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*The distribution and habitat requirements of Grevillea lullfitzii, a Priority 1 taxa, known from the Digger Rock- South Ironcap Area of the Forrestania Greenstone Belt, Western Australia.*

Greg Durell and Leon Silvester

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*The distribution and habitat requirements of Grevillea lullfitzii, a Priority 1 taxa, known from the Digger Rock- South Ironcap Area of the Forrestania Greenstone Belt, Western Australia.*

By

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This project was funded by Western Power Corporation.

## ABSTRACT

During the summer of 1994, approximately 600 000 ha of native bushland was burnt in a wildfire from the rabbit proof fence eastwards to the Johnston Lake area. The fire burnt through an area called "Forrestania". This area is a green stone belt stretching from Mount Holland south to Hatter Hill, a distance of 70 km. This area lies approximately 80 kilometres east of Hyden.

Soon after the fire, during a transmission line rebuilding project, Western Power Corporation were responsible for accidentally destroying several populations of Declared Rare and Priority Flora. The species were *Eremophila racemosa*, *E. inflata*, *Banksia sphaerocarpa* var. *dolychostyla* and *Grevillea lullfitzii*. Consequently, Western Power Corporation agreed to provide funds for surveys of the effected species and to determine post fire germination and growth responses.

Three surveys undertaken since the fire, July 1996, November 1996 and May 1997 provided sufficient data for all species targeted except for *G. lullfitzii*.

This report describes the survey undertaken in respect to *G. lullfitzii* during November 1997. It is intended to compliment other surveys undertaken as part of this project. (See reference section). The report describes the population ecology of *G. lullfitzii* including a summary known populations (with new discoveries), along with recommendations for this species future management and protection status

## INTRODUCTION

*G. Lullfitzii* is an open spreading shrub to about 1.5 metres high. The branchlets are angular covered with loose closely pressed hairs. The leaves are 3-5 cm long curved upward with little or no stalk and divided two or three times. The leaf margins are rolled backwards towards the midrib, enclosing the lower surface except for mid-vein. The upper leaf surface is mostly hairless with a conspicuous mid vein on the lower surface. The leaf texture is leathery. The inflorescences are terminal, erect, about 10.5-20.5 mm long. The flowering period is October - December with the flowers being an off-white colour. The fruit is 16-17 mm long and 6 mm wide, erect on erect stalks. The species named after Fred Lullfitz, a botanical collector for Kings Park, who collected it on a hill at Digger Rocks, part of the Forrestania greenstone belt, in 1964.

The Forrestania greenstone belt stretches from Mt Holland south to Hatter Hill, a distance of some 70 kilometres. It is approximately 80 km east of Hyden. This narrow greenstone belt is composed of an undulating plain or mafic and ultra mafic lithology's and abrupt ridges of banded ironstone's with some tertiary lateritic development (Gibson N. *et al* 1996).

*G. lullfitzii* is known to occur only within the southern portion of the Forrestania greenstone belt from near Diggers Rock and South Ironcap. The geology from this area, based on the Hyden 1:250 000 Geological Survey of Western Australia, is described predominantly a mafic amphibolite and metabasalt with occurrences of seriate granite and ademellite, banded ironstone and colluvium derived from the mafic amphibolite.

The climate of the area is warm dry Mediterranean with cool winters and hot summers. Mean annual rainfall at Hyden is 336 mm, ( rainfall is presumed to be greater at Forrestania than Hyden), with moderate seasonal variation. Most rainfalls during winter and is associated with frontal activity from May to August. Summer falls are highly erratic and result from thunderstorms or south eastward moving tropical depressions. The mean highest temperature, based on Hyden's recordings, is January with December to April months all recording mean annual temperatures above 30° C. Lowest mean temperatures of 5°C are recorded in July and August.

The Digger Rock - South Ironcap area lies within the Roe Botanical District, an area characterised by mallee vegetation with some eucalypt woodland in lower valleys and scrub heath and *Allocasuarina* thicket on the residual plateau soils (Beard 1990).

The southern Forrestania belt has similar sized flora to that recorded for the Bremer and Parker Ranges (some 80 kilometres to the east). The flora belt was typically south western in composition with low representation of genera common in the more arid South west Interzone (eg *Eremophila*). Occurrence of priority species was much higher than the nearby Bremer and Parker Ranges, perhaps reflecting the unusual combination of geology and climate (Gibson, N. *et al* 1996).

Two species of Declared Rare Flora, *Banksia sphaerocarpa* var. *dolichostya* and *Boronia revoluta*, along with eleven priority species, including *G. lullfitzii* presently occur within the Digger Rock - South Ironcap area (Gibson, N. *et al* 1996).

The aim of this *G. Lullfitzii* survey was to investigate and survey potential sites within the Forrestania green stone zone and similar adjacent sites in the hope of extending the species distribution, increase population numbers and provide a suitable recommendation for this species future protection status.

## **METHODS**

A desktop study prior to the survey was undertaken. This study analysed previous collection information available for the species, for example literature, Western Australian Herbarium data base records, vegetation and geology plans and aerial photographs were studied.

In particular, the study of plans and aerial photographs based on known vegetation and geological associations helped identify possible location sites for the species. These sites were recorded prior to the survey and amended when surveying as further evidence was discovered concerning the species preferred habitat.

The survey was mainly vehicular based, traversing likely sites using major roads, minor roads and tracks and grid lines (many grid lines are associated with the exploration and mining in the area).

When a population of the species was discovered, a brief ground search was undertaken. Following this search, CALM's Rare Flora Report Form were completed and Global Positioning System (GPS) location details were recorded.

Potential sites for *G. lullfitzii*, well away from the species known distribution range, were also searched (See Appendix 4) attempting to extend its present known distribution therefore, reducing the species conservation status and decreasing the need to impose actions to ensure the species long term survival.

When found, other species of Declared Rare or Priority Flora known to the authors were also recorded following the same procedure.

## **RESULTS**

A total of 15 new populations of *G. lullfitzii* were discovered and 1 population re-surveyed. (Appendix 1A, 2, 3 & 4 provide plans and GPS location details for all populations discovered). All the populations found were located within an area from South Ironcap to Digger Rock. A summary of each new population found is recorded on CALM's Rare Flora Report Form. (A copy is provided as Attachments 1-15).

No new populations were found outside the previously recorded distribution area of the Digger Rock and South Ironcap area.

## **DISCUSSION**

All occurrences of *G. lullfitzii* were recorded within the environs from South Iron Cap to Digger Rock. A distance of approximately 6 square kilometres. Finding several populations east of the Forrestania - Southern Cross Road was significant because it extends the distribution away from the existing Cosmic Boy and Digger Rock Nickel Mines and appears to be outside existing Mining Tenements (See Attachment 16).

*G. lullfitzii* occurs as scattered individuals rather than a common species. It appears to be a long lived species with plants reaching 1.5 metres - tall, spreading foliage and thick woody stems. It favours a habitat comprising eucalyptus mallee low woodland over allocasuarina thicket. Its geological preference was not determined however, it is believed also to be specific. It appears not to be affected adversely from the impact of fire, as indicated by the seed regenerating populations found around and south of Digger Rock.

The species should occur at Hatter Hill. The vegetation and geology appear to be similar in composition however, we were unable to find any evidence of the species there.

The immediate threats to the species appear to be those activities associated with the present mineral exploration and development of mine sites within the species present distribution. Two active mines and extensive mineral exploration is occurring in the area. The current mines are predominantly underground although the Digger Rock operation has a large open pit associated with the underground mine. In the longer term, the mining company, Outokumpu Mining Western Australia Pty Limited is committed to the rehabilitation of completed mining areas. (Presently rehabilitation of the Flying Fox mine, further to the north, is proceeding).

Because the species known range is small and within an active mining lease, there are good reasons to include this species as Declared Rare Flora. This will ensure that while mining activity occurs within the area the species populations are not damaged. The decision to declare as rare flora should however be made after consultation with Outokumpu Western Australia PTY LTD, who may provide CALM with alternative acceptable strategies for the species preservation.

The other threat to the species would be if a decision was ever made to open the area up for agricultural purposes. This is unlikely to occur however, is always a possibility. If the decision was made to clear then reservation of the species within a conservation reserve is essential. There is almost none of the Forrestania greenstone belt reserve currently in the state's conservation reserve system. The small Lake Cronin Nature Reserve (1016 ha) 30 kilometres to the north is the only conservation reserve covering the southern Forrestania vegetation system. None of the banded ironstone or associated lateritic areas, of which *G. lullfitzii* occurs are currently conserved for conservation. This *G. lullfitzii* work strongly supports Henry - Hall's (1990) conclusion that there is an urgent need for a series of nature reserves along the Forrestania belt.

## RECOMMENDATIONS

In relation to *G. lullfitzii* it is recommended:

- 1 the species be considered for gazettal as Declared Rare Flora. It has been adequately searched for over the past two years by the Narrogin District and because of its restricted population distribution is in need of special protection. Any decision to gazette as DRF should be made after consultation with Outokumpu, discussing alternative strategies the company may adopt to ensure adequate protection of the species within their mining tenements.

- 2 consideration be given for the inclusion of some populations within a future NPNCA vested conservation reserve. An area within the environs of Digger Rocks and South Ironcap would be an appropriate location for a reserve, and.
- 3 Outokumpu Mining Australia Pty Limited be requested to include *G. lullfitii* as a regeneration species within any future Digger Rock Mine regeneration programmes.

## REFERENCES

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Thom R., Lipple S.L and Sanders C.C. (1977 Geological Survey of Western Australia. 1: 250 000 Geological Series and Explanatory Notes. Ravensthorpe Western Australia. Department of Mines Western Australia.



## Appendix

**Appendix 1 & 1A**

**Appendix 2-3**

**Appendix 4**

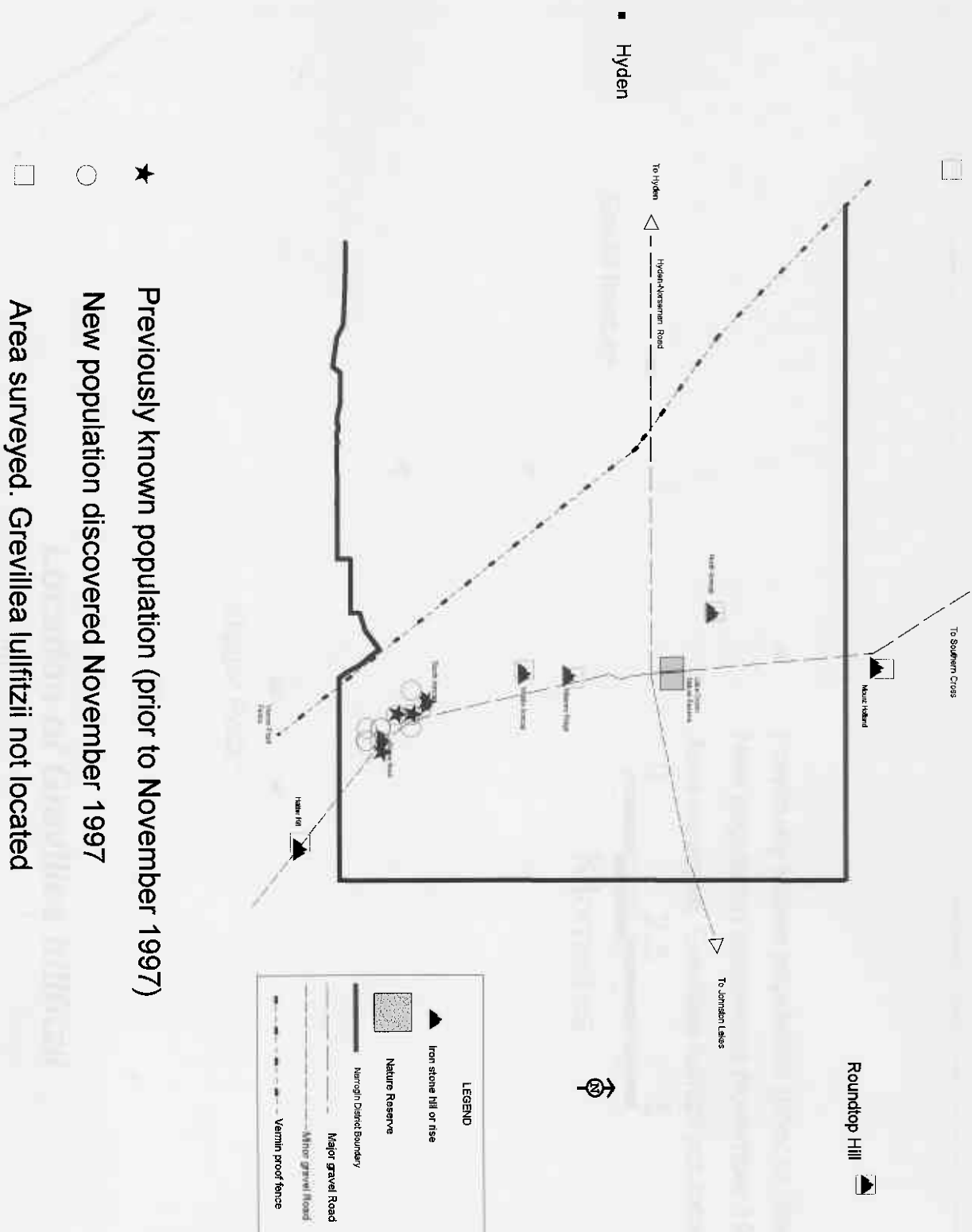
**Appendix 5**

**Location plans for populations.**

**Aerial photographs showing population distribution**

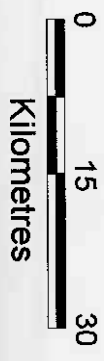
**Summary of locations**

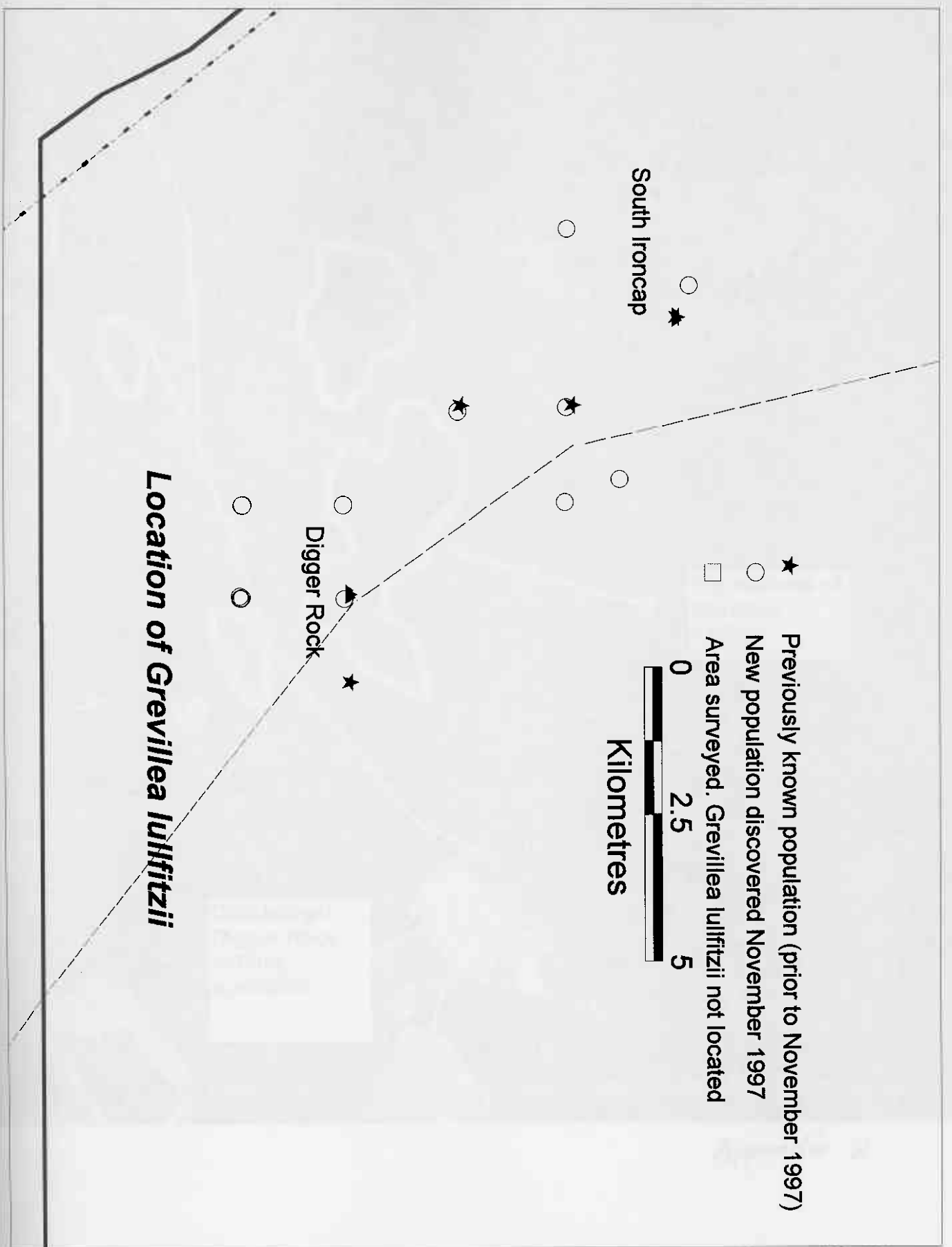
**Photographs of *G. lullfitzii***



**Location of *Grevillea lullfitzii***

- ★ Previously known population (prior to November 1997)
- New population discovered November 1997
- Area surveyed. *Grevillea lullfitzii* not located







Location of *Grevillea lullfitzii* in relation to the Digger Rock mine

Appendix 2

**Outokumpu  
Digger Rock  
Mining  
operation**



Digger Rock

Populations of *Grevillea lullifitzii*

Location of *Grevillea lullifitzii* in relation to the Digger Rock Mine

Scale 1:10000

Appendix 3

Population summary of *Grevillea lullfitzii* as at November 1997.

## 1 Existing populations

## Population No. 1 Diggers Rock

Population	latitude	longitude
1A	32° 42' 20"	119° 47' 45"
1B	32° 43' 34"	119° 49' 02"

## Population No. 2 Near Lake Cronin

Population	latitude	longitude
2 ****	32° 23' 03"	119° 44' 51"

\*\*\*\* This population was incorrectly determined. It is not *G. lullfitzii*. It is *G. teretifolia*.

## Population No.3 South east of South Ironcap

Population	latitude	longitude
3	32° 42' 00"	119° 48' 00"

## Population No. 5 Mount Roe: Requires confirmation

## Population No.6 South Ironcap

Population	latitude	longitude
6	32° 43' 04"	119° 49' 42"

## 2 New populations

latitude	longitude
32° 43' 43"	119° 48' 50"
32° 44' 23"	119° 49' 34"
32° 44' 32"	119° 49' 43"
32° 43' 58"	119° 48' 12"
32° 44' 24"	119° 48' 49"
32° 44' 27"	119° 48' 56"
32° 44' 44"	119° 49' 22"
32° 44' 40"	119° 49' 42"
32° 43' 22"	119° 48' 36"
32° 43' 39"	119° 48' 44"
32° 42' 22"	119° 47' 57"
32° 41' 59"	119° 48' 20"
32° 41' 57"	119° 47' 20"
32° 40' 41"	119° 45' 57"
32° 43' 47"	119° 49' 49"

*Main locations searched without success*

Place name	latitude	longitude
North Ironcap	32° 21' 06"	119° 39' 45"
Middle Ironcap	32° 34' 25"	119° 44' 13"
Hatter Hill	32° 49' 26"	119° 58' 41"
North of Emu Fence Road	32° 05' 07"	119° 04' 40"
Mason Ridge	32° 31' 10"	119° 44' 07"
NW of Mount Holland	32° 17' 49"	119° 41' 30"
Roundtop Hill	32° 11' 36"	120° 24' 48"



**Form of *Grevillea lullfitzii***





Grevillea lullfitzii flowers

Form 1-15  
Rare Flora Report Form  
This form is used to report the occurrence of rare plants and animals in Florida. It is to be filled out by the person who discovered the species or by a knowledgeable person who has observed the species in the field. The form should be filled out for all populations of a rare species that are discovered or observed in Florida. The form should be filled out for all populations of a rare species that are discovered or observed in Florida. The form should be filled out for all populations of a rare species that are discovered or observed in Florida.

**Attachments**

*Attachments 1-15 Rare Flora Report Forms for all populations surveyed.*

1-15  
Rare Flora Report Form  
This form is used to report the occurrence of rare plants and animals in Florida. It is to be filled out by the person who discovered the species or by a knowledgeable person who has observed the species in the field. The form should be filled out for all populations of a rare species that are discovered or observed in Florida. The form should be filled out for all populations of a rare species that are discovered or observed in Florida. The form should be filled out for all populations of a rare species that are discovered or observed in Florida.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT**  
**RARE FLORA REPORT FORM**

TAXON: Grevillea lullfitzii POPULATION No 1  
 (Bold Type) DRF Priority Species Pr 1 Partial Survey Full Survey New Population  
 FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
 REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
 File Ref: Map/Site Ref.: Reserve No.:

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
 National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
 Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: In the near proximity of Digger Rock.

LATITUDE: 32° 43 ' 43 "S LONGITUDE: 119° 48 ' 50 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Hilltop

ROCK TYPE: Other: Banded ironstone  
 ROCKFORM: Sheet Boulder Fluvatile Gravel Concretional Gravel  
 SOIL TYPE: Sand Loam Clay Peat Gravel  
 SOIL COLOUR: Red Brown Yellow White Grey  
 SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Very open scrub malle over low heath C of Allocasuarina campestris and A. acutivalvis

ASSOCIATED SPECIES: Melaleuca uncinata, Eucalyptus? eremophila, Hibbertia, Acacia sp., Calothamnaus sp., Hakea francisiana.

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
 POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
 Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
 Weeds Disease Prescribed Burning Other Comment:

(Bold type)

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required): Population number 1 is part of this population.

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: \_\_\_\_\_ Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
RARE FLORA REPORT FORM

TAXON Grevillea lullfitzii POPULATION No P. 1.  
(Bold Type) DRF Priority Species P. 3. Partial Survey Full Survey  
FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: In the near proximity of Digger Rock.

LATITUDE: 32° 44 ' 24 "S LONGITUDE: 119° 48 ' 49 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: lateritic gravel  
ROCKFORM: Sheet Boulder Fluvial Gravel Concretional Gravel  
SOIL TYPE: Sand Loam Clay Peat Gravel  
SOIL COLOUR: Red Brown Yellow White Grey  
SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Low woodland A of Eucalyptus argyphaea over thicket of Allocasuarina campestris and Melaleuca uncinata and Grevillea insignis subsp. ellottii (Priority 3)

ASSOCIATED SPECIES: Melaleuca sp., Gastrolobium sp., Hakea francisiana.

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
Weeds Disease Prescribed Burning Other Comment:

(Bold type)

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required):

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM., PO Box 104., COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT**  
**RARE FLORA REPORT FORM**

TAXON: Grevillea lullfitzii POPULATION No  
 (Bold Type) DRF Priority Species Pr 1\_ Partial Survey Full Survey  
 FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
 REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
 File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
 National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
 Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: In the near proximity of Digger Rock.

LATITUDE: 32° 44 ' 23 "S LONGITUDE: 119° 49 ' 34 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)  
 LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: lateritic gravel  
 ROCKFORM: Sheet Boulder Fluvialite Gravel Concretional Gravel  
 SOIL TYPE: Sand Loam Clay Peat Gravel  
 SOIL COLOUR: Red Brown Yellow White Grey  
 SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Scrub of Allocasuarina campestris and A. acutivalvis

ASSOCIATED SPECIES: Banksia sp., Dryandra sp., Hibbertia, Acacia sp., Calothamnaus sp., Hakea francisiana.

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
 POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
 Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
 Weeds Disease Prescribed Burning Other Comment:

(Bold type)  
 FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required): Population number 1 is part of this population.

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM., PO Box 104., COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
RARE FLORA REPORT FORM

TAXON: Grevillea luffitzi POPULATION No  
(Bold Type) DRF Priority Species Pr 1 Partial Survey Full Survey  
FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: In the near proximity of Digger Rock.

LATITUDE: 32° 43 ' 58 "S LONGITUDE: 119° 48 ' 49 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: lateritic gravel  
ROCKFORM: Sheet Boulder Fluvialite Gravel Concretional Gravel  
SOIL TYPE: Sand Loam Clay Peat Gravel  
SOIL COLOUR: Red Brown Yellow White Grey  
SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Low woodland A of Eucalyptus sp. over thicket of Allocasuarina campestris and Melaleuca uncinata and Grevillea insignis subsp. ellottii (Priority 3)

ASSOCIATED SPECIES: Melaleuca sp., Gastrolobium sp., Hakea francisiana.

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative

POLLINATORS: Native bees Honey bees Other insects Birds Mammals

Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
Weeds Disease Prescribed Burning Other Comment:

(Bold type)

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required): Population number 1 is part of this population.

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

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RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
RARE FLORA REPORT FORM

TAXON: Grevillea lullfitzii POPULATION No  
(Bold Type) DRF Priority Species Pr 1 Partial Survey Full Survey  
FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: In the near proximity of Digger Rock.

LATITUDE: 32° 44 ' 32 "S LONGITUDE: 119° 49 ' 43 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: lateritic gravel  
ROCKFORM: Sheet Boulder Fluvialite Gravel Concretional Gravel  
SOIL TYPE: Sand Loam Clay Peat Gravel  
SOIL COLOUR: Red Brown Yellow White Grey  
SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): very open tree mallee of Eucalyptus sp. over thicket of Allocasuarina campestris and Hakea francisiana

ASSOCIATED SPECIES: Melaleuca sp., Gastrolobium sp., Hakea francisiana.

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
POLLINATORS: Native bees Honey bees Other insects Birds Mammals

Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
Weeds Disease Prescribed Burning Other Comment:

(Bold type)

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required): Population number 1 is part of this population.

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: B. D. U. Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT**  
*RARE FLORA REPORT FORM*

TAXON *Grevillea lullfitzii* POPULATION No \_\_\_\_\_  
 (Bold Type) DRF Priority Species Pr  Partial Survey Full Survey  
 FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
 REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
 File Ref: \_\_\_\_\_ Map/Site Ref.: \_\_\_\_\_ Reserve No.: \_\_\_\_\_

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
 National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
 Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: Near Digger Rock.

LATITUDE: 32° 44 ' 27 "S LONGITUDE: 119° 48 ' 56 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)  
 LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: lateritic gravel  
 ROCKFORM: Sheet Boulder Fluvialite Gravel Concretional Gravel  
 SOIL TYPE: Sand Loam Clay Peat Gravel  
 SOIL COLOUR: Red Brown Yellow White Grey  
 SOIL CONDITION: Inundated Moist Dry Saline Other: \_\_\_\_\_

VEGETATION CLASSIFICATION (Muir's): Low woodland A of *Eucalyptus argyryphaea* over thicket of *Allocasuarina campestris* and *Melaleuca uncinata*

ASSOCIATED SPECIES: *Melaleuca sp.*, *Gastrolobium sp.*, *Hakea francisiana*.

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied: \_\_\_\_\_

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
 POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
 Other observations: \_\_\_\_\_

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment: \_\_\_\_\_

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
 Weeds Disease Prescribed Burning Other Comment: \_\_\_\_\_

(Bold type)  
 FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_\_\_\_\_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required): \_\_\_\_\_

Copy sent to (Bold type) Regional Office District Office Other Specify: \_\_\_\_\_

Signed: *J. D. C.* Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.



DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
RARE FLORA REPORT FORM

TAXON *Grevillea lullfitzii* POPULATION No.                       
(Bold Type) DRF Priority Species Pr  Partial Survey Full Survey New Population  
FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
File Ref: Map/Site Ref.: Reserve No.:

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: Near Digger Rock.

LATITUDE: 32° 44 ' 44 "S LONGITUDE: 119° 49 ' 22 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)  
LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: lateritic gravel  
ROCKFORM: Sheet Boulder Fluvial Gravel Concretional Gravel  
SOIL TYPE: Sand Loam Clay Peat Gravel  
SOIL COLOUR: Red Brown Yellow White Grey  
SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Low woodland A of *Eucalyptus argyphaea*. over thicket of *Allocasuarina campestris* and *Melaleuca uncinata*

ASSOCIATED SPECIES: *Melaleuca sp.*, *Gastrolobium sp.*, *Hakea francisiana*.

No. of PLANTS: Scattered Mature:        Seedlings:        Dead:        Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
POLLINATORS: Native bees Honey bees Other insects Birds Mammals

Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
Weeds Disease Prescribed Burning Other Comment:

(Bold type)  
FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required):

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed:  Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM., PO Box 104., COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT**  
*RARE FLORA REPORT FORM*

TAXON *Grevillea lullfitzii* POPULATION No \_\_\_\_\_  
 (Bold Type) DRF Priority Species Pr  Partial Survey Full Survey  
 FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
 REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
 File Ref: \_\_\_\_\_ Map/Site Ref.: \_\_\_\_\_ Reserve No.: \_\_\_\_\_

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
 National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
 Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: Near Digger Rock.

LATITUDE: 32° 44 ' 40 "S LONGITUDE: 119° 49 ' 42 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: lateritic gravel  
 ROCKFORM: Sheet Boulder Fluvialite Gravel Concretional Gravel  
 SOIL TYPE: Sand Loam Clay Peat Gravel  
 SOIL COLOUR: Red Brown Yellow White Grey  
 SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Very open tree mallee of *Eucalyptus* sp. over scrub of *Melaleuca uncinata* and *Hakea francisiana*

ASSOCIATED SPECIES: *Melaleuca* sp., *Calothamnus* sp.

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied: \_\_\_\_\_

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
 POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
 Other observations: \_\_\_\_\_

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment: \_\_\_\_\_

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
 Weeds Disease Prescribed Burning Other Comment: \_\_\_\_\_

(Bold type)

FIRE HISTORY: not known Burnt in 19\_\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_\_\_\_\_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required): \_\_\_\_\_

Copy sent to (Bold type) Regional Office District Office Other Specify: \_\_\_\_\_

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
RARE FLORA REPORT FORM

TAXON Grevillea luffitzi POPULATION No  
(Bold Type) DRF Priority Species Pr 1 Partial Survey Full Survey  
FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: Near Digger Rock.

LATITUDE: 32° 43 ' 22 "S LONGITUDE: 119° 48 ' 36 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: lateritic gravel  
ROCKFORM: Sheet Boulder Fluvial Gravel Concretional Gravel  
SOIL TYPE: Sand Loam Clay Peat Gravel  
SOIL COLOUR: Red Brown Yellow White Grey  
SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Scrub of Melaleuca uncinata and Hakea francisiana

ASSOCIATED SPECIES: Melaleuca sp., Dryandra sp., Calothamnus sp.

No. of PLANTS: Scattered Mature:      Seedlings:      Dead:      Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
Weeds Disease Prescribed Burning Other Comment: This population is within 50 metres of open cut mining area.

(Bold type)

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required):

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT**  
*RARE FLORA REPORT FORM*

TAXON *Grevillea lullfitzii* POPULATION No Pr 1/4 Partial Survey Full Survey  
**(Bold Type)** DRF **Priority Species** Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
 FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer  
 REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
 File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: **(Bold typed)** Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
 National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
 Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: Near Digger Rock.

LATITUDE: 32° 43 ' 39 "S LONGITUDE: 119° 48 ' 44 "E G.P.S. USED: Y ASPECT: northerly

**(Bold type)**  
LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: Ironstone  
 ROCKFORM: Sheet Boulder Fluviatile Gravel Concretional Gravel  
 SOIL TYPE: Sand Loam Clay Peat Gravel  
 SOIL COLOUR: Red Brown Yellow White Grey  
 SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Very open scrub mallee over low heath C.

ASSOCIATED SPECIES: *Grevillea insignis subsp. ellottii* (Priority 3)

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: **(Bold type)** Flower bud Flower Immat. fruit Fruit Cl Fruit Dehiscid Vegetative  
 POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
 Other observations:

CONDITION OF POPULATION: **(Bold type)** Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: **(Bold type)** Firebreaks Mining Recreational activities Roadworks Grazing  
 Weeds Disease Prescribed Burning Other Comment

**(Bold type)**  
FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required):

Copy sent to **(Bold type)** Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT**  
*RARE FLORA REPORT FORM*

TAXON *Grevillea lullfitzii* POPULATION No  
**(Bold Type)** DRF Priority Species Pr 1 Partial Survey Full Survey  
 FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
 REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
 File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: **(Bold typed)** Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
 National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
 Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: Near Digger Rock.

LATITUDE: 32° 42 ' 22 "S LONGITUDE: 119° 47 ' 57 "E G.P.S. USED: Y ASPECT: northerly

**(Bold type)**

LANDFORM: Low rise grading into a Hilltop

ROCK TYPE:	Other:	<u>Lateritic gravel</u>			
ROCKFORM:	Sheet	Boulder	<u>Fluviatile Gravel</u>		<u>Concretional Gravel</u>
SOIL TYPE:	Sand	<u>Loam</u>	Clay	Peat	Gravel
SOIL COLOUR:	Red	<u>Brown</u>	<u>Yellow</u>	White	Grey
SOIL CONDITION:	Inundated	Moist	<u>Dry</u>	Saline	Other:

VEGETATION CLASSIFICATION (Muir's): Very open tree mallee over thicket of *Leptospermum*.

ASSOCIATED SPECIES: *Leptospermum sp., Melaleuca uncinata, Hakea sp., Isopogon sp., Hakea sp., gastrolobium spinosum.*

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: **(Bold type)** Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
 POLLINATORS: Native bees Honey bees Other insects Birds Mammals

Other observations:

CONDITION OF POPULATION: **(Bold type)** Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: **(Bold type)** Firebreaks Mining Recreational activities Roadworks Grazing  
 Weeds Disease Prescribed Burning Other Comment

**(Bold type)**

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required):

Copy sent to **(Bold type)** Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

**RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.**

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
RARE FLORA REPORT FORM

TAXON Grevillea luffitzi POPULATION No  
(Bold Type) DRF Priority Species Pr 1\_ Partial Survey Full Survey  
FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: Near Digger Rock.

LATITUDE: 32° 41 ' 59 "S LONGITUDE: 119° 48 ' 20 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: Lateritic gravel  
ROCKFORM: Sheet Boulder Fluvial Gravel Concretional Gravel  
SOIL TYPE: Sand Loam Clay Peat Gravel  
SOIL COLOUR: Red Brown Yellow White Grey  
SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Very open tree mallee over thicket of Melaleuca.

ASSOCIATED SPECIES: Melaleuca uncinata, Allocasuarina sp., Hakea sp., Isopogon sp., Hakea sp., gastrolobium spinosum.

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
Weeds Disease Prescribed Burning Other Comment

(Bold type)

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required):

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
RARE FLORA REPORT FORM

TAXON Grevillea luffitzi POPULATION No                       
(Bold Type) DRF Priority Species Pr 1\_ Partial Survey Full Survey New Population  
FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
File Ref: Map/Site Ref.: Reserve No.:

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: Near Digger Rock.

LATITUDE: 32° 41 ' 47 "S LONGITUDE: 119° 47 ' 20 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: Lateritic gravel and ironstone  
ROCKFORM: Sheet Boulder Fluviatile Gravel Concretional Gravel  
SOIL TYPE: Sand Loam Clay Peat Gravel  
SOIL COLOUR: Red Brown Yellow White Grey  
SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Open low woodland A of Eucalyptus sp. over thicket of Dryandra.

ASSOCIATED SPECIES: Melaleuca sp., Callitris sp., Banksia sphaerocarpa subsp. dolichostyla, Isopogon., Calothamnus sp.

No. of PLANTS: Scattered Mature:        Seedlings:        Dead:        Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
Weeds Disease Prescribed Burning Other Comment

(Bold type)

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required):

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
RARE FLORA REPORT FORM

TAXON Grevillea lullfitzii POPULATION No  
(Bold Type) DRF Priority Species Pr 1\_ Partial Survey Full Survey  
FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
Other Shire Res. Water Reserve Other Specify: Mining lease also

LOCATION: Near Digger Rock.

LATITUDE: 32° 41 ' 41 "S LONGITUDE: 119° 45 ' 57 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Low rise grading into a Hilltop

ROCK TYPE: Other: Lateritic gravel  
ROCKFORM: Sheet Boulder Fluviatile Gravel Concretional Gravel  
SOIL TYPE: Sand Loam Clay Peat Gravel  
SOIL COLOUR: Red Brown Yellow White Grey  
SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Open low woodland A of Eucalyptus sp. over thicket of Melaleuca uncinata

ASSOCIATED SPECIES: Callitris sp., Hakea francisiana.

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
Weeds Disease Prescribed Burning Other Comment

(Bold type)

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required):

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.



**DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT**  
**RARE FLORA REPORT FORM**

TAXON *Grevillea lullfitzii* POPULATION No  
 (Bold Type) DRF Priority Species Pr 1\_ Partial Survey Full Survey  
 FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
 REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Ravensthorpe  
 File Ref: Map/Site Ref.: Reserve No.:

New Population

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
 National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
 Other Shire Res. Water Reserve Other Specify:

LOCATION: Hatter Hill

LATITUDE: 32° 49 ' 26 "S LONGITUDE: 119° 58 ' 41 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Hilltop

ROCK TYPE: Other: Lateritic gravel  
 ROCKFORM: Sheet Boulder Fluvialite Gravel Concretional Gravel  
 SOIL TYPE: Sand Loam Clay Peat Gravel  
 SOIL COLOUR: Red Brown Yellow White Grey  
 SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Low thicket

ASSOCIATED SPECIES:

No. of PLANTS: Nil found Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
 POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
 Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
 Weeds Disease Prescribed Burning Other Comment

(Bold type)

FIRE HISTORY: not known Burnt in 19\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required):

Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

Please return completed form to Executive Director. CALM, PO Box 104, COMO WA 6152

RECORDS: PLEASE FORWARD TO ADMINISTRATIVE OFFICER, FLORA, WILDLIFE BRANCH.

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT  
RARE FLORA REPORT FORM

TAXON Grevillea lullfitzii POPULATION No. New Population  
(Bold Type) DRF Priority Species Pr 1\_ Partial Survey Full Survey  
FROM: G S Durell & L. Silvester TITLE: Ops. Officer and Wildlife Officer SURVEY DATE: 5/11/97  
REGION: Wheatbelt DISTRICT: Narrogin SHIRE: Kondinin  
File Ref: Map/Site Ref.: Reserve No.:

LAND STATUS: (Bold typed) Nature Reserve Private Gravel Res. MRD Gravel Res. Shire  
National Park Pastoral Lease Rd. Verge MRD Rd. verge Shire State Forest VCL Rail Reserve  
Other Shire Res. Water Reserve Other Specify:

LOCATION: Hatter Hill

LATITUDE: 32° 43 ' 47 "S LONGITUDE: 119° 49 ' 49 "E G.P.S. USED: Y ASPECT: northerly

(Bold type)

LANDFORM: Low rise grading to Hilltop

ROCK TYPE: Other: Lateritic gravel  
ROCKFORM: Sheet Boulder Fluviatile Gravel Concretional Gravel  
SOIL TYPE: Sand Loam Clay Peat Gravel  
SOIL COLOUR: Red Brown Yellow White Grey  
SOIL CONDITION: Inundated Moist Dry Saline Other:

VEGETATION CLASSIFICATION (Muir's): Very open scrub mallee over Heath B

ASSOCIATED SPECIES:

No. of PLANTS: Scattered Mature: \_\_\_\_\_ Seedlings: \_\_\_\_\_ Dead: \_\_\_\_\_ Actual /Estimate Area Occupied:

REPRODUCTIVE STATE: (Bold type) Flower bud Flower Immat. fruit Fruit Cl Fruit Dehisced Vegetative  
POLLINATORS: Native bees Honey bees Other insects Birds Mammals  
Other observations:

CONDITION OF POPULATION: (Bold type) Healthy Moderate Poor Disturbed Comment:

POTENTIAL THREATS: (Bold type) Firebreaks Mining Recreational activities Roadworks Grazing  
Weeds Disease Prescribed Burning Other Comment Mining lease also.

(Bold type)

FIRE HISTORY: not known Burnt in 1980's\_ Summer Autumn Winter Spring

VOUCHER SPECIMEN: District Herb WA Herb. Other \_

ATTACHED: Map Mudmap Illustration Photo Field Notes

FENCING: Not Required Fenced Required Replace/Repair

ROADSIDE MARKERS: Not Required Present Required Replace Reposition

OTHER COMMENTS (include action taken/required): Population regenerating after fire.

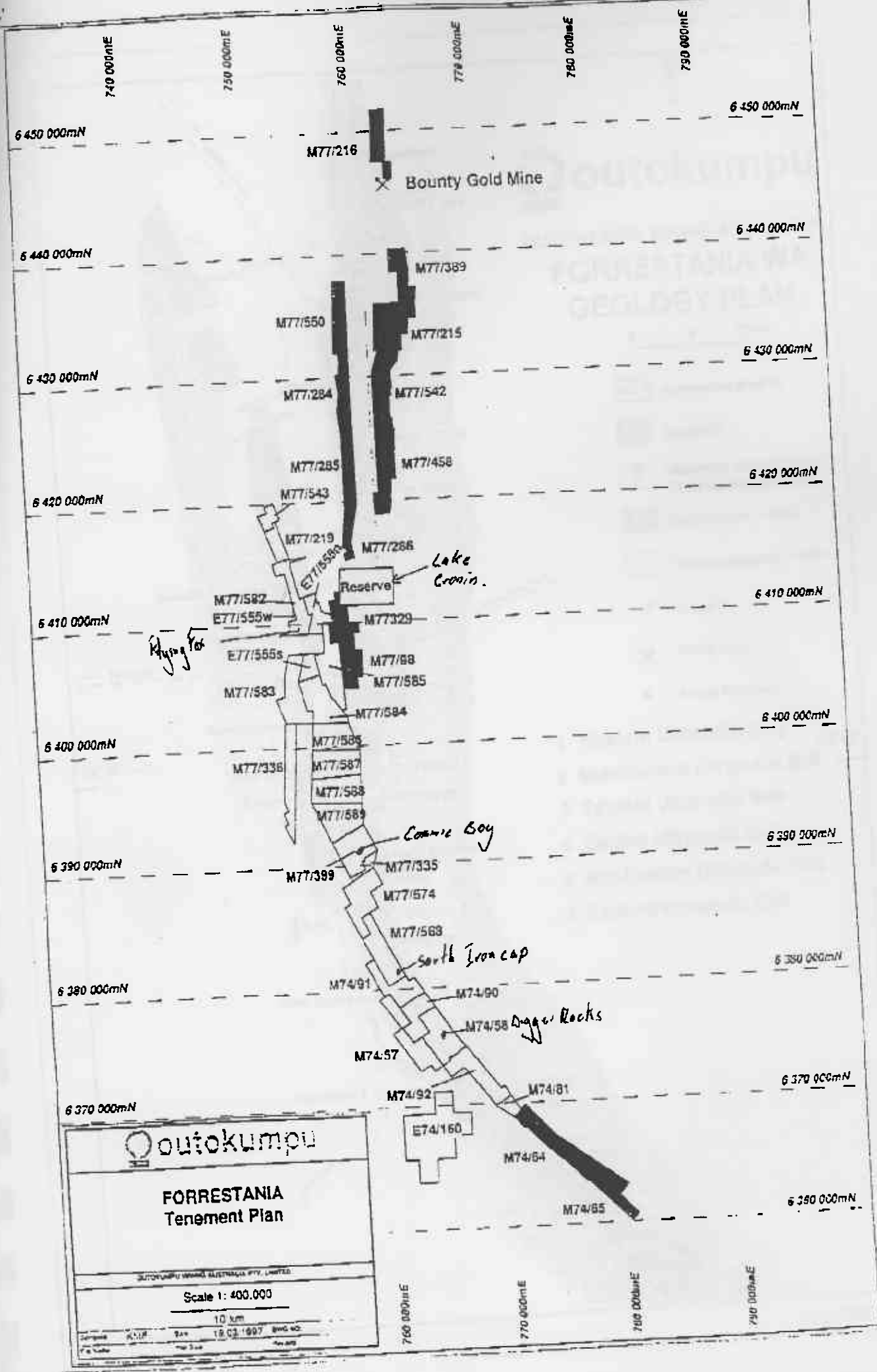
Copy sent to (Bold type) Regional Office District Office Other Specify:

Signed: [Signature] Date: 29 December 1997

Note: More than one selected criteria in any section may be ticked. Attach map or further information to this form.

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**Outokumpu**

**FORRESTANIA Tenement Plan**

Scale 1: 400,000

10 km

19.03.1997

Scale 1: 400,000

10 km

19.03.1997

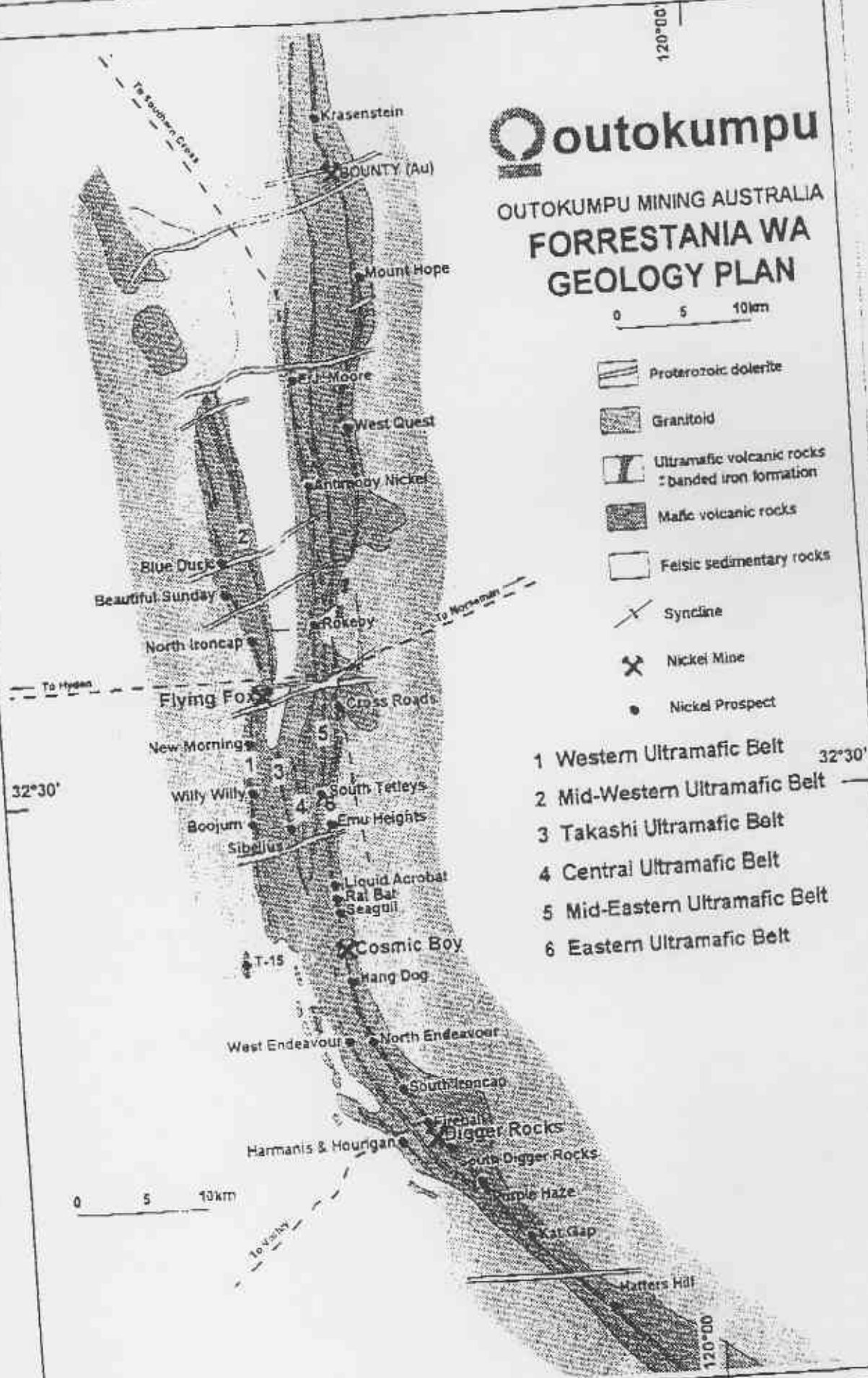


FIGURE 2