083	6736359
		8	316083	6737088
		1	316083	6737114
		1	316084	6737352
		2	316084	6737378
		1	316085	6736606
		3	316085	6737080
		1	316086	6737308
		1	316086	6737329
		2	316087	6737053

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Hypocalymma gardneri (cont.)	P3	1	316088	6737269
		1	316089	6737251
		2	316090	6737223
		1	316091	6737208
		1	316092	6737133
		2	316094	6737177
		2	316105	6736399
		2	316106	6736533
		3	316108	6736327
		1	316109	6736541
		1	316109	6736595
		4	316110	6736576
		1	316111	6736508
		1	316111	6736527
		1	316111	6736533
		1	316112	6736516
		1	316113	6736475
		1	316113	6736482
		1	316114	6736420
		1	316114	6736438
		1	316117	6736331
		1	316119	6736280
		1	316135	6737007
		1	316159	6736576
		1	316195	6736592
		1	316304	6736450
		8	316518	6733733
Lechenaultia juncea	P3	1	315501	6737794
Persoonia rudis	P3	1	313993	6737271
Banksia elegans	P4	5	313758	6733564
		3	313871	6736719
		13	313875	6736437
		8	313875	6736464
		14	313876	6736419
		1	313878	6736244
		10	313880	6736534
		3	313882	6736230
		5	313889	6736231
		1	313889	6736712
		3	313896	6736243
		1	313899	6736237
		1	313904	6736234
		1	313914	6736243
		3	313924	6736235
		23	313938	6736236
		1	313941	6736210
		3	314095	6732026
		2	314114	6731967
		2	314134	6732051
		1	314138	6731994
		1	314145	6732017
		1	314150	6732035
		12	314152	6736724
		1	314163	6731985
		25	314166	6736695
		7	314168	6738996

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	1	314178	6732020
		32	314189	6736709
		32	314190	6736702
		18	314204	6736711
		1	314205	6731944
		33	314207	6736712
		1	314213	6731981
		13	314233	6736716
		8	314259	6736659
		2	314263	6731908
		3	314276	6735459
		3	314292	6731837
		1	314296	6739398
		1	314298	6739388
		1	314300	6738603
		2	314301	6736600
		1	314303	6739396
		1	314305	6739512
		2	314307	6739396
		4	314318	6735401
		7	314349	6735389
		6	314356	6736600
		3	314369	6738988
		1	314398	6738627
		9	314438	6736595
		2	314452	6737824
		2	314490	6738234
		1	314505	6738242
		6	314509	6731277
		3	314516	6731263
		1	314531	6731278
		3	314532	6731256
		1	314535	6731209
		1	314544	6738277
		1	314546	6731230
		3	314553	6736592
		3	314559	6731228
		1	314563	6738632
		1	314573	6731393
		1	314588	6734519
		2	314589	6731262
		3	314589	6731272
		6	314591	6731224
		3	314598	6731213
		4	314599	6731235
		2	314600	6731318
		4	314607	6731207
		2	314616	6731209
		7	314617	6731192
		7	314625	6731157
		5	314642	6735599
		2	314655	6738600
		1	314664	6733640
		1	314669	6733646
		1	314670	6729320

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	2	314677	6733563
		1	314687	6736184
		1	314690	6738194
		1	314695	6738200
		2	314697	6736603
		3	314701	6733560
		1	314704	6733602
		4	314710	6737796
		2	314713	6733643
		1	314715	6733562
		4	314720	6733633
		1	314730	6738168
		2	314742	6729281
		14	314760	6730090
		6	314765	6730123
		4	314769	6729648
		10	314771	6729238
		2	314771	6729254
		2	314773	6729854
		1	314773	6737791
		1	314774	6729271
		7	314774	6730001
		3	314776	6729776
		3	314777	6729812
		1	314780	6729225
		7	314781	6730081
		3	314782	6729868
		3	314782	6729818
		1	314783	6729240
		6	314784	6729254
		5	314785	6729338
		7	314785	6729293
		3	314785	6729790
		5	314787	6729269
		4	314788	6730095
		3	314789	6730058
		2	314791	6729970
		4	314792	6729213
		2	314794	6730833
		3	314795	6729811
		2	314795	6729868
		2	314795	6738621
		1	314795	6729332
		5	314796	6729967
		1	314796	6729349
		6	314797	6730009
		8	314797	6737692
		5	314797	6729231
		2	314799	6729767
		20	314800	6729935
		21	314800	6730099
		4	314800	6729848
		1	314801	6729793
		11	314802	6729862
		10	314802	6729863

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	4	314802	6729310
		20	314806	6730126
		4	314807	6730056
		2	314807	6729804
		1	314808	6729773
		8	314809	6729291
		3	314809	6729723
		9	314810	6730852
		17	314811	6729303
		20	314811	6730061
		22	314814	6730153
		1	314814	6729968
		38	314815	6730001
		8	314816	6729813
		4	314816	6729924
		9	314817	6729327
		4	314817	6729367
		10	314819	6730096
		8	314820	6729292
		28	314820	6730008
		43	314821	6730033
		3	314821	6730834
		2	314822	6729870
		4	314823	6729887
		7	314823	6729977
		8	314824	6730046
		3	314826	6735590
		3	314828	6730132
		8	314828	6729205
		1	314829	6729854
		1	314831	6730156
		1	314832	6729193
		7	314833	6729962
		13	314834	6729292
		1	314835	6738628
		1	314835	6729335
		2	314836	6729353
		4	314838	6729201
		2	314838	6729888
		4	314841	6730129
		3	314843	6729870
		5	314844	6729977
		25	314844	6730008
		6	314846	6730832
		3	314846	6729847
		2	314848	6729337
		4	314848	6729885
		6	314848	6730054
		10	314849	6729290
		7	314849	6730165
		8	314850	6729305
		1	314850	6729347
		1	314854	6729874
		5	314854	6730128
		3	314855	6729363

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	7	314855	6729964
		1	314856	6733634
		14	314856	6730083
		4	314858	6729725
		2	314858	6729347
		5	314859	6730049
		5	314859	6729316
		3	314860	6737655
		4	314861	6730015
		4	314862	6729336
		1	314862	6730202
		5	314864	6730183
		5	314864	6730177
		2	314871	6729123
		1	314871	6738632
		1	314877	6729112
		2	314878	6733587
		2	314880	6729100
		7	314906	6729093
		5	314906	6729080
		1	314910	6729104
		4	314914	6729096
		1	314930	6729089
		1	314935	6738617
		1	314948	6729128
		1	314955	6729122
		1	314958	6729059
		3	314960	6737380
		1	314969	6729121
		1	314971	6733411
		12	314989	6737402
		3	314997	6726983
		4	314999	6726963
		3	315008	6726943
		2	315021	6726905
		4	315025	6726920
		8	315030	6726859
		4	315035	6726834
		2	315049	6733971
		9	315082	6737461
		3	315091	6739441
		1	315097	6738814
		1	315117	6736056
		2	315195	6733900
		1	315211	6733900
		2	315216	6733910
		1	315230	6733936
		1	315342	6734066
		4	315351	6733928
		3	315411	6735086
		3	315429	6734932
		4	315433	6735092
		5	315433	6735023
		2	315437	6735018
		2	315445	6735035
		3	315445	6734778

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	5	315450	6735052
		4	315464	6735087
		7	315468	6734933
		2	315473	6735014
		2	315477	6734936
		2	315485	6734929
		2	315486	6735097
		3	315495	6734921
		1	315499	6737072
		1	315499	6737388
		5	315501	6737096
		2	315501	6737794
		1	315503	6735000
		1	315503	6735000
		4	315503	6735005
		1	315504	6737082
		7	315507	6734982
		6	315510	6734977
		3	315515	6739452
		2	315518	6738038
		4	315523	6734323
		4	315526	6736265
		1	315529	6735095
		4	315532	6734257
		10	315545	6739528
		1	315553	6734288
		1	315554	6733508
		2	315559	6734281
		6	315561	6734365
		2	315573	6734714
		1	315575	6734285
		2	315576	6733474
		3	315578	6734728
		3	315578	6734390
		5	315584	6734445
		2	315585	6734501
		5	315586	6739400
		2	315588	6734289
		8	315589	6734653
		12	315603	6736214
		18	315603	6739568
		2	315604	6734692
		8	315604	6734413
		2	315605	6734304
		8	315606	6734339
		3	315607	6734299
		4	315609	6734334
		2	315611	6734714
		5	315613	6734285
		3	315613	6734390
		8	315613	6734690
		3	315616	6739410
		4	315618	6735015
		2	315621	6734467
		7	315627	6734692
		3	315632	6734456

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	7	315633	6734652
		6	315634	6736602
		2	315635	6734690
		2	315635	6734479
		3	315637	6734611
		2	315645	6734469
		3	315649	6734310
		8	315653	6736199
		2	315654	6734374
		2	315655	6738462
		2	315666	6734380
		3	315666	6734490
		18	315670	6734226
		3	315675	6734374
		1	315675	6734386
		1	315677	6734323
		3	315677	6734227
		2	315687	6734362
		4	315689	6734241
		1	315692	6734174
		26	315693	6736181
		3	315694	6734314
		4	315695	6739310
		1	315695	6734132
		2	315696	6734499
		1	315697	6734523
		3	315697	6738452
		4	315697	6734451
		2	315703	6734533
		4	315704	6734295
		3	315704	6734301
		12	315704	6734248
		1	315705	6734492
		6	315709	6734389
		5	315714	6738443
		9	315715	6734336
		4	315715	6734203
		3	315716	6734367
		7	315718	6734404
		6	315721	6739397
		5	315723	6734305
		7	315724	6734319
		17	315725	6736216
		2	315727	6734205
		4	315731	6734496
		23	315731	6734235
		3	315732	6734236
		2	315732	6734471
		6	315737	6734415
		2	315738	6734359
		4	315739	6734456
		6	315739	6734335
		20	315740	6739373
		2	315743	6734520
		6	315745	6734288
		1	315747	6734245

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	2	315748	6734306
		4	315749	6734372
		3	315752	6734210
		3	315753	6734387
		3	315754	6734535
		3	315754	6734337
		3	315759	6734489
		1	315760	6734402
		3	315761	6734177
		3	315764	6734289
		2	315764	6734306
		4	315764	6734134
		12	315765	6738423
		25	315766	6736220
		3	315768	6734317
		1	315768	6734369
		8	315768	6734330
		1	315770	6734214
		5	315771	6734386
		1	315772	6734256
		3	315772	6734502
		2	315779	6734415
		2	315781	6734475
		11	315783	6734216
		8	315783	6738585
		1	315783	6734377
		3	315783	6734291
		5	315784	6734250
		2	315786	6734481
		4	315791	6733513
		8	315792	6738402
		3	315792	6734392
		3	315793	6734311
		2	315800	6734212
		2	315803	6734184
		2	315806	6733512
		1	315808	6734129
		2	315808	6734392
		5	315810	6734291
		9	315810	6736224
		5	315811	6738595
		13	315812	6738387
		3	315813	6733525
		3	315813	6734336
		3	315820	6733648
		2	315823	6734191
		2	315824	6734204
		2	315828	6734289
		1	315829	6733686
		3	315830	6733469
		4	315836	6733452
		9	315838	6738376
		3	315838	6733652
		2	315839	6733669
		2	315841	6733815
		3	315844	6733726

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	3	315845	6733472
		3	315846	6733576
		3	315852	6733606
		1	315852	6733466
		4	315853	6737812
		2	315861	6733474
		3	315865	6733829
		1	315865	6733440
		26	315866	6736208
		5	315867	6733590
		9	315867	6733729
		9	315868	6738522
		5	315869	6733841
		4	315872	6733745
		50	315873	6736186
		4	315876	6738505
		8	315877	6738360
		9	315879	6733842
		5	315881	6737809
		19	315881	6738592
		4	315883	6733807
		8	315884	6733722
		8	315885	6738548
		12	315886	6736206
		3	315887	6733801
		3	315888	6733883
		3	315891	6733823
		7	315894	6738601
		3	315894	6733763
		7	315895	6739228
		24	315898	6739346
		13	315898	6739365
		9	315898	6733816
		1	315900	6736199
		1	315900	6739399
		2	315901	6738595
		1	315902	6733444
		6	315909	6738513
		14	315910	6733730
		2	315911	6733802
		5	315914	6733688
		1	315917	6733444
		4	315917	6733748
		1	315919	6734693
		1	315920	6738308
		1	315920	6738321
		5	315923	6736196
		2	315923	6737398
		7	315924	6733801
		3	315925	6733748
		1	315925	6733842
		3	315926	6733822
		9	315928	6739394
		5	315928	6733818
		10	315930	6738346
		2	315930	6733516

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	4	315931	6733663
		23	315931	6738404
		1	315932	6733775
		4	315934	6733341
		6	315934	6733651
		11	315935	6733687
		4	315935	6733402
		2	315937	6733404
		1	315940	6733357
		5	315941	6733528
		3	315945	6733812
		6	315947	6733516
		1	315950	6733383
		2	315952	6733803
		3	315953	6733662
		3	315954	6733643
		4	315958	6733339
		2	315960	6733686
		5	315968	6733657
		17	315970	6739408
		4	315970	6733664
		1	315970	6734865
		3	315971	6733389
		5	315977	6738307
		6	315977	6733646
		6	315982	6739415
		3	315986	6733344
		1	315989	6736996
		1	315992	6733386
		1	315995	6738290
		19	315997	6739344
		1	315998	6735125
		12	315998	6739242
		4	315999	6735829
		4	315999	6739416
		1	316001	6733421
		7	316003	6739387
		6	316005	6739305
		3	316005	6733410
		14	316006	6739206
		1	316007	6739412
		1	316007	6733454
		2	316009	6733801
		2	316010	6733509
		8	316014	6733405
		3	316015	6733472
		1	316015	6733405
		3	316015	6733448
		1	316016	6733397
		1	316016	6736999
		5	316018	6733337
		3	316021	6736221
		3	316022	6733814
		2	316023	6734368
		1	316024	6733823
		1	316025	6733509

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	2	316025	6734924
		3	316026	6737864
		2	316029	6733410
		1	316030	6733813
		1	316031	6736991
		4	316035	6733505
		5	316036	6733526
		4	316036	6733450
		5	316045	6736990
		3	316047	6737868
		2	316048	6733560
		2	316049	6733454
		1	316050	6737274
		3	316055	6733442
		7	316055	6737855
		2	316058	6734264
		3	316059	6737423
		2	316062	6733336
		1	316062	6733590
		4	316063	6736397
		2	316064	6733573
		1	316065	6734257
		6	316065	6737383
		16	316066	6736995
		1	316066	6737312
		1	316067	6737279
		5	316068	6735830
		2	316068	6733527
		13	316071	6737018
		5	316071	6737027
		1	316073	6733520
		1	316076	6737041
		1	316076	6737284
		4	316077	6733455
		5	316077	6733466
		1	316077	6737219
		7	316078	6735848
		1	316079	6737032
		5	316080	6733525
		4	316080	6733603
		2	316082	6737023
		2	316084	6737047
		1	316084	6737382
		2	316086	6737007
		2	316088	6737273
		2	316096	6737191
		2	316096	6733574
		2	316096	6733540
		1	316100	6737117
		1	316101	6737245
		1	316104	6737390
		3	316104	6733938
		1	316106	6735846
		12	316108	6737014
		1	316108	6734683
		8	316108	6733477

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	2	316113	6735172
		1	316114	6733689
		3	316118	6736178
		1	316119	6734657
		14	316119	6735933
		6	316119	6736138
		26	316120	6735992
		21	316120	6736062
		2	316125	6737392
		1	316129	6734251
		3	316130	6734383
		2	316136	6733448
		5	316138	6733530
		1	316139	6733477
		1	316141	6733243
		3	316141	6733533
		8	316143	6736995
		1	316144	6734615
		1	316145	6733453
		3	316147	6737388
		2	316150	6733438
		5	316152	6733446
		2	316165	6733443
		10	316176	6736994
		1	316178	6734368
		1	316183	6733384
		1	316204	6733394
		20	316207	6736995
		1	316223	6737374
		2	316232	6737407
		4	316259	6737278
		18	316264	6737004
		4	316271	6733568
		3	316278	6737262
		2	316298	6733401
		3	316298	6737333
		20	316299	6737006
		1	316300	6737000
		11	316300	6737000
		10	316303	6737248
		33	316305	6737059
		4	316307	6737412
		3	316318	6736562
		6	316319	6733533
		14	316322	6737100
		1	316322	6735146
		1	316323	6733650
		4	316325	6734769
		10	316326	6737207
		1	316327	6733667
		35	316334	6737129
		1	316335	6734778
		4	316346	6736550
		7	316347	6736505
		1	316348	6733572
		5	316351	6733441

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	1	316357	6733691
		2	316359	6733673
		2	316363	6734574
		1	316368	6733487
		6	316376	6734777
		3	316386	6734740
		2	316388	6733570
		20	316388	6737167
		2	316390	6733439
		3	316392	6733433
		6	316399	6733396
		7	316400	6733448
		3	316403	6733427
		2	316409	6733419
		2	316413	6734217
		1	316415	6733481
		5	316417	6734705
		5	316417	6733410
		2	316419	6734789
		2	316421	6734776
		3	316421	6734722
		2	316424	6734768
		2	316436	6733435
		1	316437	6733371
		5	316439	6733446
		4	316441	6734769
		2	316444	6734728
		1	316444	6734714
		3	316444	6733368
		5	316446	6733359
		5	316459	6733415
		2	316461	6733361
		1	316462	6733657
		1	316463	6733371
		1	316465	6734710
		1	316467	6733411
		2	316470	6734607
		2	316473	6734720
		7	316476	6733364
		3	316480	6733486
		1	316483	6734608
		2	316486	6733652
		1	316487	6733378
		1	316488	6734658
		1	316489	6734607
		1	316489	6733674
		1	316492	6733393
		1	316496	6733699
		3	316500	6734657
		1	316501	6734714
		1	316501	6733603
		1	316504	6733585
		3	316504	6734610
		2	316507	6734644
		5	316510	6733690

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Banksia elegans (cont.)	P4	3	316512	6733666
		2	316514	6733617
		2	316519	6734652
		9	316520	6734722
		2	316556	6734659
		3	316556	6734783
		4	316562	6733907
		2	316570	6734778
		4	316576	6734710
		1	316581	6733910
		3	316588	6734693
		1	316591	6734405
		1	316598	6734639
		1	316599	6733446
		2	316640	6734284
		8	316648	6734604
		2	316651	6733979
		1	316654	6734299
		2	316657	6733969
		8	316658	6734262
		6	316663	6734259
		2	316664	6734007
		10	316664	6734611
		3	316665	6734208
		3	316668	6734207
		1	316672	6733689
		1	316674	6733439
		3	316678	6734062
		3	316682	6734004
		1	316690	6733990
		3	316691	6733966
		2	316694	6734574
		2	316704	6733457
		1	316708	6733418
		2	316714	6733998
		1	316721	6733368
		1	316722	6733481
		1	316732	6733890
		2	316733	6733690
		3	316740	6733850
		1	316758	6733727
		4	316773	6733417
		1	316778	6733375
		2	316778	6733431
		2	316779	6733524
		2	316781	6733383
		3	316792	6733405
		1	316794	6733460
		2	316802	6733398
		3	316804	6733364
		1	316813	6733401
Schoenus griffinianus	P4	1	314017	6736976
		1	315946	6734454
		4	316124	6735637
		2	316177	6735640
		1	316338	6737167

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Stawellia dimorphantha	P4	1	314008	6732274
		1	314042	6732375
		2	314042	6732094
		1	314049	6732053
		1	314060	6732049
		1	314064	6733400
		1	314064	6733400
		1	314102	6732031
		1	314188	6731986
		1	314215	6731827
		3	314231	6731836
		2	314238	6731823
		1	314241	6731845
		1	314243	6731936
		1	314244	6731870
		1	314247	6731928
		1	314256	6731773
		1	314259	6731769
		1	314265	6731822
		1	314265	6734544
		2	314269	6731786
		3	314283	6731771
		2	314291	6731735
		1	314291	6734472
		1	314292	6734612
		1	314295	6731793
		1	314296	6731767
		1	314298	6734996
		7	314298	6734996
		1	314301	6731835
		1	314305	6731769
		2	314308	6731733
		1	314313	6731825
		1	314322	6731811
		1	314325	6731766
		1	314328	6734577
		1	314330	6731767
		1	314331	6731784
		1	314348	6731773
		1	314375	6734502
		3	314392	6733622
		2	314423	6731511
		3	314431	6731508
		2	314441	6731468
		3	314450	6731466
		4	314462	6731503
		1	314464	6731507
		3	314465	6731504
		1	314468	6731429
		2	314473	6731520
		1	314475	6731460
		1	314477	6731369
		1	314478	6731517
		2	314482	6731385
		5	314484	6731504
		1	314487	6731438
		3	314487	6731504

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Stawellia dimorphantha (cont.)	P4	1	314489	6731501
		2	314493	6731433
		2	314495	6731515
		3	314498	6731516
		1	314502	6731475
		2	314503	6731473
		1	314508	6731425
		1	314510	6731466
		5	314511	6731321
		3	314511	6731505
		1	314513	6731464
		1	314523	6731347
		2	314525	6731392
		2	314529	6731505
		1	314531	6734481
		1	314537	6731481
		3	314537	6731436
		2	314540	6731478
		2	314543	6731477
		1	314545	6733640
		1	314551	6731390
		1	314572	6731301
		1	314605	6731164
		1	314696	6734277
		1	314707	6729292
		1	314708	6734370
		3	314712	6729288
		2	314714	6734159
		1	314716	6734144
		1	314723	6734118
		1	314723	6734151
		1	314724	6734289
		2	314739	6734119
		1	314739	6734265
		1	314750	6734109
		1	314753	6729171
		3	314759	6733875
		1	314760	6734125
		1	314764	6734054
		1	314766	6734096
		2	314770	6734109
		2	314771	6729623
		1	314773	6734128
		1	314773	6730415
		1	314774	6733843
		1	314774	6729629
		1	314777	6729888
		1	314779	6734007
		1	314781	6734157
		1	314782	6734169
		3	314783	6729630
		1	314785	6729654
		2	314786	6729685
		1	314787	6729309
		2	314787	6733618
		1	314787	6729666
		1	314788	6733847

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Stawellia dimorphantha (cont.)	P4	1	314789	6733907
		1	314789	6734118
		3	314791	6730877
		1	314792	6729651
		1	314794	6734149
		5	314796	6730627
		1	314796	6734113
		1	314798	6729270
		1	314800	6729848
		1	314800	6729567
		1	314801	6734121
		1	314805	6729850
		2	314807	6729611
		1	314808	6729585
		1	314810	6734136
		1	314812	6734165
		1	314812	6734084
		1	314813	6733805
		1	314814	6734078
		1	314817	6730373
		1	314819	6729663
		2	314820	6729772
		1	314820	6733820
		1	314821	6729626
		1	314822	6733440
		1	314824	6730365
		1	314825	6733497
		1	314826	6729370
		1	314830	6730366
		1	314832	6729746
		1	314838	6729671
		1	314838	6733788
		1	314839	6729501
		1	314841	6733411
		1	314842	6729659
		1	314843	6733414
		1	314846	6729580
		1	314851	6730408
		2	314855	6733440
		1	314857	6734111
		1	314857	6734144
		2	314857	6729640
		1	314859	6733756
		1	314861	6730405
		1	314861	6734047
		1	314861	6729597
		1	314861	6733771
		1	314862	6733451
		1	314863	6733778
		3	314865	6733751
		1	314867	6733767
		1	314873	6733770
		1	314874	6733877
		1	314875	6733838
		1	314875	6729106
		1	314883	6733404
		1	314887	6733361

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Stawellia dimorphantha (cont.)	P4	1	314899	6733396
		1	314904	6729186
		1	314907	6733409
		1	314908	6733440
		2	314912	6729105
		2	314913	6733466
		2	314930	6729093
		1	314940	6733446
		2	314954	6733455
		1	314962	6734067
		1	314966	6733960
		2	314976	6729139
		5	314983	6729066
		14	314987	6729061
		2	314989	6729061
		5	314992	6729062
		3	314995	6729055
		1	314998	6729043
		6	314999	6729056
		4	315001	6729051
		2	315004	6729046
		1	315006	6729088
		2	315009	6729045
		3	315012	6729105
		1	315024	6729085
		1	315025	6729089
		2	315026	6729084
		4	315033	6729089
		1	315035	6729087
		5	315035	6733848
		1	315051	6733837
		1	315051	6733853
		3	315062	6733826
		1	315067	6733831
		1	315068	6733863
		2	315079	6729047
		1	315080	6733862
		2	315087	6733530
		1	315089	6733821
		1	315090	6733901
		1	315093	6733864
		1	315094	6733817
		1	315099	6733814
		3	315099	6733853
		2	315103	6733844
		1	315104	6733801
		1	315118	6733816
		1	315128	6733457
		1	315181	6733443
		3	315183	6733348
		1	315200	6733359
		1	315226	6733391
		1	315230	6733360
		1	315242	6733384
		1	315245	6733419
		1	315246	6733394
		3	315248	6733414

APPENDIX G: GEOGRAPHIC LOCATIONS OF CONSERVATION SIGNIFICANT TAXA RECORDED IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: CC refers to conservation code (State/Federal); T denotes threatened flora; P1-P4 denotes priority flora (DBCA 2019a).

SPECIES	CC	No. INDIVIDUALS	LOCATION (GDA94 Z50)	
			EASTING (mE)	NORTHING (mN)
Stawellia dimorphantha (cont.)	P4	1	315254	6733388
		1	315257	6733403
		1	315263	6733375
		1	315273	6733395
		1	315274	6733400
		1	315275	6733337
		2	315278	6733394
		2	315286	6733411
		1	315294	6733358
		1	315303	6733410
		3	315578	6734129
		2	315584	6733892
		2	315587	6733840
		1	315592	6733881
		1	315593	6733859
		2	315596	6733926
		1	315598	6733821
		1	315599	6733859
		4	315617	6733809
		2	315618	6733818
		3	315628	6733751
		1	315631	6733812
		1	315640	6733812

APPENDIX H: VASCULAR PLANT SPECIES RECORDED IN EACH VEGETATION COMMUNITY IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a), list does not contain opportunistic taxa.

SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
Acacia blakelyi	x	x		x	x	x	x	x	x		x	x	x	x		x	x
Acacia cavealis	x	x			x			x									
Acacia comans	x																
Acacia idiomorpha								x									x
Acacia lasiocarpa	x																x
Acacia ?lineolata							x		x					x			
Acacia pulchella						x								x			
Acacia pulchella var. *glaberrima*														x			
Acacia rostellifera	x					x		x	x		x	x				x	
Acacia saligna								x	x		x	x			x		
Acacia scirpifolia	x	x					x										
Acacia spathulifolia	x				x	x	x		x	x						x	x
Acacia xanthina													x				x
Acacia sp.	x																
Acanthocarpus ?canaliculatus	x	x	x	x		x	x										
Acanthocarpus preissii	x	x		x	x	x	x	x		x				x		x	x
Acanthocarpus sp. Ajana (C.A. Gardner 8596)	x	x	x	x	x		x		x								
* *Aira caryophyllea*								x	x		x	x	x				
Alexgeorgea nitens	x	x		x	x	x	x							x			
Allocasuarina campestris	x	x	x		x	x	x	x	x	x							
Allocasuarina humilis	x	x	x	x	x	x	x							x			
Allocasuarina microstachya		x															
Allocasuarina sp.			x	x		x											
Amphipogon turbinatus	x	x	x	x	x		x							x			
Amphipogon sp.		x															
Amyema preissii											x						
Anigozanthos humilis	x	x	x	x	x	x	x							x			
Anigozanthos pulcherrimus														x			
Arnocrinum preissii					x	x											
Asteraceae sp.						x		x				x			x	x	
Asteridea pulverulenta	x								x								

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SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
Austrostipa ?*crinita*									x								
Austrostipa macalpinei	x	x			x		x	x	x		x			x			
Austrostipa sp.	x								x				x	x			x
Babingtonia grandiflora	x		x														
Banksia attenuata	x	x	x	x	x	x	x	x	x					x			
Banksia dallanneyi subsp. *media*	x																x
Banksia elegans (P4)			x	x		x		x						x			
Banksia hookeriana	x	x	x	x	x	x	x							x			
Banksia leptophylla var. *melletica*	x					x	x				x						
Banksia menziesii	x	x	x	x	x	x			x					x			
Banksia prionotes	x					x			x								
Banksia sessilis						x										x	x
Banksia shuttleworthiana		x	x	x	x	x											
Banksia sp.	x																
Beaufortia ?*aestiva*						x											x
Beaufortia elegans	x	x	x	x	x	x	x							x			
Bossiaea eriocarpa						x											
* Brassicaceae sp.												x					
* *Briza maxima*												x	x				
Burchardia congesta	x	x	x	x	x		x	x									
Caladenia crebra	x																
Caladenia sp.								x									
Calandrinia polyandra								x									
Calandrinia sp.											x						
Calectasia narragara			x	x			x										
Calectasia sp.				x													
Callitris arenaria	x					x		x		x	x						
Calothamnus blepharospermus	x	x	x	x	x	x	x	x	x								
Calothamnus quadrifidus subsp. *angustifolius*	x	x					x	x	x								
Calothamnus sanguineus			x	x		x	x	x									
Calytrix sapphirina		x		x		x	x							x			

APPENDIX H: VASCULAR PLANT SPECIES RECORDED IN EACH VEGETATION COMMUNITY IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

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SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
Calytrix strigosa	x	x	x	x	x	x	x	x						x			
Calytrix sp.						x	x	x									
Cassytha ?*aurea* var. *aurea*	x																
Cassytha flava		x		x	x	x	x							x			
Cassytha glabella forma *bicallosa*		x	x		x		x		x					x			
Cassytha pomiformis	x					x	x		x					x			
Cassytha sp.	x	x	x	x	x	x								x			x
Centrolepis pilosa	x																
Chaetospora curvifolia														x			
Chordifex sinuosus			x	x	x		x							x		x	
?*Clematicissus angustissima*																x	
Comesperma calymega									x								
Conospermum ?*stoechadis* subsp. *stoechadis*						x											
Conospermum brachyphyllum		x		x		x											
Conospermum triplinervium	x	x	x	x	x	x	x		x					x		x	
Conostephium preissii				x		x	x							x			
Conostephium sp.														x			
Conostylis aurea							x										
Conostylis candicans								x			x						
Conostylis candicans subsp. *calcicola*	x					x								x			
Conostylis candicans subsp. *candicans*	x	x	x	x		x	x	x	x				x	x		x	x
Conostylis candicans subsp. *procumbens*		x		x		x			x					x		x	x
Conostylis neocymosa	x	x	x			x	x										
Conostylis resinosa	x	x	x	x	x	x	x										
Conostylis sp.	x	x															
Corynotheca micrantha	x										x						
Crassula colorata								x	x					x			
Cryptandra myriantha					x	x											
Cyanothamnus ramosus subsp. *anethifolius*		x				x	x							x			
Cyperaceae sp.			x														
Dampiera oligophylla					x		x										

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SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
Dampiera spicigera	x	x	x	x	x	x	x							x			
Dampiera sp.														x			
Darwinia pauciflora	x	x	x		x	x	x										
Darwinia speciosa				x		x	x							x			
Daviesia divaricata subsp. *divaricata*	x	x	x	x	x	x	x							x			
Daviesia nudiflora	x						x										
Daviesia triflora			x	x		x								x			
Daviesia sp.		x	x	x		x								x			
Desmocladus asper	x					x		x					x			x	x
Dianella revoluta	x					x		x	x		x						x
Diplolaena leemaniana																x	
Drosera eneabba	x	x	x	x	x	x	x							x			
Drosera erythrorhiza	x																
Drosera humilis	x	x	x	x					x								
Drosera sp.	x	x	x		x	x		x						x			
Drosera sp. (climbing)	x	x	x	x	x	x	x							x			
Ecdeiocolea monostachya	x	x	x	x	x	x	x	x	x	x			x			x	
* *Eragrostis curvula*											x						
Eragrostis dielsii											x						
Eremaea beaufortioides	x							x									
Eremaea beaufortioides var. *beaufortioides*	x	x	x	x	x	x	x							x			
Eremaea beaufortioides var. *microphylla*						x											
Eremaea ectadioclada		x	x	x	x	x	x							x			
Eremaea violacea	x																
Eremaea violacea subsp. *violacea*	x	x	x	x	x	x	x										
Eucalyptus camaldulensis											x						
Eucalyptus drummondii															x		
Eucalyptus erythrocorys	x							x								x	x
Eucalyptus todtiana	x							x	x								
Fabaceae sp.								x									
Geleznowia verrucosa	x									x							

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SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
Georgeantha hexandra	x	x															
Gnephosis tenuissima	x																
Gompholobium tomentosum	x					x	x		x					x			x
Goodenia pulchella								x									
Goodenia reinwardtii	x				x		x	x									
Grevillea candelabroides	x	x	x	x		x			x					x			
Grevillea eriostachya	x	x	x	x	x												
Grevillea leucopteris	x			x	x		x	x	x				x	x			
Grevillea preissii subsp. *preissii*																	x
Guichenotia ledifolia	x								x								
Guichenotia sp.	x								x							x	x
Gyrostemon ramulosus	x					x			x				x				
Gyrostemon sp.									x								
Haemodorum sp.					x												
Hakea costata	x	x	x	x	x	x	x	x									
Hakea incrassata						x											
Hakea lissocarpha						x		x			x					x	x
Hakea polyanthema	x	x	x	x	x	x	x		x					x			
Hakea trifurcata						x		x									
Hemiandra sp. Eneabba (H. Demarz 3687) (P3)		x	x	x		x											
Hibbertia acerosa											x						
Hibbertia crassifolia	x	x	x	x	x	x	x							x			
Hibbertia hypericoides subsp. *hypericoides*	x	x	x	x	x	x	x	x	x				x	x		x	x
Hibbertia striata	x	x		x			x										
Hibbertia subvaginata						x											x
Hopkinsia anoectocolea (P3)											x						
Hyalosperma cotula	x	x							x								
Hypocalymma gardneri (P3)		x	x	x	x	x	x							x			
* *Hypochaeris glabra*	x							x	x		x						
Isolepis marginata	x							x									
Isotoma hypocrateriformis	x	x						x	x								

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SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
Isotropis cuneifolia	x	x	x			x											
Jacksonia calcicola													x				x
Jacksonia hakeoides	x	x		x		x	x	x			x			x		x	
Jacksonia ?*nutans*		x															
Jacksonia sp.					x	x				x				x			
Labichea cassioides						x										x	x
Lachnostachys eriobotrya	x																
Lasiopetalum drummondii		x	x	x	x	x											
Laxmannia omnifertilis		x		x													
Laxmannia sessiliflora subsp. *drummondii*	x	x	x	x	x		x							x			
Lechenaultia juncea (P3)						x											
Lechenaultia linarioides	x					x		x		x							
Lepidobolus preissianus subsp. *preissianus*	x	x	x	x	x	x	x	x	x							x	x
Lepidobolus sp.	x	x	x			x			x								
Lepidosperma aff. apricola											x						
Lepidosperma apricola sens. lat.	x						x										
Lepidosperma scabrum sens. lat.	x	x	x	x	x	x											
Lepidosperma squamatum sens. lat.	x																
Lepidosperma tenue sens. lat.		x	x	x													
Lepidosperma sp.	x	x	x					x									x
Leptospermum oligandrum	x	x	x	x	x	x	x							x			
Leptospermum spinescens	x	x	x	x	x	x	x	x						x			
Leucopogon inflexus	x	x	x	x	x	x	x							x			
Leucopogon sp.														x			
Leucopogon sp. Northern ciliate (R. Davis 3393)		x	x	x		x	x							x			
Levenhookia octomaculata	x																
Levenhookia pusilla	x				x		x	x									
Levenhookia stipitata	x	x	x	x	x									x			
Lobelia ?*rarifolia*									x								
Lobelia rhytidosperma	x								x								
Lomandra hastilis	x			x													

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SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
?*Loxocarya striata*									x					x			
Lyginia imberbis	x			x		x								x			
* *Lysimachia arvensis*	x							x	x		x						
Lysinema pentapetalum		x	x	x	x	x	x										
Macrozamia fraseri	x							x				x	x			x	
Melaleuca concreta									x								
Melaleuca huegelii subsp. *huegelii*									x								
Melaleuca leuropoma	x	x	x	x	x	x	x	x	x					x		x	
Melaleuca ?systena	x							x		x			x				x
Melaleuca rhaphiophylla											x						
Melaleuca viminea subsp. *viminea*									x								
Mesomelaena pseudostygia	x	x	x	x	x	x	x	x	x					x			x
Mirbelia ?spinosa								x									
Monotaxis grandiflora	x	x	x	x	x	x	x										
Morelotia octandra	x																
Muehlenbeckia adpressa								x	x		x	x	x			x	
Neurachne alopecuroidea	x	x	x	x	x	x	x	x	x								
Olax benthamiana									x								
Olax scalariformis	x																
Olearia ?sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628)	x								x							x	x
Opercularia vaginata			x		x		x										
Orchidaceae sp.									x		x						
Orianthera flaviflora				x													
Orianthera spermacocea		x	x			x	x										
Panaetia lessonii								x									
Patersonia occidentalis							x									x	
Persoonia acicularis	x	x	x	x	x	x	x	x	x	x							
Petrophile axillaris	x																
Petrophile brevifolia	x	x	x	x	x	x	x		x								x
Petrophile drummondii	x	x	x	x	x	x	x							x			
Petrophile macrostachya	x	x	x	x	x	x	x							x			

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SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
Phyllanthus ?*calycinus*																x	
Pileanthus filifolius	x	x	x	x	x	x	x							x			
Pimelea angustifolia	x	x	x	x	x	x	x							x			
Pimelea sp.	x		x	x			x							x			
Poaceae sp.	x						x		x			x	x		x	x	x
Podotheca angustifolia	x							x	x		x						
Podotheca chrysantha	x																
Podotheca gnaphalioides	x				x				x								
Poranthera microphylla	x	x			x	x	x	x	x								
Proteaceae sp.									x								
Pterochaeta paniculata	x							x	x								
Pterostylis sp.	x																
Ptilotus stirlingii subsp. *stirlingii*	x				x	x											
Pyrorchis nigricans	x						x										
Quoya verbascina						x											
Restionaceae sp.	x					x		x									
Scaevola canescens	x	x															
Scaevola phlebopetala	x							x									
Scaevola repens subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445)	x	x	x	x	x	x	x										
Scaevola sericophylla						x		x									
Scaevola sp.																x	
Schoenus brevisetis						x											
Schoenus clandestinus	x	x	x	x	x	x	x	x	x					x			
Schoenus griffinianus (P4)														x			
Schoenus latitans						x											
Schoenus nanus	x													x			
Schoenus pleiostemoneus			x	x	x	x	x										
Schoenus sp.			x													x	
Scholtzia laxiflora	x	x	x	x	x	x	x	x			x			x			
Scholtzia sp.	x					x		x		x			x			x	x

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SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
Solanum ?lasiophyllum												x			x	x	
* *Sonchus oleraceus*									x								
Sphaerolobium gracile	x																
Stackhousia dielsii							x										
Stawellia dimorphantha (P4)	x	x					x	x	x								
Stenanthemum notiale subsp. *notiale*	x	x	x	x	x	x	x	x	x							x	x
Stirlingia abrotanoides	x	x	x		x												
Stirlingia latifolia				x		x			x					x			
Stylidium adpressum	x	x	x					x									
Stylidium crossocephalum	x	x	x	x	x	x	x							x			
Stylidium dichotomum			x		x												
Stylidium diuroides subsp. *paucifoliatum*		x	x	x	x	x											
Stylidium kalbarriense		x															
Stylidium maitlandianum				x													
Stylidium ponticulus		x	x	x	x	x	x										
Stylidium purpureum	x	x		x	x	x	x							x			
Stylidium repens	x	x	x	x	x	x	x							x			x
Stylidium rigidulum		x	x	x		x								x			
Stylidium sp.	x	x	x		x	x	x										
Styphelia hamulosa	x	x															
Styphelia insularis						x										x	x
Styphelia leptantha	x	x															
Styphelia microdonta		x	x	x	x	x	x										
Styphelia tortifolia	x	x	x	x	x		x										
Styphelia xerophylla		x		x		x	x							x			
Styphelia sp.	x																
Synaphea spinulosa subsp. *spinulosa*	x	x	x		x	x	x							x			
Synaphea sp.	x				x												
Thysanotus manglesianus	x						x										
Thysanotus patersonii			x								x						
Thysanotus rectantherus	x	x	x	x	x	x	x										

APPENDIX H: VASCULAR PLANT SPECIES RECORDED IN EACH VEGETATION COMMUNITY IN THE ARROWSMITH NORTH SURVEY AREA 2018-2021

Note: * denotes introduced species; T denotes threatened flora and P1-P4 denote priority flora species (DBCA 2019a), list does not contain opportunistic taxa.

SPECIES	VEGETATION COMMUNITY																
	H1	H2	H3	H4	H5	H7	S3	S6	T1	T3	T4	T5	T6	W2	W3	W4	W5
Thysanotus sparteus	x								x								
Thysanotus spiniger	x							x									
Thysanotus thyrsoideus	x																
Thysanotus ?triandrus			x														
Thysanotus sp.	x	x	x	x	x	x		x	x			x					
Thysanotus sp. (Climbing)	x			x	x				x								
Trachymene pilosa	x							x	x		x						
Tricoryne elatior	x																
Tricoryne humilis		x	x	x		x											
Tricoryne sp.	x			x	x		x										
* *Trifolium arvense* var. *arvense*									x								
Tripterococcus brunonis				x										x			
* *Ursinia anthemoides*	x							x	x		x	x			x		
Verticordia densiflora var. *densiflora*	x	x	x	x	x	x	x		x		x			x			
Verticordia grandis	x	x	x	x	x	x								x			
Verticordia ovalifolia														x			
Verticordia sp.				x													
* *Vulpia myuros* forma *myuros*								x			x						
* *Wahlenbergia capensis*	x							x			x			x			
Wahlenbergia gracilenta	x							x	x								
Wahlenbergia preissii	x								x								
Waitzia acuminata	x							x		x		x	x			x	x
Waitzia acuminata var. *acuminata*									x								
Waitzia acuminata var. *albicans*	x				x			x	x		x						
Xanthorrhoea drummondii	x						x	x						x			x
Xanthosia huegelii	x		x	x		x								x			
Xylomelum angustifolium	x	x	x	x													

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: H1

Structural

Open Heath to Closed Heath of *Hakea polyanthema*, *Calothamnus blepharospermus, Conospermum triplinervium, Petrophile macrostachya* and *Melaleuca leuropoma* with emergent *Banksia attenuata* over *Acanthocarpus preissii* and *Ecdeiocolea monostachya*.

Associated species

Acacia cavealis, Eremaea beaufortioides var. *beaufortioides, Scholtzia laxiflora, Persoonia acicularis, Verticordia grandis, Verticordia densiflora* var. *densiflora.*

Soils and Landforms: cream and white surface sands.

Outcropping: Absent

Condition: Excellent-Pristine

Area: 325.6 ha

Proportion of survey area: 14.9 %

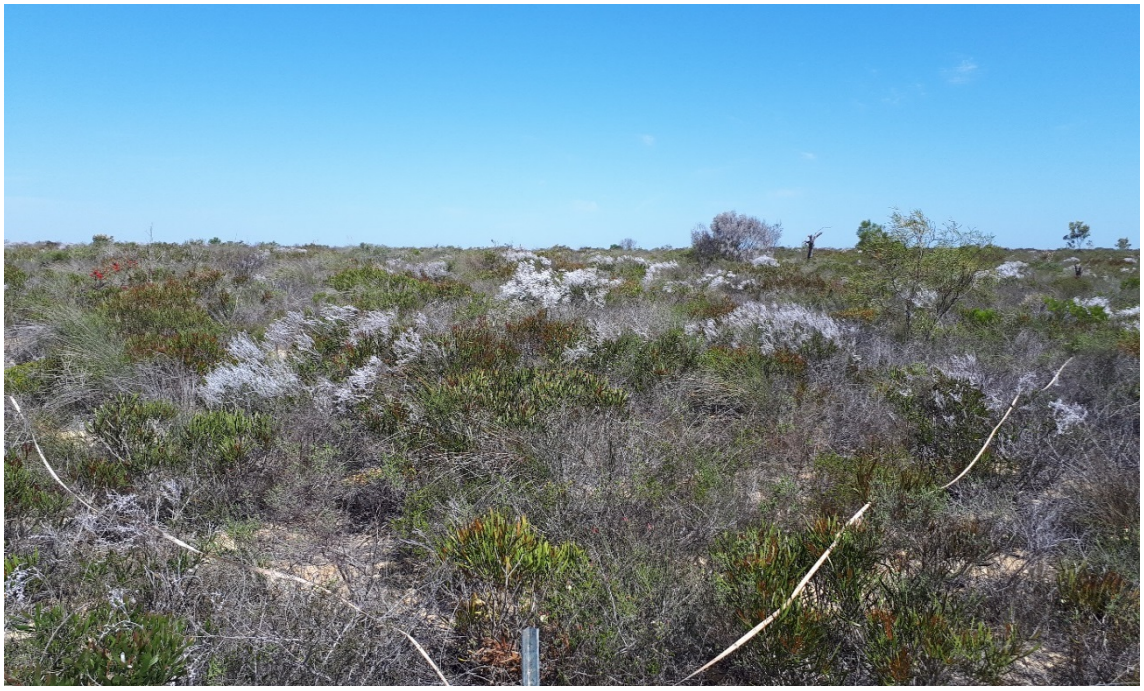
Number of Quadrats 2018-2020: 24

Species richness: 28.5 ± 1.5 (SE)

Number of Quadrats 2021: 9

Species richness: 35.2 ± 1.6 (SE)

Representative Photograph



Site AR66

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: H2

Structural

Open Heath to Closed Heath of *Banksia hookeriana, Banksia attenuata* with occasional *Banksia menziesii* over *Melaleuca leuropoma*, *Eremaea beaufortioides* var*. beaufortioides, Scholtzia laxiflora, Conospermum triplinervium, Eremaea violacea* subsp*. violacea* over *Mesomelaena pseudostygia.*

Associated species

Calothamnus blepharospermus, Acanthocarpus ?*canaliculatus*, *Scaevola repens* subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445) and *Schoenus clandestinus.*

Soils and Landforms: white sands on plains

Outcropping: Absent

Condition: Pristine

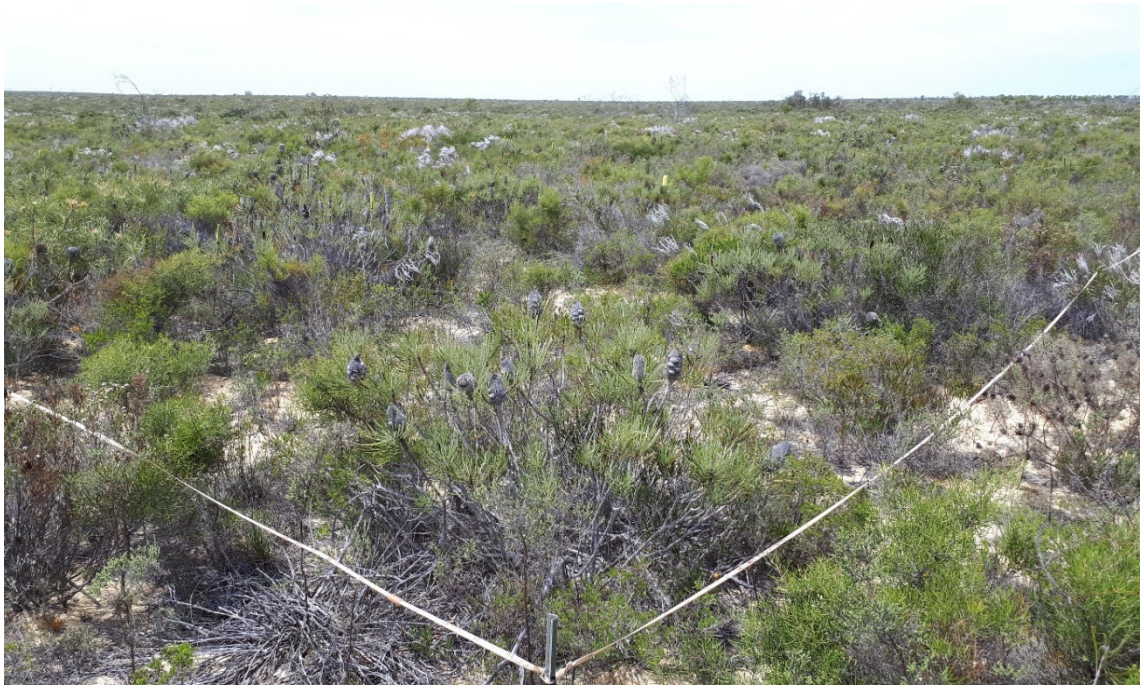
Area: 314.4 ha

Proportion of survey area: 14.3 %

Number of Quadrats 2018: 17
Species richness: 33.4 ± 0.9 (SE)

Number of Quadrats 2021: 7
Species richness: 39.4 ± 1.8 (SE)

Representative Photograph



Site AR72

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: H3

Structural

Open Heath of *Melaleuca leuropoma*, *Leptospermum oligandrum, Hakea polyanthema, Conospermum triplinervium, Beaufortia elegans* and *Pileanthus filifolius*, with isolated trees of *Banksia attenuata* and *Xylomelum angustifolium,* over *Mesomelaena pseudostygia* and *Ecdeiocolea monostachya.*

Associated species

Persoonia acicularis, Leptospermum spinescens, Calothamnus blepharospermus, Daviesia divaricata subsp. *divaricata* and *Petrophile drummondii.*

Soils and Landforms: cream/grey sand on plains

Outcropping: Absent

Condition: Pristine

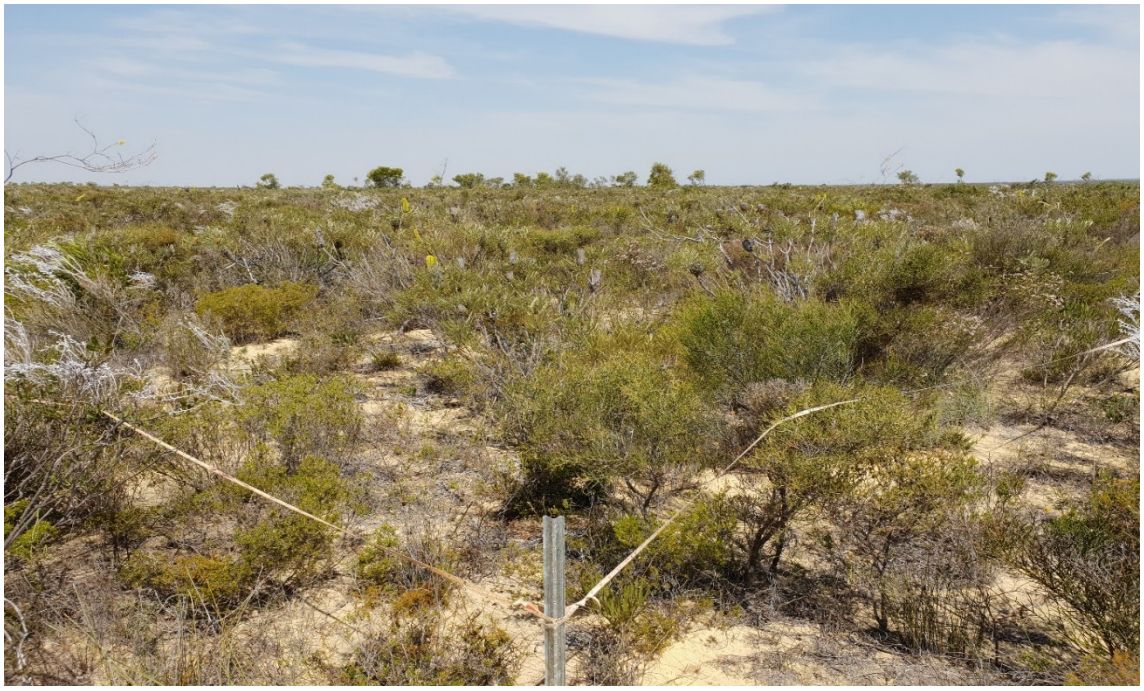
Area: 258.2 ha

Proportion of survey area: 11.8 %

Number of Quadrats 2018: 16
Species richness: 38.5 ± 1.1 (SE)

Number of Quadrats 2021: 8
Species richness: 43.5 ± 0.6 (SE)

Representative Photograph



Site AR107

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: H4

Structural

Open Heath of *Conospermum triplinervium, Banksia attenuata, Banksia hookeriana, Melaleuca leuropoma, Daviesia divaricata* subsp. *divaricata* and *Eremaea beaufortioides* var. *beaufortioides* over *Mesomelaena pseudostygia* and *Dampiera spicigera.*

Associated species

Pileanthus filifolius, Scholtzia laxiflora, Hibbertia hypericoides subsp. *hypericoides, Verticordia grandis, Verticordia densiflora* var. *densiflora, Leptospermum spinescens, Beaufortia elegans, Eremaea ectadioclada, Lasiopetalum drummondii, Daviesia triflora, Stylidium crossocephalum, Persoonia acicularis, Acanthocarpus preissii, Anigozanthos humilis.*

Soils and Landforms: yellow-cream/white sand on flats

Outcropping: Absent

Condition: Pristine

Area: 517.9 ha

Proportion of survey area: 23.6 %

Number of Quadrats 2018: 16

Species richness: 37.8 ± 1.3 (SE)

Number of Quadrats 2021: 3

Species richness: 44.0 ± 2.3 (SE)

Representative Photograph

Site AR101

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: H5

Structural

Open Heath to Closed Heath of *Banksia shuttleworthiana, Banksia attenuata* with occasional *Banksia menziesii* over *Melaleuca leuropoma*, *Eremaea beaufortioides* var*. beaufortioides, Conospermum triplinervium, Scholtzia laxiflora* and *Verticordia grandis* over *Mesomelaena pseudostygia, Ecdeiocolea monostachya* and *Lepidobolus preissianus* subsp. *preissianus*.

Associated species

Hakea polyanthema, Banksia hookeriana, Beaufortia elegans, Pileanthus filifolius, Daviesia divaricata subsp*. divaricata, Petrophile drummondii, Leptospermum oligandrum, Petrophile macrostachya, Calothamnus blepharospermus, Darwinia pauciflora, Leptospermum spinescens, Conostylis resinosa, Schoenus clandestinus, Monotaxis grandiflora.*

Soils and Landforms: pale yellow sandy flats

Outcropping: Absent

Condition: Pristine

Area: 112.4 ha

Proportion of survey area: 5.1 %

Number of Quadrats 2018: 7
Species richness: 41.3 ± 1.9 (SE)

Number of Quadrats 2021: 3
Species richness: 43.0 ± 1.5 (SE)

Representative Photograph

Site AR49

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: H7

Structural

Open Heath to Closed Heath of *Banksia leptophylla* var. *melletica*, *Melaleuca leuropoma* and *Hakea trifurcata* over *Ecdeiocolea monostachya*, *Lepidobolus preissianus* and *Stenanthemum notiale* subsp. *notiale* on cream sand on lower slopes.

Associated species

Acacia spathulifolia, Calothamnus sanguineus, Jacksonia hakeoides, Hibbertia hypericoides subsp. *hypericoides*

Soils and Landforms: Cream sand on lower slopes

Outcropping: Absent/ occasional limestone

Condition: Pristine/Excellent

Area: 24.1 ha

Proportion of survey area: 1.1 %

Number of Quadrats 2018, 2020: 27

Species richness: 35.5 ± 1.4

Representative Photographs

Site: AR99

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: S3

Structural

Scrub of *Banksia attenuata, Banksia leptophylla* var. *melletica, Hakea polyanthema* and *Melaleuca leuropoma* over *Scholtzia laxiflora, Petrophile macrostachya, Petrophile drummondii, Allocasuarina humilis, Hakea costata* and *Acacia spathulifolia* over *Scaevola repens* subsp. Northern Sandplains (R.J. Cranfield & P.J. Spencer 8445) and *Mesomelaena pseudostygia.*

Associated species

Banksia hookeriana, Conospermum triplinervium, Eremaea beaufortioides var. *beaufortioides, Pileanthus filifolius, Conostylis candicans, Lepidobolus preissianus subsp. preissianus, Acacia blakelyi, Eremaea violacea* subsp. *violacea, Conostylis neocymosa, Stenanthemum notiale* subsp. *notiale.*

Soils and Landforms: white-yellow sand on flats and slopes

Outcropping: Absent

Condition: Excellent-Pristine

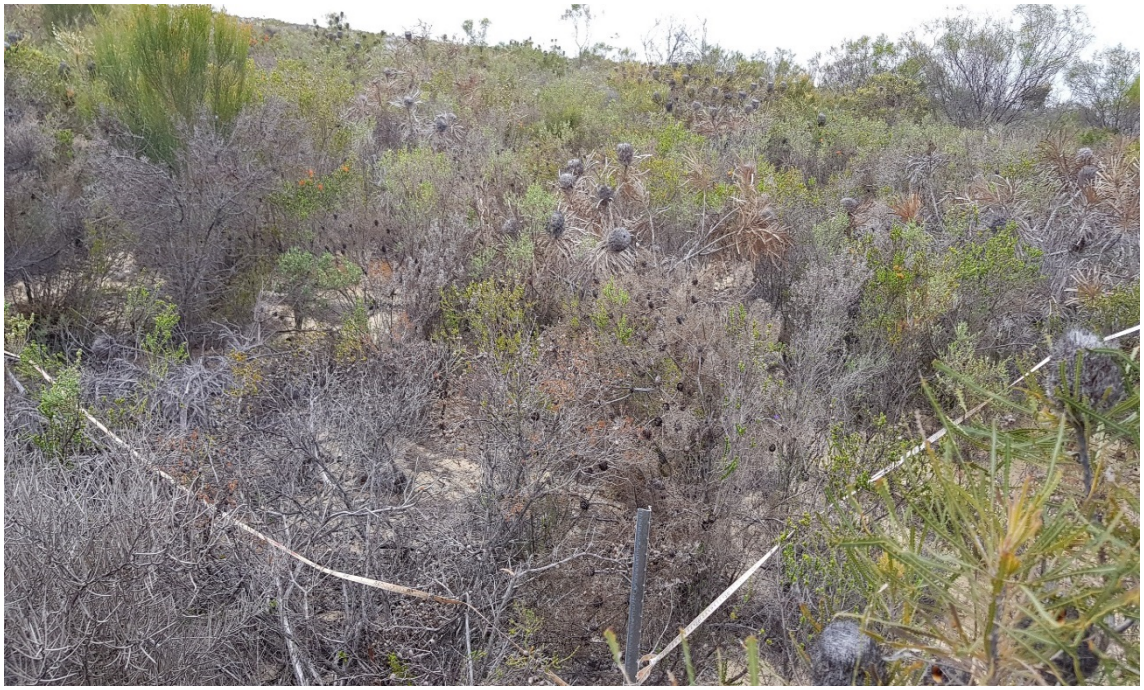
Area: 23.7 ha

Proportion of survey area: 1.1 %

Number of Quadrats 2018-2019: 4
Species richness: 34.3 ± 4.4 (SE)

Number of Quadrats 2021: 3
Species richness: 45.0 ± 6.4 (SE)

Representative Photograph



Site AR116

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: S6

Structural

Open shrubland of *Acacia blakelyi* and *Allocasuarina campestris*, over *Ecdeiocolea monostachya*, *Jacksonia hakeoides* and *Lepidobolus preissianus* on cream/grey sand on flats to lower slopes.

Associated species

Acacia rostellifera, Conostylis candicans, Melaleuca leuropoma, Calothamnus quadrifidus subsp. *angustifolius*

Soils and Landforms: Cream/white/grey sands on flats and lower slopes

Outcropping: Absent

Condition: Pristine/Excellent

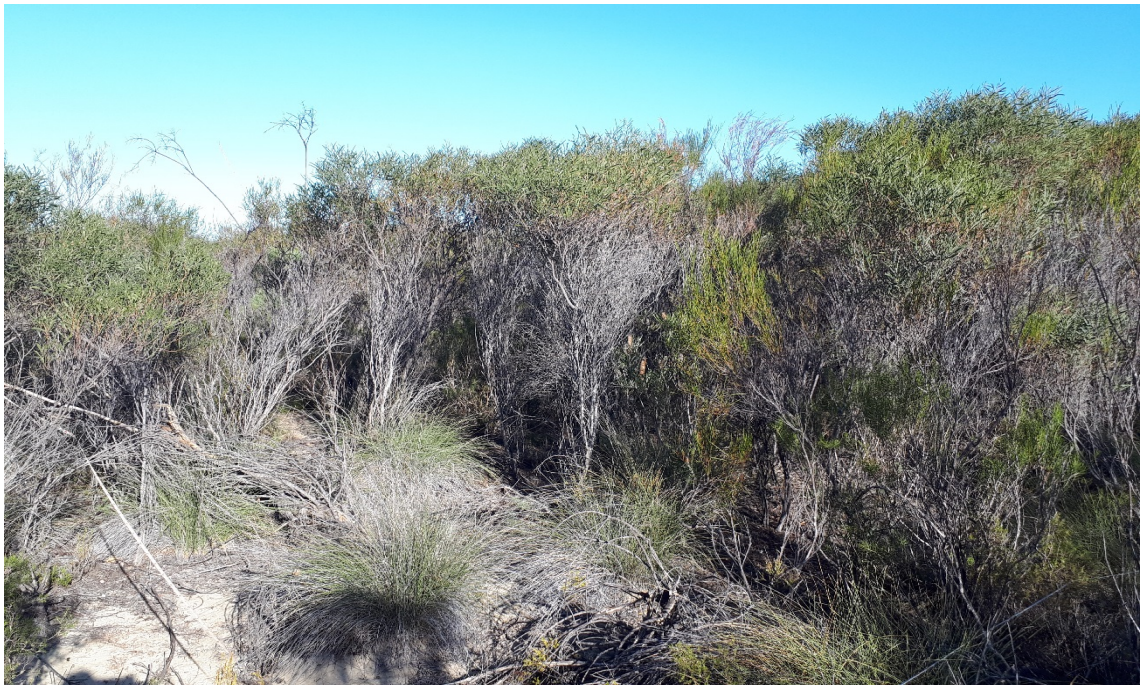
Area: 44.4 ha

Proportion of survey area: 2.0 %

Number of Quadrats 2020: 7
Species richness: 15.3 ± 2.6 (SE)

Number of Quadrats 2021: 3
Species richness: 28.3 ± 2.6 (SE)

Representative Photograph



Site: ARS04

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: T1

Structural

Thicket to Scrub of *Allocasuarina campestris, Grevillea leucopteris, Guichenotia ledifolia, Acacia ? lineolata, Calothamnus quadrifidus* subsp. *quadrifidus* with occasional *Eucalyptus todtiana* and *Banksia attenuata* over *Dianella revoluta* and *Ecdeiocolea monostachya.*

Associated species

Acacia blakelyi, Hibbertia hypericoides subsp. *hypericoides, Melaleuca leuropoma, Conostylis candicans.*

Soils and Landforms: grey/cream/orange/red sand on flats and slopes

Outcropping: Absent

Condition: Excellent-Pristine

Area: 132.5 ha

Proportion of survey area: 6.0 %

Number of Quadrats 2018-2019: 7

Species richness: 16.9 ± 1.5 (SE)

Number of Quadrats 2021: 3

Species richness: 20.3 ± 3.5 (SE)

Representative Photograph

Site AR220

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: T3

Structural

Thicket of *Allocasuarina campestris, Acacia spathulifolia, Melaleuca ?systena, Callitris arenaria* over *Ecdeiocolea monostachya, Lechenaultia linarioides* and *Acanthocarpus preissii* on cream sand on flats.

Associated species

Persoonia acicularis, Geleznowia verrucosa, Waitzia acuminata

Soils and Landforms: Cream sand on flats

Outcropping: Absent

Condition: Pristine

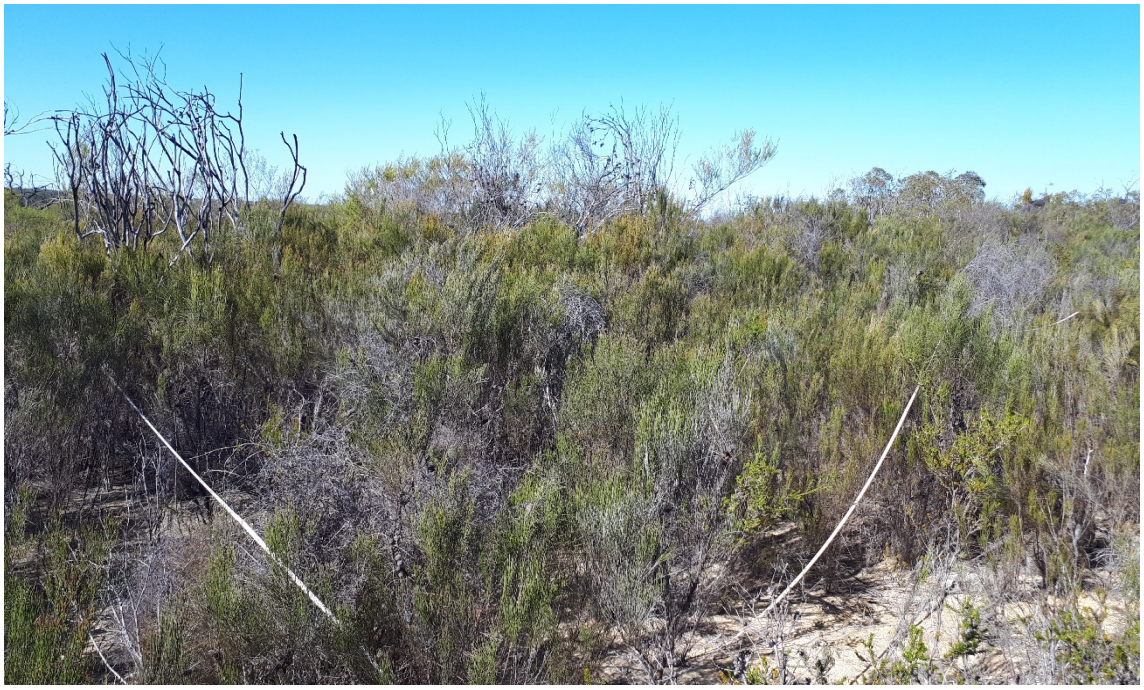
Area: 1.07 ha

Proportion of survey area: 0.05 %

Number of Quadrats 2020: 1

Species richness: 12 ± 0

Representative Photographs



Site: ARW04

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: T4

Structural

Thicket to Scrub of *Acacia blakelyi* and *Acacia rostellifera* over *Lepidosperma* aff. *apricola*, *Scholtzia laxiflora, Hakea lissocarpha* and *Verticordia densiflora* on grey sand on flats.

Associated species

Acacia saligna, Hopkinsia anoectocolea (P3)*, Dianella revoluta*

Soils and Landforms: Grey sand on flats

Outcropping: Absent

Condition: Pristine

Area: 9.9 ha

Proportion of survey area: 0.5 %

Number of Quadrats 2020: 1
Number of Quadrats 2021: 2

Species richness: 9
Species richness: 18.0 ± 7.0 (SE)

Representative Photograph

Site: ARS10

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: T5

Structural

Thicket of *Acacia blakelyi* and *Acacia saligna* and *Macrozamia fraseri* over *Waitzia acuminata* and Poaceae sp. on sandy loam/clay on low lying flats.

Associated species

Muehlenbeckia adpressa, Solanum ?lasiophyllum

Soils and Landforms: Grey/white sand on low lying flats

Outcropping: Absent

Condition: Excellent

Area: 26.7 ha

Proportion of survey area: 1.2 %

Number of Quadrats 2020: 3

Species richness: 8 ± 1.00

Representative Photographs

Site: ARS19

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: T6

Structural

Thicket of *Acacia blakelyi*, *Macrozamia fraseri* with occasional *Grevillea leucopteris* over *Conostylis candicans*, *Waitzia acuminata* and *Aira caryophyllea* on cream/grey sand on flats.

Associated species

Acacia xanthina, Desmocladus asper, Gyrostemon ramulosus

Soils and Landforms: Cream/grey sand on flats

Outcropping: Absent

Condition: Pristine/Excellent/Very Good

Area: 55.4 ha

Proportion of survey area: 2.5 %

Number of Quadrats 2020: 4

Species richness: 8.75 ± 0.75

Representative Photographs

Site: ARW10

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: W2

Structural

Low Open Woodland of *Banksia attenuata* and *Banksia menziesii* over open shrubland of *Melaleuca leuropoma, Eremaea beaufortioides* var. *beaufortioides, Daviesia triflora, Styphelia xerophylla, Pileanthus filifolius* and *Stirlingia latifolia* over *Alexgeorgea nitens, Lyginia imberbis* and *Stylidium crossocephalum.*

Associated species

Gompholobium tomentosum, Leucopogon sp. Northern ciliate (R. Davis 3393), *Scholtzia laxiflora, Leucopogon inflexus, Acacia pulchella.*

Soils and Landforms: cream to white sands on plains

Outcropping: Absent

Condition: Pristine

Area: 95.5 ha

Proportion of survey area: 4.4 %

Number of Quadrats 2018 - 2019: 9
Species richness: 31.9 ± 1.8 (SE)

Number of Quadrats 2021: 3
Species richness: 34.7 ± 0.3 (SE)

Representative Photograph

Site AR56

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: W3

Structural

Open mallee woodland of *Eucalyptus drummondii,* over shrubland of *Acacia saligna,* over isolated *Solanum* ?*lasiophyllum* and Poaceae sp. on grey clay loam on flats.

Associated species

Asteraceae sp., **Ursinia anthemoides*

Soils and Landforms: Grey clay loam on flats

Outcropping: Absent

Condition: Excellent

Area: 13.3 ha

Proportion of survey area: 0.6 %

Number of Quadrats 2020: 2

Species richness: 5 ± 0

Representative Photographs

Site: ARS18

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: W4

Structural

Woodland to isolated trees of *Eucalyptus erythrocorys*, over sparse to closed shrubland of *Acacia spathulifolia* and *Acacia rostellifera*, over *Melaleuca leuropoma*, *Conostylis* ?*candicans* subsp. *procumbens*, and *Ecdeiocolea monostachya* on cream sand with limestone outcropping on slopes.

Associated species

Banksia sessilis, Chordifex sinuosus, Diplolaena leemaniana, Hibbertia hypericoides subsp. *hypericoides*

Soils and Landforms: Cream sand on slopes

Outcropping: Moderate/ numerous limestone

Condition: Pristine/Very Good

Area: 98.2 ha

Proportion of survey area: 4.5 %

Number of Quadrats 2020: 7

Species richness: 9.71 ± 1.64

Representative Photographs

Site: ARS15

APPENDIX I: SUMMARY OF VEGETATION COMMUNITIES RECORDED IN ARROWSMITH NORTH SURVEY AREA

Vegetation Community Description

Vegetation map code: W5

Structural

Isolated trees of *Eucalyptus erythrocorys,* over open shrubland of *Melaleuca ?systena*, *Banksia sessilis* and *Labichea cassioides*, over *Hibbertia hypericoides* subsp. *hypericoides* and *Desmocladus asper* on grey/brown sand with limestone outcropping on flats and slopes.

Associated species

Hakea lissocarpha, Acacia blakelyi, Olearia ?sp. Eremicola (Diels & Pritzel s.n. PERTH 00449628), *Acacia spathulifolia*

Soils and Landforms: Grey/brown sand on flats and slopes

Outcropping: Occasional/moderate limestone

Condition: Pristine/Excellent

Area: 32.0 ha

Proportion of survey area: 1.5 %

Number of Quadrats 2020: 5

Species richness: 14.4 ± 2.06

Representative Photographs

Site: ARW07