1991 (ecologia 1991) suggest a regional population of 9,000 plants. The DPaW TPFL database records a total population of 8,263 plants known regionally. It is estimated that 27 plants (128 TPFL database, 31 WB counts) of *Grevillea inconspicua* may be impacted by development of the MKS project, representing 2.77% of the local population and 0.3268% of the total regional population estimate using the TPFL data.

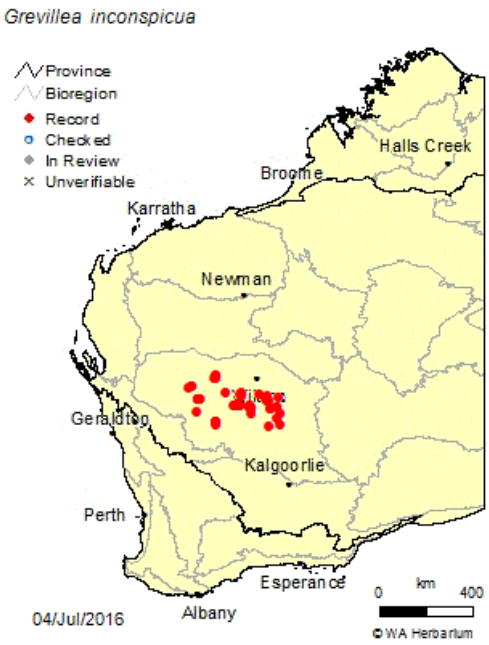
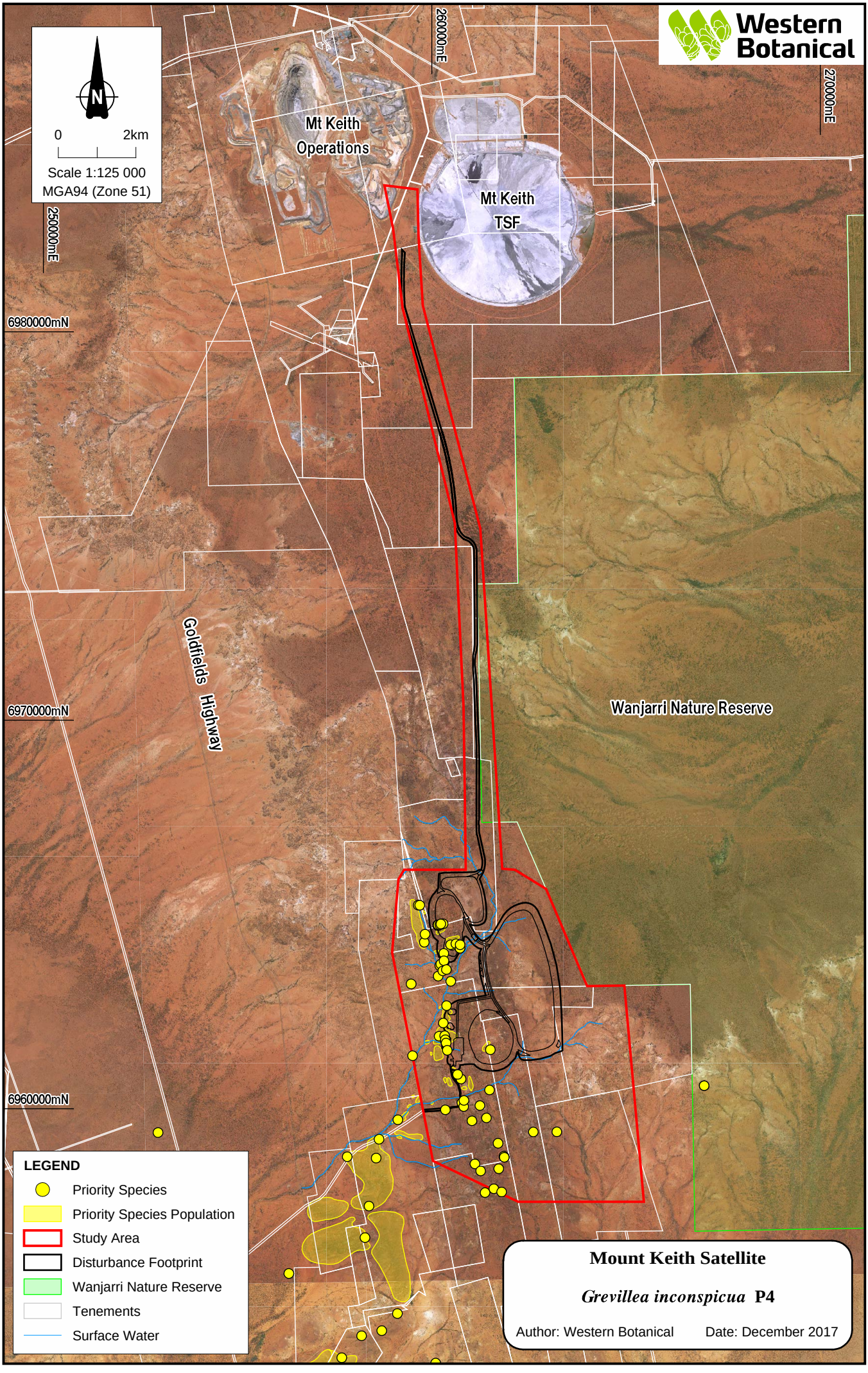


Figure 24. Distribution of *Grevillia inconspicua* (P4) within Western Australia (Western Australian Herbarium, 2016).

Figure 25. Populations of *Grevillea inconspicua* (P4) within and near the MKS Proposal Study Area.



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Gunniopsis propinqua Priority 3

Gunniopsis propinqua is a small, succulent, short lived annual herb to 5 cm high x 5 cm wide, Plate 5, that is found in gently inclined saline plains with clay soils. It is known from 14 scattered sites in W.A. from the Pilbara, Gascoyne, Murchison, Yalgoo biogeographic regions, and is represented by 17 records at the WA Herbarium. Typically, population estimates at these sites are lacking.

Gunniopsis propinqua is known from three locations within the MKS Study Area. The largest of these lie (i) north-west of the Six Mile orebody area (four sites) and (ii) east of the proposed haul road alignment route over the breakaways north of the Six Mile orebody area (two sites) with many hundreds of individuals estimated at each site. Both occur downslope of Archaean granite breakaways and associated kaolinised slopes, outside the proposed disturbance envelope. The eastern population extends into the Wanjarri Nature Reserve with an estimated several thousand plants over hundreds of square metres present. The third population at MKS (one site) lies within the proposed wastedump adjacent to the six mile orebody area. No population size has been estimated here, Figure 27.

Plate 5. *Gunniopsis propinqua*, dried plant with dehisced fruits, NW of the Six Mile deposit area, about 2 x actual size.

One of seven recorded sites within the MKS Study Area will be disturbed by the proposed development. However, numbers of the species or areas of occupancy at recorded sites have not been accurately defined as the species was not recognised as a Priority Species until field works had been completed in November 2016. Given the general observations that the species was relatively abundant at both population areas outside the proposed MKS disturbance footprint and the population extends into the Wanjarri Nature Reserve, the proportional impact on *Gunniopsis propinqua* by the MKS proposal is considered low in a local sense and insignificant in a regional sense.

Gunniopsis propinqua is a short lived ephemeral and is difficult to survey and easily overlooked in the field. It is highly likely the species is under-represented in botanical survey and is therefore more common and widespread than records indicate. It's distribution in W.A suggests it doesn't warrant Priority Flora status.

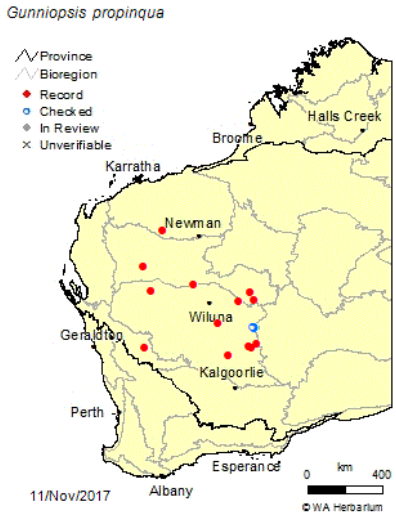
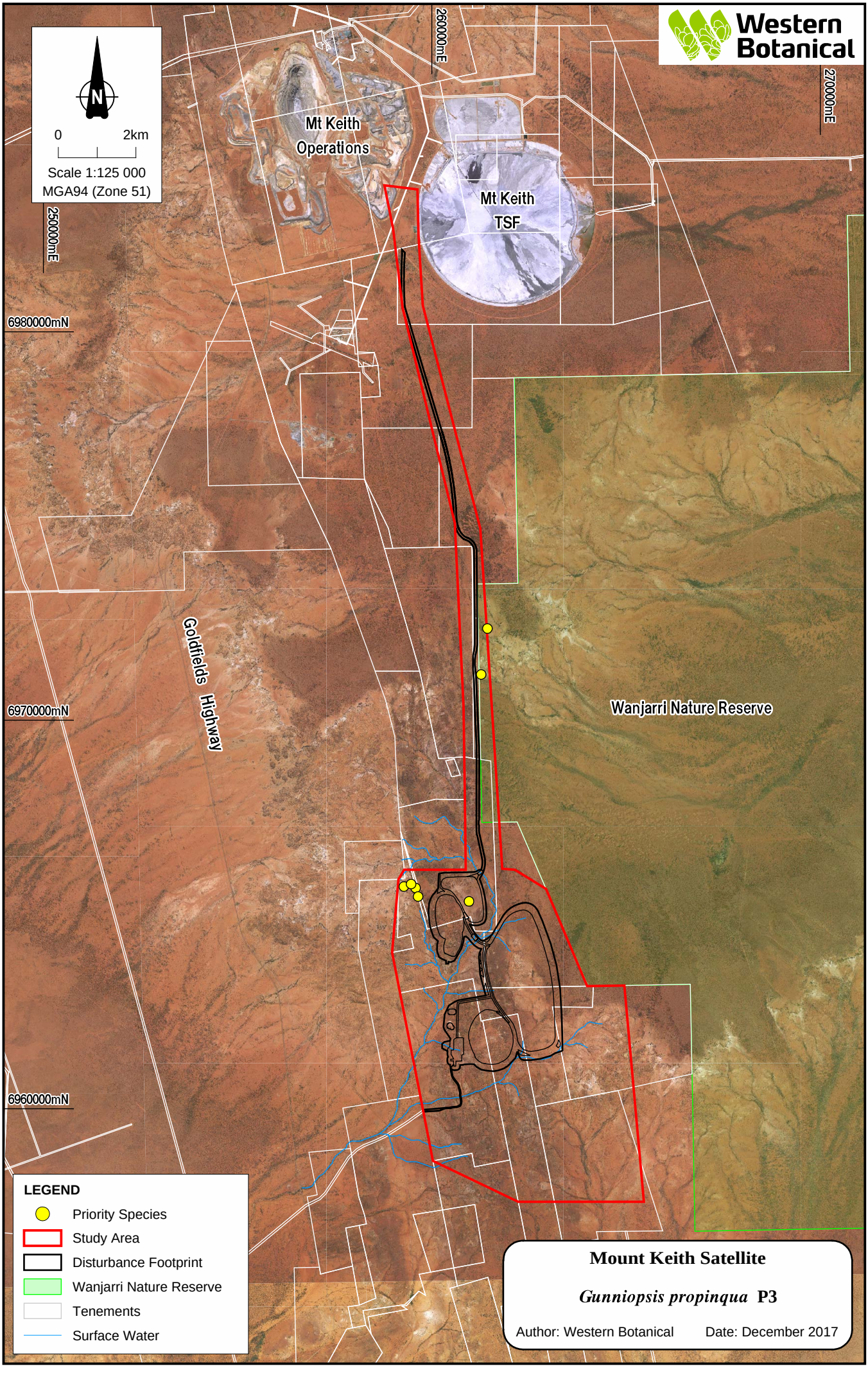


Figure 26. Distribution of *Gunniopsis propinqua* in W.A. (Western Australian Herbarium, 2017)

Figure 27. Distribution of *Gunniopsis propinqua* P3 within the MKS Study Area.



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Hibiscus krichauffianus Priority 3

Hibiscus krichauffianus is a slender small shrub 0.3 to 1.2m in height with a pan-continental distribution (349 records, Figure 28), but which is poorly known in Western Australia (5 WA Herbarium records, Figure 28, Figure 29). It is described from a specimen collected on the Darling River in New South Wales (Com. F. Mueller 6/85, specimen K000659852, held at the Kew Botanical Gardens, U.K.), (http:specimens.kew.org/herbarium/K000659852). Such a distribution suggests some taxonomic review is required, however, this involves material largely held at herbaria outside Western Australia, is time consuming and outside the scope of this treatment.

At the MKS Study Area, *Hibiscus krichauffianus* was recorded at three sites, one lying within the proposed wastedump east of the Goliath orebody area. Seven plants were recorded at MKS, one being within the proposed disturbance footprint.

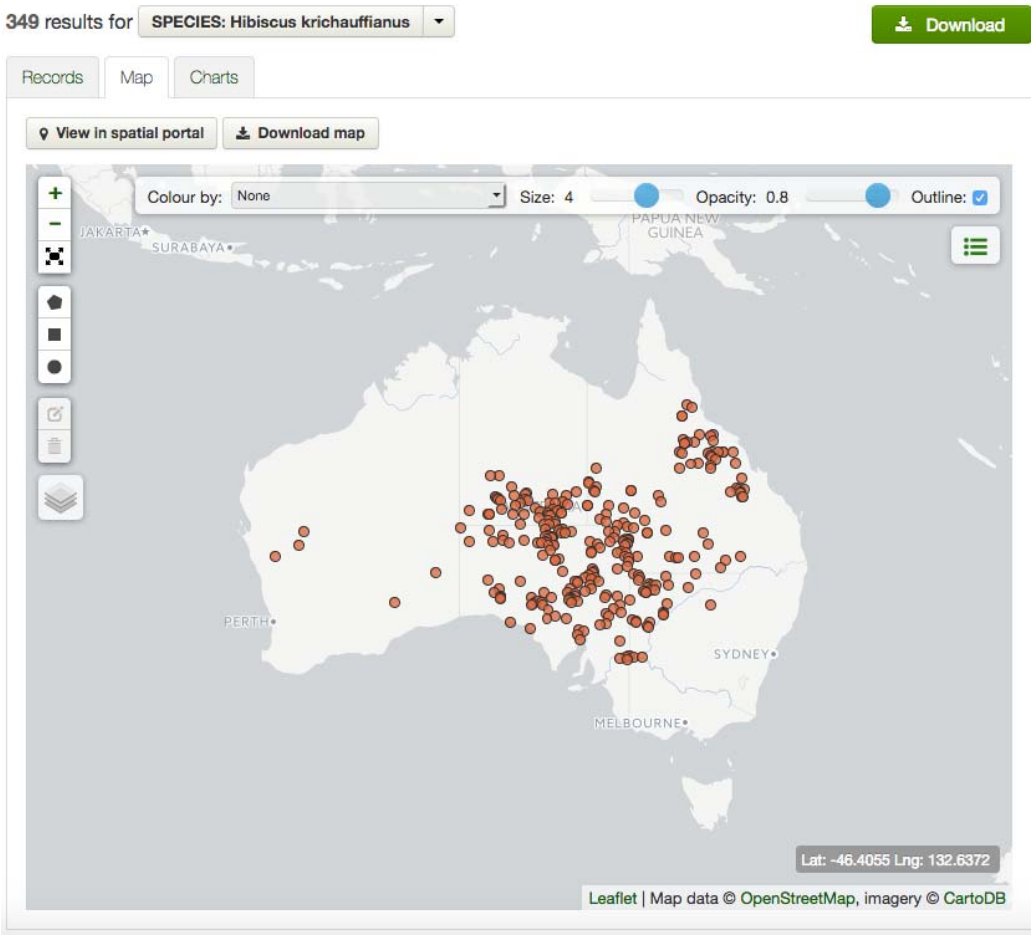


Figure 28. Distribution of *Hibiscus krichauffianus* in Australia (Australia's Virtual Herbarium, 2017)

Note, the western-most record shown in Figure 28 is that of S.F. Hymus s.n. 10/1976, held at MEL and it's location is generalised, noted as 56 km NNW of Wurarga (Yalgoo).

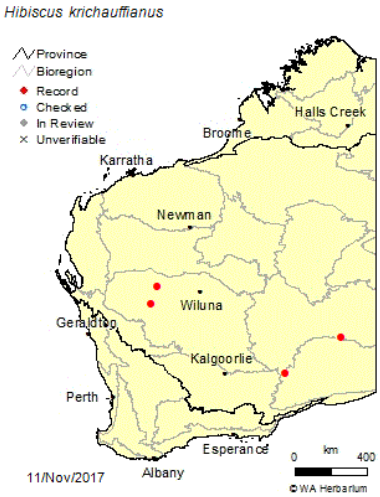


Figure 29. Distribution of *Hibiscus krichauffianus* in W.A. (WA Herbarium, 2017)

Western Botanical has previously recorded *Hibiscus krichauffianus* at one site, Mt Elvire, west of Menzies (Western Botanical, 2011b), Figure 30.

A consolidation of data for this species is presented in Table 14.

Table 14. Consolidated data for *Hibiscus krichauffianus* (WA Herbarium and Western Botanical)

Population #	Collector Reference	Location, habitat, description	Lat/Long
1	S.F. Hymus s.n., 10/1976	56 km NNW of Wurarga (Yalgoo)	-28.0, 116.0
2	A.A. Mitchell 850, 29/10/1987	(23.73 km WNW of) Cue	-27.3, 117.7
3	D.W. Goodall, 11/1/1977	(53.95 km WNW of) Meekatharra	-26.4, 118.0
4	G.J. Keighery & J.J. Alford 693, 18/10/1986	Woody, almost prostrate shrubs, 3 - 6 cm high. Flowers purple/pink. Abundance: common. 27.6 km N of Trans-Australia railway line on W boundary fence Kananda Station, Naretha 3	-30.8, 124.4
5	R. David, J. Jackson 11710, 26/7/2015	78 km S by track of Ilkurlka roadhouse. Great Victoria Desert. Open shrub to 30 cm high, 60 cm wide, pale pink flowers.	-29.0, 127.3
6	J. Warden, S. Colwill, WB33091, 14/10/2011	Mt Elvire, *Casuarina pauper* woodland, shallow red silty sand over calcrete, 5 plants	-29.59, 119.72

Population #	Collector Reference	Location, habitat, description	Lat/Long
7a, b, c	Western Botanical	Yakabindie Station, MKS, 3 locations: 7a. D. Brassington & B. Eckermann WB38648, 23.11/2017. 7b. G Cockerton & D Brassington WB38649, 13/12/2016. 7c. G Cockerton & S. Smith WB38711, 23/11/2016.	-27.45, 120.58 -27.44, 120.60 -27.47, 120.58

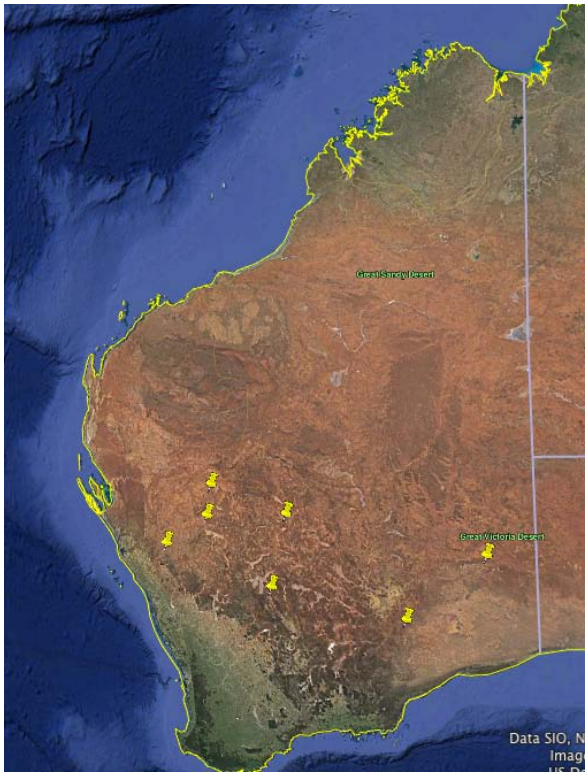
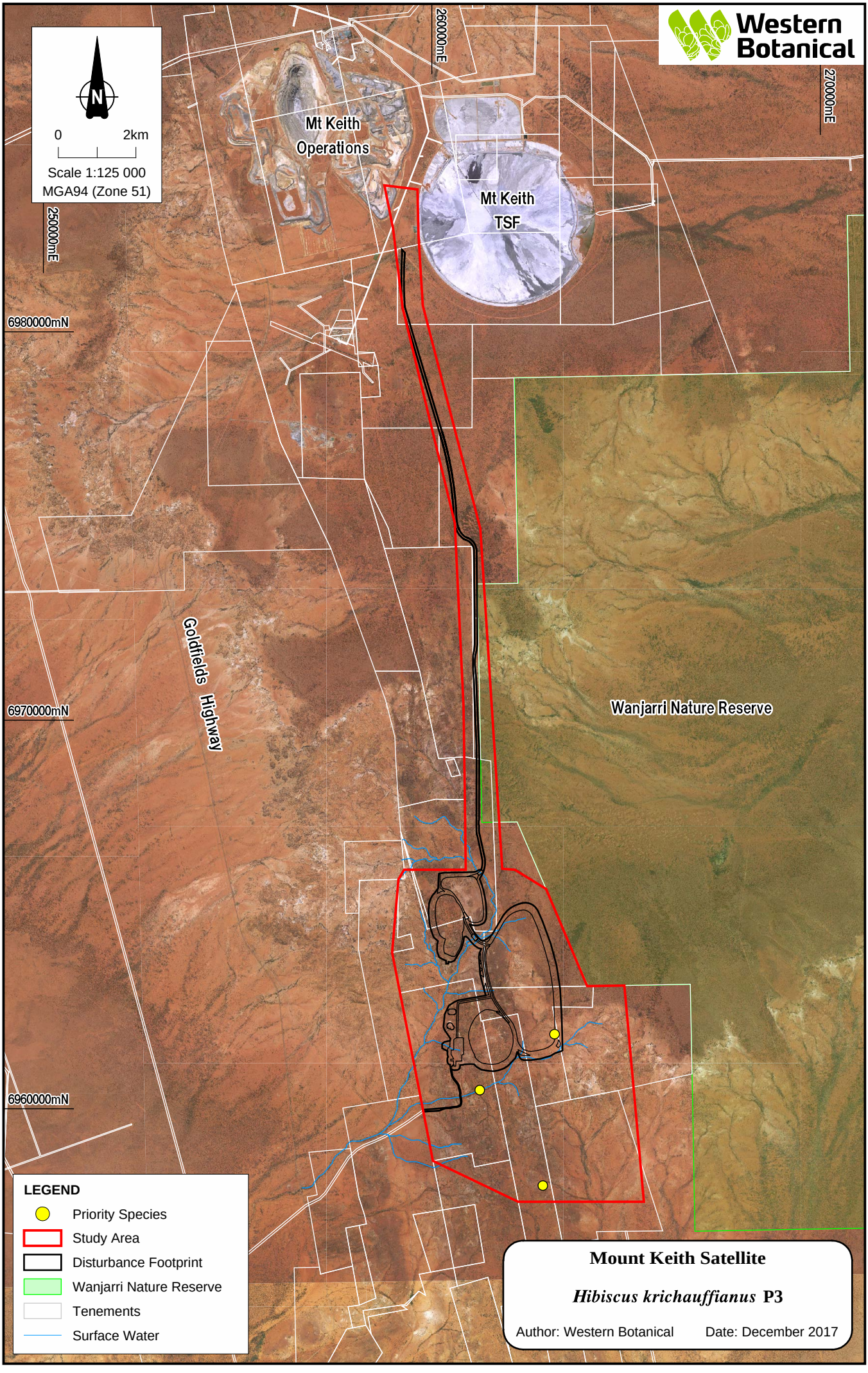


Figure 30. *Hibiscus krichauffianus* distribution in W.A. incorporating WB Records

The record at MKS (at three sites), on Yakabindie Station represents the seventh record for the species in Western Australia with others occurring in the Yalgoo biogeographic region (one record), western Murchison biogeographic region (two records) and two records on the margin of the Great Victoria Desert and Nullarbor biogeographic regions (Figure 28, Figure 29).

The impact on this species at MKS is probably low (one of 7 plants, one of three sites) as it is likely the species is more abundant within the MKS Study Area than the three data points may indicate. Given the lack of information on regional populations, it is not possible to conduct a meaningful impact assessment other than the known loss of one plant at MKS, is probably low (negligible) on a regional scale.

Figure 31. Distribution of *Hibiscus krichauffianus* at MKS at November 2017.



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Hemigenia exilis Priority 4

Hemigenia exilis is a shrub 0.5 to 1.5 m in height with an open, divaricately branched habit with paired lateral stems and decussate lanceolate leaves (Plate 6). It typically grows in Stony Ironstone Low Shrublands (SILS) habitat in the Proposal Study Area. Florabase records show almost all collections have occurred within the north-eastern Goldfields, between Leonora and Wiluna in the Murchison IBRA region (Figure 32). The western-most record of *Hemigenia exilis* is near Cue (D. Brearley s.n., 10/3/2009) is uncharacteristic for the species and until reviewed, the occurrence here is considered unreliable.

It is known that northern and southern populations of *Hemigenia exilis* have a natural disjunction south of Yakabindie. Work conducted by Botanic Gardens and Parks Authority (Mattner *et al.*, 2002) show that the southern and northern populations of *Hemigenia exilis* differ to a significant degree at the genetic level.

Plate 6. *Hemigenia exilis* within the transport corridor of the MKS Proposal Study Area with Glenda Pickersgill, former Environmental Manager at Mt Keith Operation.

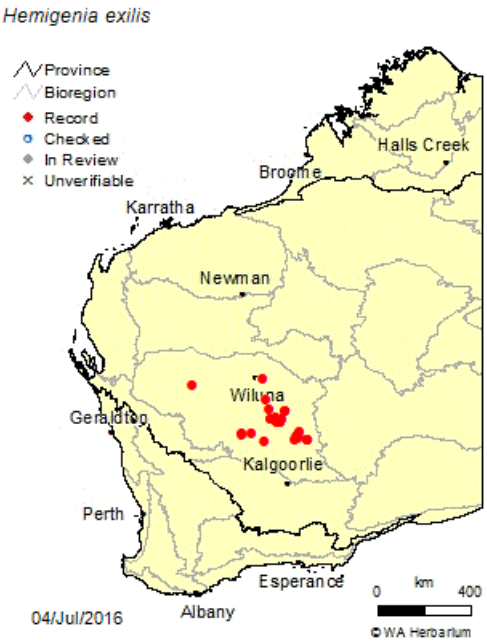
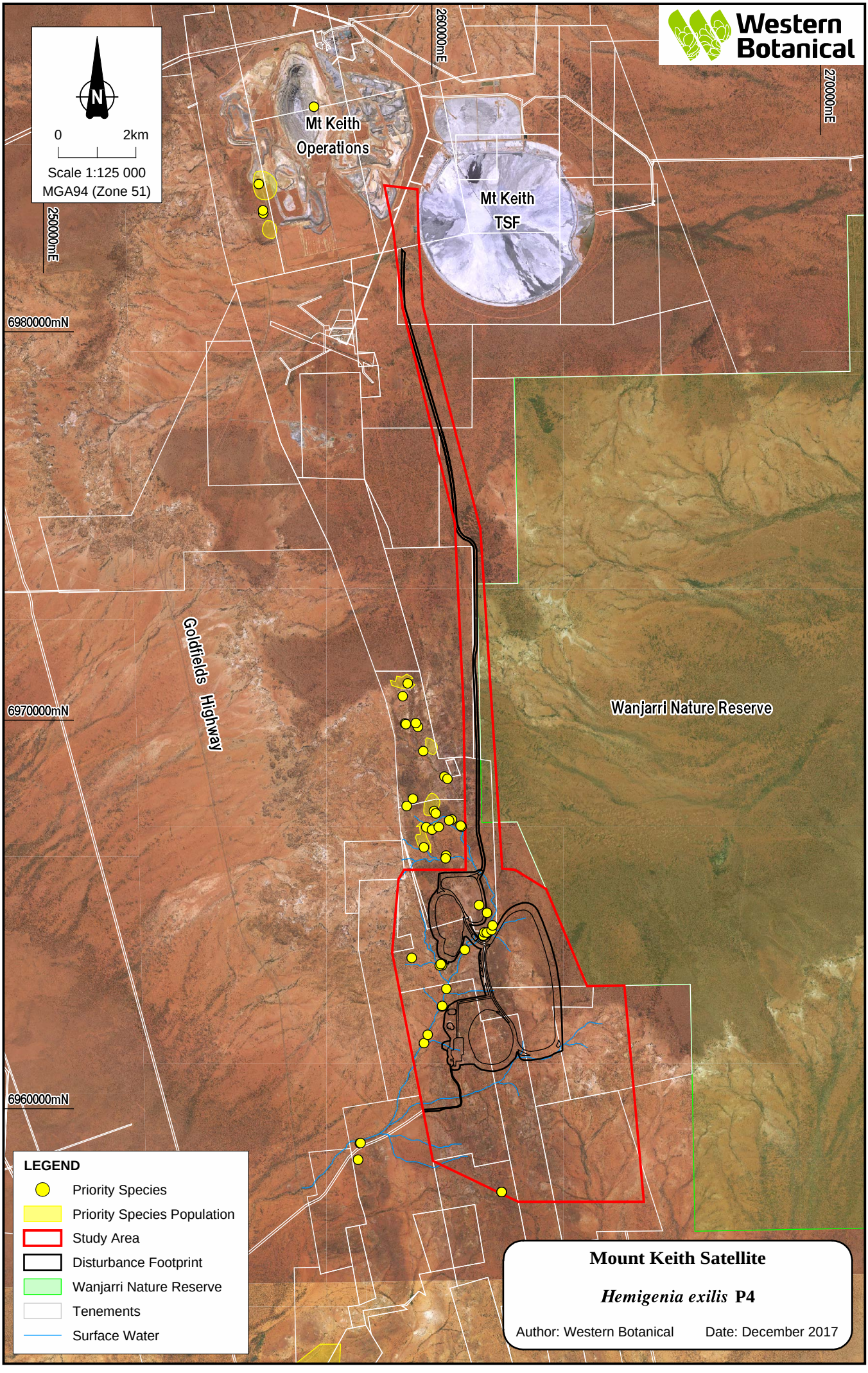


Figure 32. Distribution of *Hemigenia exilis* in Western Australia (Western Australian Herbarium, 2016).

The populations of *Hemigenia exilis* known within the MKS Proposal Study Area are presented in Figure 33. Here it is associated primarily with Jones Creek in the Violet, Bevon, and Nubev Land Systems. Between the MKS Proposal Study Area and Mt Keith, major populations of *Hemigenia exilis* are associated with the Windarra and Bevon Land Systems.

No plants of *Hemigenia exilis* are known within the MKS Development Envelope. The regional assessment of *Hemigenia exilis* reported in Cockerton & Stratford (1997, ref:LCS55) tallied 22,862 plants over 49 populations.

Figure 33. Populations of *Hemigenia exilis* P4, within the MKS Proposal Study Area.



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Hibbertia sp. Sherwood Breakaways (R.J. Cranfield 6771)

Hibbertia sp. Sherwood Breakaways (R.J. Cranfield 6771) is a shrub to 1 m high with dark green, glabrous, glossy pungent needle-like leaves to 15 mm long and large yellow flowers (Plate 7, Plate 8). This newly recognised species (following investigation by Western Botanical in September 2017) was previously reported as *H.* sp. Sherwood Breakaways aff. *H. exasperata* (G. Cockerton & G. O'Keefe 11911). It has broad similarities to the *Hibbertia exasperata* complex but is recognised as distinct from *H. exasperata, H. arcuata*, and *H. pungens* by the co-joined anther filaments in five groups of three. Distributions of *Hibbertia* sp. Sherwood Breakaways and similar *Hibbertia* species are presented in Figure 34.

Approximately 18 man days was spent in targeted searches for *H.* sp. Sherwood Breakaways, finding that its population extends in a relatively narrow band westwards from the south-western corner of the Wanjarri Nature Reserve, across the MKS transport corridor, then southward into the north-west corner of the MKS Proposal Study Area (Figure 35). Its greatest concentration of individuals is on low remnant laterite capped hills within the northern Perseverance fault line, and adjacent Archaean granite breakaway plateaux with silcrete remnants adjacent to the north-eastern and south-western interfaces with the Sherwood Land System.

A estimated total population of 13,715 plants is known with 12,287 (89.59% of the overall population) occurring in Unallocated Crown Land on Yakabindie Station and 1,428 plants (10.41%) occurring within the Wanjarri Nature Reserve. Unavoidably, 258 plants (1.88%) occur within the proposed Disturbance Footprint of the transport corridor with a further 27 plants in the Disturbance Envelope (Table 15).

Hibbertia. sp. Sherwood Breakaways was listed as Priority 1 in early October 2017. However, as a sizeable sub-population exists within Wanjarri Nature Reserve there is an expectation that this will be revised to Priority 2 status when data and specimens are forwarded to DBCA and the WA Herbarium respectively.

Table 15. Summary of *Hibbertia* sp. Sherwood Breakaways (R.J. Cranfield 6771) plant numbers and proportional impact.

Area	# of Plants	% of Plants
All Locations (total population) consisting of:	13,715	100.00%
1. Wanjarri Nature Reserve	1,428	10.41%
2. Vacant Crown land (Yakabindie Station)	12,287	89.59%
Direct impact to plants within MKS (Transport Corridor, Disturbance Footprint)	258	1.88%
Potential impact to plants within MKS (Transport Corridor, Disturbance Envelope)	27	0.20%

Plate 7. Habitat and shrub of *Hibbertia* sp. Sherwood Breakaways (R.J. Cranfield 6771).

Plate 8. Foliage and post-anthesis flower of *Hibbertia* sp. Sherwood Breakaways (R.J. Cranfield 6771).

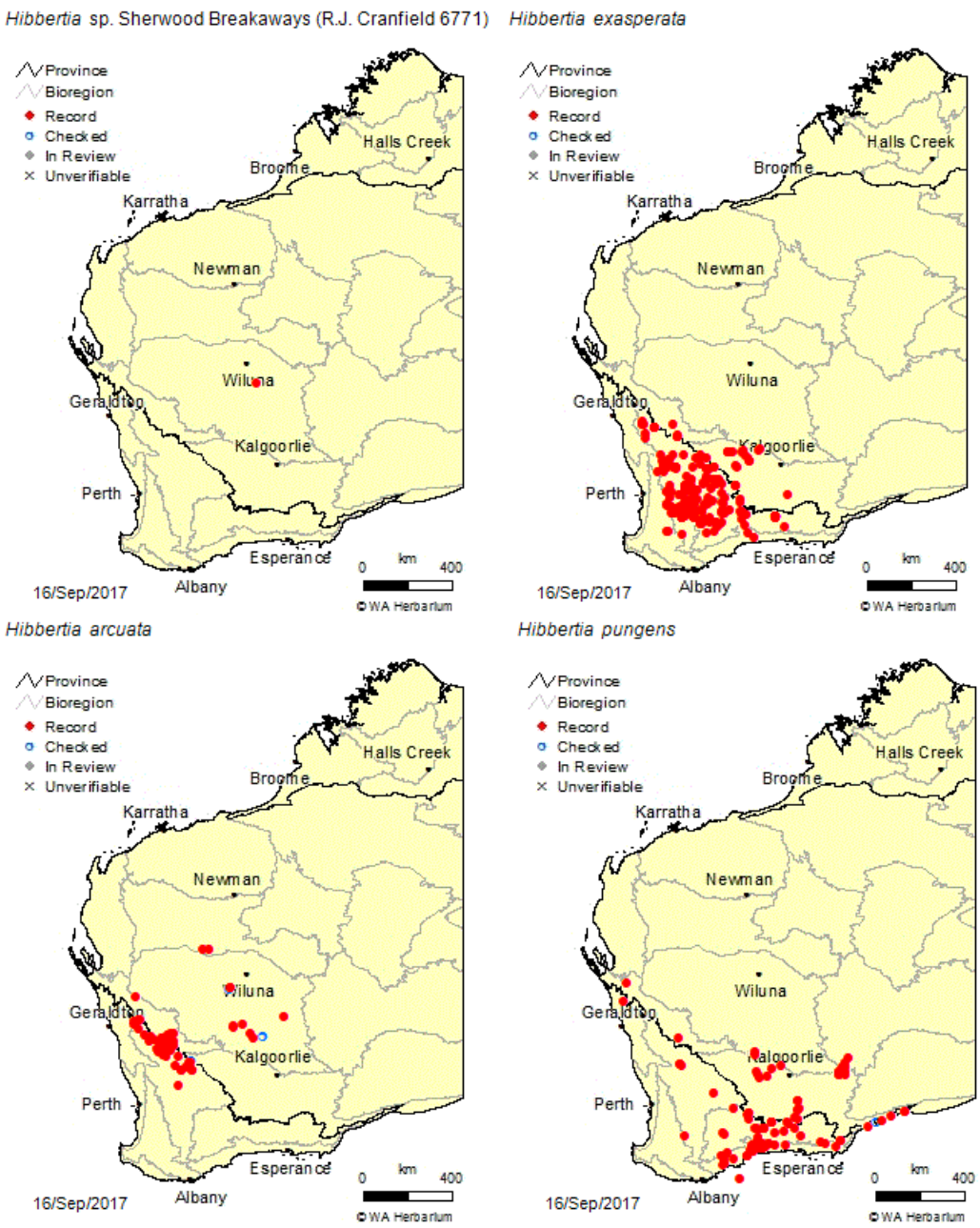

Figure 34. Distribution of *Hibbertia* sp. Sherwood Breakaways (R.J. Cranfield 6771), *Hibbertia exasperata*, *Hibbertia arcuata,* and *Hibbertia pungens* in Western Australia (Western Australian Herbarium, 2017).