Appendix 4.Information Sheet and EIA GuidelinesTHREATENED SPECIES INFORMATION

Grevillea obtusiflora

including both subspecies obtusiflora and fecunda

Conservation Status

G. obtusiflora is listed as an endangered species on Schedule 1 of the *Threatened Species Conservation* Act 1995, and the Commonwealth Endangered Species Protection Act 1992.

Briggs and Leigh (1996) assign a conservation status of *Grevillea obtusiflora* as 2E. Makinson (1997) recommends a classification of 2Vi for *Grevillea obtusiflora* subsp. *fecunda* pending a full survey.

Description

G. obtusiflora subsp. obtusiflora

G. obtusiflora subsp. *obtusiflora* is a low, multi-stemmed shrub to half a metre tall, the leaves are narrow flowers are pink to pinkish red. It is not known to set fruit or seed.



Grevillea obtusiflora subsp. obtusiflora.

G. obtusiflora subsp. fecunda

G. obtusiflora subsp. *fecunda* is a low, dense shrub to one metre tall.

Leaves narrow. Flowers profusely with pale to deep pink to crimson flowers.



Grevillea obtusiflora subsp. fecunda.

Distribution

G. obtusiflora subsp. obtusiflora

G. obtusiflora subsp. *obtusiflora* is known to occur near Rylstone in the in the central tablelands bioregion.

G. obtusiflora subsp. fecunda

G. obtusiflora subsp. *fecunda* is known to occur in the Capertee Valley, west of Lithgow, and in the Gardens of Stone National Park. Both sites are in the central tablelands botanical division.

Occurrences in conservation reserves

G. obtusiflora subsp. *obtusiflora* does not occur in conservation reserves.

One sub-population of *G. obtusiflora* subsp. *fecunda* occurs within the Gardens of Stone National Park.

Habitat

G. obtusiflora subsp. obtusiflora

G. obtusiflora subsp. *obtusiflora* occurs in the understorey of low open eucalypt forest at an altitude of 730 metres above sea level.

Species growing in association with *G. obtusiflora* subsp. *obtusiflora*

include Eucalyptus crebra; E. dealbata; E. tenella, Callistemon linearis, Acacia buxifolia, Acacia elongata, Leucopogon sp., Caustis flexuosa, Dianella sp. and Patersonia sp.

G. obtusiflora subsp. fecunda

G. obtusiflora subsp. *fecunda* occurs on orange sandy loam soils with sandstone boulders in low open scrub beneath open dry sclerophyll forest, at an altitude of 570 metres.

Species growing in association with G. obtusiflora subsp. fecunda include Eucalyptus tenella, E. fibrosa, E. macrorhyncha, E. punctata, Callitris endlicheri, Acacia buxifolia, Leptospermum continentale, monotoca elliptica., Persoonia linearis, Indigofera sp., Pomax umbellata.

Ecology

G. obtusiflora subsp. obtusiflora

G. obtusiflora subsp. *obtusiflora* flowers sparsely in winter and spring with flowering peaking in October. Fruits, seeds and seedlings have not been recorded for this taxon, indicating that *G. obtusiflora* subsp. *obtusiflora* is apparently wholly dependent on root suckering for reproduction (Makinson, 1997).

G. obtusiflora subsp. *obtusiflora*'s floral morphology indicates it is predominantly pollinated by birds, with bees being potential secondary pollinators.

Sub-population structure and isolation may affect pollination within and between sub-populations, hence fruit set (Eriksson and Bremer, 1993). Other biological causes of failure to produce seed may include inbreeding depression, selfincompatibility, pollen unviability, flower stigma non-receptivity or shrunken pollen grains.

Sub-populations of *G. obtusiflora* subsp. *obtusiflora* are scattered. The high degree of clonality of this species makes it difficult to identify and count individual genets. The sub-population sizes vary from a few isolated plants to several hundred plants/ramets covering up to 20 square metres.

The genus *Grevillea* is adapted to survive fire through several strategies. *G. obtusiflora* subsp. *obtusiflora's* root suckering habit would enable it to cope with a fire event. However, the effects of fire on the viability of the species. is unknown

G. obtusiflora subsp. fecunda

G. obtusiflora subsp. *fecunda* flowers abundantly in spring. and sets copious amounts of fruits (Makinson, 1997). Due to the particular flower morphology, *G. obtusiflora* subsp. *fecunda* is predominantly pollinated by birds, with bees being the potential secondary pollinators.

Seed is most likely dispersed directly below the plant and is distributed by wind, water and ants. Seedlings have been recorded soon after dehiscence.

Sub-populations of *G. obtusiflora* subsp. *fecunda* appear to be located in 'clusters' of suitable habitat. No information on growth rate and longevity is available.

G. obtusiflora subsp. *fecunda* appears respond favourably to mechanical soil disturbance and is known to quickly recolonise roadside scrapes.

Threats

Threats to both subsp. obtusiflora and fecunda may include: inappropriate fire regimes, loss of effective pollinator and roadside management activities.

Management

Management actions for both subspecies of *G. obtusiflora* include; liaison with landholders/ managers including State Forests of NSW and Rylstone Council to ensure the conservation of the plant populations, continued biological and ecological investigations and monitoring of the known populations, surveying of suitable habitat for further populations, and a community awareness strategy.

Recovery Plan

A recovery plan for *Grevillea obtusiflora* incorporating both subspecies *obtusiflora* and *fecunda* was approved in September 2001.

For Further Information contact

Threatened Species Unit Central Directorate NSW NPWS PO Box 1967, Hurstville NSW 2220 Phone 02 9585 6678 www.npws.nsw.gov.au

REFERENCES

Makinson, R.O. (1997) *Grevillea obtusiflora* subsp. *fecunda* (Proteaceae : Grevilleoideae), a new subspecies from New South Wales. Telopea 7(2): 143-148

Makinson, R.O. (in press) Grevillea In Flora of Australia.

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ENVIRONMENTAL IMPACT ASSESSMENT GUIDELINES

Grevillea obtusiflora

The following information is provided to authors of Species Impact assist Statements, development and activity proponents, and determining and consent authorities, who are required to prepare or review assessments of likely impacts on threatened species pursuant to the provisions of the Environmental Planning and Assessment Act 1979. These guidelines should be read in conjunction with the NPWS Information Circular No. 2: Threatened Species Assessment under the EP&A Act: The '8 Part Test' of Significance (November 1996).

Survey

Surveys for both *G. obtusiflora* subsp. *obtusiflora* and subsp. *fecunda* can be conducted at any time of the year, however they are easier to locate while flowering from September to December.

Surveys should be conducted within suitable habitat within the range of this species, which include the Lithgow and Rylstone local government areas.

Life cycle of the species

The biology of *Grevillea obtusiflora* is described in the draft recovery plan and summarised in the attached profile. The lifecycle of *G. obtusiflora* subsp. *obtusiflora* and subsp. *fecunda* is likely to be disrupted should any of the following occur:

• Habitat Modification could impact on the lifecycle of both *G*. *obtusiflora* subsp. *obtusiflora* and subsp. *fecunda* through direct and indirect impacts on individual plants or to the soil seed bank. Both subspecies have populations on roadside verges that are potentially under threat by road widening, slashing and weed spraying of broad areas with herbicide and phosphate sprays.

• Inappropriate fire regimes may pose a threat to the lifecycle of both G. obtusiflora subsp. obtusiflora and subsp. fecunda, however, Grevilleas are adapted to persist individual fire events. after Prescribed burns for fuel reduction are carried out by the State Forests of NSW and Rylstone Council through the local Bush Fire Risk Management Committee. In the known habitats of G. obtusiflora obtusiflora and subsp. subsp. fecunda evidence indicates that regular fire events are uncommon.

Threatening processes

There are no key threatening processes listed under the Threatened Species Conservation Act 1995 that are relevant to these taxa.

Viable local population of the species

G. obtusiflora subsp. obtusiflora

The population is estimated at several hundred adult ramets in 10 subpopulations in the Clandulla State Forest, and scattered individuals outside State Forest boundaries.

Due to the lack of regular new genetic input from seed and the exclusive clonality of this species, this may be indicative that the genetic diversity of the population is low. It is unknown if this population is viable.

G. obtusiflora subsp. fecunda

The three sub-populations are estimated to have 50, 350, and 500 individuals. The extent of genetic transfer between the sub-populations is unknown.

Due to *G. obtusiflora* subsp. *fecunda's* ability to sexually reproduce and to colonise disturbed areas, it is probable that the populations of this species are viable.

A significant area of habitat

Due to the limited area occupied by this taxon, and the sensitivity of its habitat, all habitat and subpopulations of *G*. *obtusiflora* are significant.

Isolation/fragmentation

Both taxa are isolated. Further fragmentation of sub-populations may compromise their viability.

Regional distribution of the habitat

Although similar habitat is present in the area, despite survey no further subpopulations have been located. The parameters defining the preferred habitat for these species are yet to be identified.

For further information contact:

Limit of known distribution

G. obtusiflora subsp. obtusiflora

G. obtusiflora subsp. *obtusiflora* occurs in Clandulla State Forest, and on adjacent land. near Rylstone in the Central Tablelands of NSW.

G. obtusiflora subsp. fecunda

Grevillea obtusiflora subsp. fecunda occurs along several roads in the Capertee Valley, west of Lithgow, and in the Gardens of Stone National Park.

Adequacy of representation in conservation reserves

G. obtusiflora subsp. obtusiflora

This taxon is not adequately represented in conservation reserves.

G. obtusiflora subsp. fecunda

A sub-population occurs in the Gardens of Stone National Park. This taxon is not adequately reserved

Critical habitat

Critical habitat has not been declared for *G. obtusiflora*.

Threatened Species Unit, Central Directorate, NSW NPWS, PO Box 1967, Hurstville NSW 2220. Phone: 9585 6678. www.npws.nsw.gov.au

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Appendix 5: - Implementation Funding

Action	Action Description		Year of		implementation			Source of funding			
		1	2	3	4	5	Total	NPWS	Rylstone Council	State Forests of NSW	Unfund ed
10.2	liaison between authorities	2500	2500	2500	2500	2500	12500	12500			
	reclassifying S.F. area	1000					1000			1000	
	signage	1000					1000		1000		
	impact assessment	\checkmark	\checkmark		\checkmark		\checkmark		\checkmark		
	fire planning				\checkmark			\checkmark			
11.2	potential habitat identification & survey	1000	1000	1000			3000	3000			
	monitoring	1250	1250	1250	1250	1250	6250	6250			
12.2	research			2500	2500	2500	7500				7500
13.2	community liaison and involvement										
	information sheet/ EIA guidelines	2500					2500	2500			
	Total	9250	4750	7250	6250	6250	33750	24250	1000	1000	7500

Key

 $\sqrt{}\,$ No direct funding required, as action is component of recurrent agency responsibility Funding accounted for in liaison between authorities

Contribution towards funding of approved research program

Survey funding required is dependent on outcome of potential habitat identification



43 Bridge Street Hurstville 2220 (02) 9585 6444

