MURRAGULDRIE FLORA RESERVE No.179

WORKING PLAN

Murraguldrie State Forest

Hume Region

Xanthorrhoea arborea Grass Tree in open dry forest, Murraguldrie Flora Reserve

CONTENTS

1. INTRODUCTION

This plan has been prepared in accordance with the terms of section 25A (5) of the Forestry Act 1916 with the objective of providing for the future management of that part of the Murraguldrie State Forest No. 403, set aside as Murraguldrie Flora Reserve No. 179.

Murraguldrie Flora Reserve forms part of the dedicated reserve system for the Southern Region Forest Agreement.

2. KEY VALUES OF THE RESERVE

Murraguldrie Flora Reserve has the following identified values requiring protection:

- Remnant native vegetation, including White Box Yellow Box Blakely's Red Gum Woodland – an ecological community listed as endangered in the NSW Threatened Species Conservation Act 1995.
- Habitat for threatened and vulnerable fauna species, including *Petaurus norfolcensis* (Squirrel Glider), *Pyrrolaemus sagittatu*s (Speckled Warbler), *Climacteris picumnus* (Brown Treecreeper) and *Neophema pulchella* (Turquoise Parrot). Petaurus norolcensis (Squirrel Glider) populations in the Wagga Wagga Local Government Area are classified as an endangered ecological community under the NSW Threatened Species Conservation Act 1995.
- Habitat for significant flora species. For example, *Pultenaea humilis* is currently under review with a recommendation for listing on the NSW Threatened Species Conservation Act 1995 Flora schedule as Vulnerable.

3. DESCRIPTION OF THE RESERVE

Refer to Appendices 1 and 2 for locality and topographic maps**.**

3.1 Location

Murraguldrie Flora Reserve is 6 kilometres south east of the town of Kyeamba within Murraguldrie State Forest. The Wagga-Tumbarumba Road runs along the length of the Flora Reserve on southern and western sides and the Reserve is within 5 km of the Hume Highway.

3.2 Exclusions

There are three small areas within the boundaries of the Flora Reserve that are excluded from the Reserve. These are –

a. The Arboretum: A pine species arboretum (Research Trial R2/3.1) was established in 1965 to test species suited to the drier parts of the Wagga Wagga sub-district plantation areas. Assessment in 1986 concluded that *P.radiata* was the only species worth growing on a commercial basis, and the trial was terminated.
b. Cypress Pine plantation located on the north western boundary of the Reserve
c. Travelling Stock Reserve: located on the edge of the Flora Reserve along Wagga – Tumbarumba Road, managed by Hume Rural Lands Protection Board.

Refer to Map Misc. F. 1388 Schedule 3 National Parks Estate (Southern Region Reservations) Act 200 No. 103 for detail on Murraguldrie Flora Reserve boundaries.

3.3 Geography

Murraguldrie Flora Reserve includes an area of approximately 1524 ha, with elevation ranging from 400 - 550m ASL.

The Reserve has predominantly westerly and southern aspects.

Pinus radiata plantations occur on its north-eastern and south-western boundaries. The upper reaches of the Murraguldrie Creek and several tributaries flow through the Reserve. Murraguldrie Creek is within the Murrumbidgee River catchment (see Appendices 1 and 2).

3.3 Geology and Soils

Geology is predominantly Ordovician metasediments. These metasediments were deposited in the warm shallow sea of the Wagga Marginal Basin. Metamorphism has occurred due to heat, folding and intrusion of igneous material.

Murraguldrie Flora Reserve is within the Coreinbob Low Hills physiographic region (a characteristic mix of geology and landform).

A soil landscape is an area of land with a distinct suite of soil and landscape properties and a regular pattern of parent material, landform, soils, slope, relief, vegetation community and capability for use. Soil landscapes for Murraguldrie Flora Reserve over the majority of the Reserve on metasediment geology are: *Veteran* on the hills, *Lloyd* on the low hills and high level plateaux and *Pulletop*

on the undulating rises. A summary for each of these landscapes as provided by Janet Wild, Regional Soil Surveyor, Murrumbidgee Region, Department of Infrastructure, Planning and Natural Resources from draft work on Soil Landscapes of the Tarcutta 1:100 000 Sheet follows –

SOIL LANDSCAPE UNIT	LANDSCAPE LOCATION	SOIL DESCRIPTION
VETERAN	Crests, ridges, upper slopes	Shallow (<200mm) regolithic rudosols
	Rock outcrops	Common
LLOYD	Broad crests, ridges, upper slopes	Shallow (<50cm) lithosols
	mid-lower slopes	Red Earth soils
	Broad drainage depressions	Moderately deep (80 – 150cm) Brown Solodic soils
PULLETOP	Crests, ridges, upper slopes	Shallow to moderately deep (40 – 100cm) Red Podzolic soils
	Mid –lower slopes	Moderately deep (80 – 150cm) bleached and haplic Red Podzolic Soils
	Drainage lines	Moderately deep (80 – 150cm) mottled- subnatric brown solodic soils

Within Murraguldrie Flora Reserve, there is a small section of Kyeamba Adamellite, where igneous material has intruded the metamorphosed sedimentary rock. Adamellite is a granite with a high proportion of silica, which forms light coloured minerals (such as muscovite, quartz and orthoclase). These minerals are acidic, resistant to weathering and tend to form a shallower, more acidic and infertile soil profile. A soil type profile was located within Murraguldrie Flora Reserve by Department of Land and Water Conservation (Chen,X.Y. and McKane, D.J. 1997) for this section of Adamellite (attached as Appendix 3).

3.4 Climate

Figures provided are averages for Murraguldrie State Forest from readings taken over the period 1938 – 1974. This data was taken from the Commonwealth Bureau of Meteorology website www.bom.gov.au/climate/averages/tables/cw072035.

Median annual rainfall	881.1mm
Mean daily minimum temperature	1.6° Celcius
Mean daily maximum temperature	29.7° Celcius

The highest monthly rainfall occurs during winter and spring (May - November), although regular rain is experienced in the other months. The minimum daily temperature recorded between 1938 and 1974 was – 5.6° C and the maximum 42.2° C.

3.5 Vegetation

See Appendix 4 for the Murraguldrie Flora Reserve flora species list.

The remnant vegetation within the Flora Reserve has significant natural values in a landscape that has been greatly altered by clearing for agricultural production and pine plantation establishment. Few other areas of native forest in the vicinity cover an area the size of the Flora Reserve (ie. over 1500 ha).

Murraguldrie Flora Reserve contains White Box Yellow Box Blakely's Red Gum Woodland – an endangered ecological community listed on Part 3 of Schedule 1 of the Threatened Species Conservation Act 1995. This vegetation community is endangered due to a drastic reduction in its area and a high level of fragmentation through clearing for cropping and pasture improvement. For details on the assemblage of flora species characterising this woodland, and the significant species that may occur, refer to www.nationalparks.nsw.gov.au (threatened species, box-gum woodland).

Pultenaea humilis is an erect to prostrate rhizomatous shrub occurring in NSW, Victoria and Tasmania. The population within the Flora Reserve is restricted to a few hundred mature individuals. Hogbin (2002) recommended the Scientific Committee assessing Flora Schedules for the Threatened Species Conservation Act list *Pultenaea humilis* as Vulnerable. In addition to loss of populations through land clearing and grazing, this species is also recorded as possibly being significantly affected by *Phytophthora cinnamomi*, a soil borne pathogen that is probably not native to NSW.

3.6 Fauna

Appendix 5 lists recorded fauna species for Murraguldrie Flora Reserve.

A limited number of bird count surveys have revealed a variety of bird species present in the Reserve, including *Pyrrolaemus sagittatu*s (Speckled Warbler), *Climacteris picumnus* (Brown Treecreeper) and *Neophema pulchella* (Turquoise Parrot). These three species are listed in Schedule 2 of the NSW Threatened Species Conservation Act 1995 as Vulnerable.

A recent study into *Petaurus norfolcensis* (Squirrel Glider) populations in the Wagga Wagga local government area by van der Ree (unpubl.) placed traps and spotlighted within Murraguldrie Flora Reserve. A total of 8 male and 4 female Squirrel Gliders) were trapped. Van der Ree concluded the population number of

Squirrel Gliders in Murraguldrie [Flora Reserve] was relatively high. Squirrel gliders within Wagga Wagga Local Government Area (Murraguldrie SF is within Wagga Wagga LGA) are listed as an Endangered Ecological Community under the Threatened Species Conservation Act 1995 and the species is listed as Vulnerable under the same Act.

The species occurs in a wide variety of forest and woodland vegetation types, generally below 300m ASL. Their occurrence is dependent typically on the presence of large, hollow-bearing eucalypt trees, mixed-age stands and an understorey of flowering shrubs, particularly Acacia's. Maintaining a diversity of flowering plants is important, and providing a system which will allow recruitment of new individuals is critical for the survival of the Squirrel Glider population.

4. HISTORY

4.1 Indigenous Cultural Heritage

Murraguldrie Flora Reserve encompasses an area traditionally used and occupied by the Wiradjuri clans of the Murray and Murrumbidgee Rivers.

These nations/groups used the area as a semi-permanent home whilst on their passage to the Bogong Ranges and the area is on the Brungle - Wiradjuri Line.

The high areas associated with Murraguldrie Reserve contain many grass trees and lookout points which were utilised when engaging in the custodianship and conservation of this traditional Wiradjuri land. Murraguldrie Creek was used as a source of food, water and other resources.

Traditional and contemporary cultural values are being re-established in the area through employment opportunities developed between local Wiradjuri Aboriginal groups and Forests NSW.

This section of Murraguldrie Flora Reserve Working Plan was prepared by James Ingram, Co-ordinator, Wagga Wagga Local Aboriginal Land Council, in consultation with Alice Williams, Forests NSW Aboriginal Co-Ordinator, Tumut.

Figure 1: Alice Williams, State Forests' Aboriginal Co-ordinator and James Ingram, Co-ordinator Wagga Wagga Local Aboriginal Land Council in front of large granite boulder, Murraguldrie Flora Reserve.

4.2 Non-Indigenous Cultural Heritage

Murraguldrie Forest Reserve No. 1705 was notified on 31st October 1876. The Humula Pastoral Map 1883 shows Murraguldrie as being part of "American Yards Run". The track marked on this map as "Track from Kyeamba to American Yard" is now part of the Eight Mile Road on the north east boundary of Murraguldrie State Forest. The Murraguldrie Parish Map 1883 marks and names Murraguldrie Creek and Travelling Stock Route No. 1769 which is now the western boundary of Murraguldrie Flora Reserve and the Wagga – Tumbarumba Road. "Townsends Map of Squatting Runs" is marked on what is now the junction of Eight Mile and Wagga Roads. The Ben Lomond Ridge near Shockeroo Fire Trail is marked as "Scrub Rough Hills".

In 1889 TSR No. 8650 was notified, running along the northern boundary of what became Murraguldrie State Forest and the Eight Mile Road. This became TSR and C.R. 36834 in 1903 (http://www.lpi.nsw.gov.au/maps/pmap/mrsid/).

4.3 Forest Management

Murraguldrie State Forest was dedicated in June 1917. Murraguldrie Flora reserve is largely contained within this first dedication. An Improvement Lease No. 1936 was held by John Cheney over the area for the period 1920 – 1929.

In 1922 an area of about 130 acres near Nursery Creek which was State Forest was gazetted under P.P. Board control for use as a Travelling Stock Reserve. A part of this area along Nursery Creek was also marked for Murraguldrie Public School Site and postal services for Kyeamba. A significant proportion of the remaining TSR (124 acres) was withdrawn from P. P. Board Control and dedicated as State Forest (No. 6 extension) in 1958. These areas now form part of Murraguldrie Flora Reserve, with a small area adjoining the Wagga Wagga Road remaining as a TSR.

The southern tip what is now Murraguldrie Flora Reserve (adjacent to Gentle Annie Saddle) was dedicated as State Forest in April 1924.

On the north edge of the Reserve is an area of *Callitris glauca* (Cypress Pine) that has been planted and thinned. Adjoining ruins of a farmhouse and fences suggest that this area was originally cleared and grazed with domestic stock.

Within the southern section of the Flora Reserve is an arboretum established by the Forestry Commission of NSW to 'test species suited to the drier parts of the Wagga Sub-district plantation area". Established in 1965 with nine *Pinus* species, *Pseudotsuga menziesii* and *Calocedrus decurrens* being planted, the arboretum was terminated in 1987 following assessment of data by Phil Carter (FCNSW). He concluded that *Pinus radiata* was the best species to plant in such areas. The arboretum area is excluded from the Flora Reserve.

Logging and grazing of the area has occurred periodically and at a low level of intensity.

Murraguldrie Flora Reserve was established on 1st January 2001 through enactment of the National Park Estate (Southern Region Reservations) Act of 2000, Schedule 3.

4.4 Fire

Since clearing for agriculture and the establishment of pine plantation on adjacent land, the natural fire regime in the Murraguldrie area has been considerably modified. In a landscape that naturally experiences seasons of numerous dry storms and lightning strikes, the wildfire occurrence in the past 30 – 40 years has been significantly reduced. This is a deliberate consequence of rapid detection and response to any fire outbreak by government and community agencies. In some areas of Murraguldrie Flora Reserve there are very old fire scars on trees, in other areas no evidence of wildfire can be seen.

The 'Wandoo' Section 44 in February 2006 burnt large areas of agricultural lands to the west and north of the Reserve with a small area of forest in the north-west corner also affected. The previous wildfire reaching a significant size in the region was in 1952.

A Hazard Reduction burn was conducted by Forests NSW ground crew in April 1988 over the southern half of the area now dedicated as Flora Reserve (south of Bridges Road). The operation was recorded as having an excellent result with 60 – 80 % coverage. The aim of the burn was not only to reduce fuel loads of the forests but to also kill small pine seedlings. Minor burn programs have been carried out in 2006 and 2008 to assist with wildling control.

A firebreak has been constructed on the edges of the reserve separating native forest from pine plantation.

5. CURRENT USAGE

Public usage of this area is low, and there are no recreational facilities. The area is used occasionally by local orienteering groups and trail bike riders. There is a reasonably high level of evidence of unauthorised activities such as firewood collection and dumping of rubbish. The Reserve contains two research sites used for monitoring bird species. The area prior to dedication as a Flora Reserve did have sporadic grazing by domestic stock.

There is some potential for increased aboriginal cultural and educational usage of the Flora Reserve.

6. MANAGEMENT

6.1 Objectives of Management

- To preserve native flora and fauna species in the Reserve.
- To protect examples of forest ecosystems in the area.
- To protect aboriginal cultural and archaeological values of the Reserve.
- To meet the expectations of the local community with respect to the management of the Reserve, consistent with Forest NSW's legal and policy requirements.
- To protect the Reserve and neighbouring areas from wildfire.
- To maintain reference stands within the natural forest to provide for scientific study, and for assessing the effects of alternative land use in surrounding areas, consistent with the protection of the Reserve.

6.2 Management Issues

The following issues will influence future management priorities. Over time these issues will change and require review. Many of the works program priorities identified in Appendix 6 are in response to these issues.

6.2.1 Available archaeological and scientific data

There is a limited amount of data available on natural and cultural values within the Reserve. Further survey work will assist in assessment of values and development of appropriate management practices. This includes determining the extent of the *Pultenaea humilis* population.

6.2.2 Human impact on the site

There is a need to reduce the impact of unauthorised activities in the Reserve. Options that need evaluation include physically restricting access with gates and fences, and education through appropriate signage. Forests NSW needs to maintain a presence in the Flora Reserve to minimise unauthorised activities, particularly in regards to rubbish dumping and off-track vehicle use.

Orienteering events conducted by local clubs with less than 50 participants are considered to be low impact and can continue with a Special Purposes Permit subject to standard conditions. Events should be encouraged to be conducted in others areas of State Forest.

The level of usage for educational and cultural purposes may increase in the future with increasing community liaison with the local aboriginal community.

6.2.3 Road Access

The roads and tracks bounding and within the Reserve are of varying condition. The condition of existing roads should be improved as access is important for quick fire suppression, and improved drainage will reduce the potential for erosion. Well maintained roads will also reduce the likelihood of vehicles traversing off road and impacting on native vegetation. There is an excess of tracks within some sections of the Reserve which should be closed and rehabilitated.

6.2.4 Weeds

Weeds such as Blackberry, Patersons Curse and St Johns wort occur within the Reserve. The distribution and rate of spread of noxious weeds and other environmental weeds requires ongoing monitoring and if necessary, control.

Infestation by pine wildlings (*Pinus radiata*) is low in some sections of the Reserve (such as the western side), but heavy in other areas. The number and size of pine wildlings is impeding the regeneration of native forest and understorey on the south eastern and northern edges of the Reserve.

Removal of pine wildlings and plantation will required a range of techniques, which will be determined by size of tree, safety and potential impact on surrounding vegetation. Where possible, removal with mechanical harvesting machinery can occur, and some trees are of commercial size. This will require harvesting machinery to enter the boundaries of the Flora Reserve. Chainsaw felling and stem injection of some small to large trees will be required. Small trees may also be removed with a brushcutter, and seedlings pulled by hand or chemically sprayed.

In subsequent years, pine seedlings can be removed on a regular basis within minimal disturbance.

Removing pine and the re-establishment of understorey species will enhance the diversity of flowering shrubs to provide foraging substrates for species such as the Squirrel Glider.

Figure 2: Advanced *Pinus radiata* wildlings in Murraguldrie Flora Reserve.

The presence of an abandoned Pine arboretum within the Flora Reserve is inconsistent with the natural values of the Reserve. As the Arboretum is of no further scientific or educational value, and was terminated as a Research Trial in 1986, it is recommended the exotic species within the Arboretum are felled. The fence surrounding the arboretum should be removed. There may be a small volume of timber that can be commercially harvested. This area can then be managed as part of the Flora Reserve.

6.2.5 Feral animals

Predation by the European red fox (*Vulpes vulpes*) and feral cats (*Felis catus*) are Key Threatening Processes under the NSW Threatened Species Conservation Act. Fox and cat populations should be monitored and baiting or trapping programs conducted if necessary. To be effective, any fox or cat baiting program will need to be done in association with neighbouring landholders. A fox baiting program was conducted in the Flora Reserve in April 2004.

Competition and grazing by the feral European rabbit is also an identified Key Threatening Process. Rabbits are present on some areas within the Reserve. Abatement programs will need to be done in conjunction with neighbouring landholders.

6.2.6 Fire

The impact of uncontrolled wildfire on the wildlife in the Flora Reserve is likely to be severe, with alternative habitat sources either low in availability or non-existent. Exposure to invasion by weeds and feral animals would be high. Chen and McKane (1996) identified the impact on soils and water run-off from major bushfires in this area, with an increased risk of erosion. There is also responsibility for preventing wildlife from escaping from the Flora Reserve and spreading to adjacent assets, including private property and pine plantation. Consequently suppression of any wildfire will be a priority. It is essential the firebreak on the northern boundary of the Flora Reserve separating pine plantation from the Reserve is maintained for fire control purposes

Properly managed prescribed burning may play an important role in meeting biodiversity management objectives. For example, Van der Ree (unpublished) identified the need to maintain a diversity of flowering plants and ensure recruitment of new individuals as being critical for the survival of the Squirrel Glider population, and the use of fire may have a role here. The Department of Environment and Heritage recommends maintaining a “fire regime that establishes a mosaic of fire ages” for protection of the Turquoise Parrot (DEH, website 2005).

Hogbin (2002) identified fire control activities to be a potential threat to the survival of a *Pultenaea humilis* population within the Reserve, given its proximity to a fire trail. Results of surveying populations of this species may lead to the establishment of some exclusion zones from prescribed burning activities, and reassessment of the location and maintenance of associated fire trails. However it is also possible that the majority of this species will be found in areas with naturally low levels of fuel accumulation and the impact of hazard reduction activities will be virtually nil.

An unfavourable fire regime (severe wildfire or excessive hazard reduction burning) may have a negative impact on the White Box - Yellow Box - Blakely's Red Gum Endangered Ecological Community.

6.2.7 Grazing

Whilst no grazing has been authorised in the Reserve in recent years, intermittent illegal grazing by straying stock could still occur. At present there is negligible signage defining the Reserve or outlining restrictions. Fences adjoining private property (along Shockeroo Trail) and the TSR Reserve need to be maintained to prevent stock entering the Flora Reserve. Consultation regarding the future management of the TSR with the Hume Rural Lands board is required to assess fencing needs along the Wagga - Tumbarumba Road and the TSR Reserve. Fencing is not required where Flora Reserve boundaries adjoin State Forest as no stock is permitted within these areas.

6.2.8 Endangered Ecological Communities

Two Endangered Ecological Communities (Threatened Species Conservation Act 1995) are found with the Flora Reserve.

Squirrel Glider population in the Wagga Wagga LGA

White Box Yellow Box Blakely's Red Gum Woodland

6.3 Future Management

Murraguldrie Flora Reserve will be managed by Hume Region, Forests NSW.

The following management priorities will be adopted:

- Maintenance of healthy forest condition in the Flora Reserve to protect key values, consistent with the dynamic nature of forest ecosystems.
- Maintenance of existing roads and trails as required, consistent with the objectives of the Reserve. Boundary roads to be graded and gravelled as

required to maintain access for firefighting and other management purposes and visitor use.

- Fuel management within the Reserve will be undertaken as part of the District Bush Fire Committee considerations and consistent with the Rural Fires Act 1997.
- Occupation and Special Purposes permits will only be issued for activities consistent with the objectives for the reserve. Hunting is permitted within the Reserve by holders of a Game Licence issued under the *Game and Feral Control Act 2002.*
- The boundary of the reserve must be checked and if necessary its location confirmed prior to commencement of any forestry operations in the vicinity of the Reserve. Operations in adjacent areas will be performed in a manner not to cause damage or disturbance to the Reserve.

Under the Forest Management Zoning (FMZ) system Murraguldrie Flora Reserve is zoned FMZ 1 and therefore contributes to the dedicated (formal) Comprehensive Adequate and Representative reserve system in the Southern Region (Tumut Subregion). Management is to meet the requirements of JANIS dedicated (formal) reserves. Refer to the Southern Region Forest Agreement 2002 for further details and definitions.

Minister for Forestry approval by notice in the Gazette is required for new declarations, revocations or boundary amendment.

6.3.1 Activities Not Permitted

The following activities are not permitted:

- Timber harvesting *
- Removal of forest products and materials
- Grazing by domestic stock
- Gravel or hard rock quarrying
- Mineral and petroleum exploration and mining

*Section 27F of the Forestry Act 1916 No 55 authorises issuing of a timber licence where the conditions and limitations of the licence are in accordance with the working plan for the Flora Reserve. This working plan for Murraguldrie Flora Reserve includes a once-only harvesting of *Pinus radiata* and other exotic species.

6.3.2 Activities Permitted with Standard Conditions

The following activities will be permitted subject to standard conditions approved by the Regional Manager and consistent with the Codes of Practice, Operational Circulars, protocols, licenses and Management/Recovery Plans:

- Scientific studies (eg. fauna surveys including trapping)
- Maintenance of existing roads and fire trails
- Limited tree removal for safety reasons or weed control only.
- Feral animal and noxious weed control
- General access for activities such as bush walking and photography
- Suppression of wildfire
- Prescribed burning
- Orienteering events conducted by local clubs subject to issue of a Special Purposes Permit and where the number of total participants is less than 50.

6.3.3 Activities Permitted with Special Conditions

The following activities will be permitted subject to special conditions approved by the Regional Manager and consistent with the Codes of Practice, Operational Circulars, protocols, licenses and Management/Recovery Plans:

Construction of New Roads and Trails

The construction of new roads and fire trails will be permitted with special conditions. It is very unlikely that new construction in the Reserve will be required, as existing roads adequately access the area. Construction will only be permitted in exceptional instances and consistent with the following principles:

- No practical alternative is available;
- The values of the Reserve will not be significantly affected by the road or fire trail;
- Opportunity is provided for public comment on the proposal; and
- Ministerial approval is given for the proposal.

7. MONITORING, REPORTING AND REVIEW

Forests NSW will monitor:

- The output of scientific research and incorporate the results, where relevant into future management of the Reserve.
- The condition of the roads and fire trails and fuel accumulation in the Reserve.

The results of this monitoring will be incorporated into the annual Ecologically Sustainable Forest Management (ESFM) Report for Hume Region, and contribute to the five yearly review of the Southern Region Forest Agreement.

The provisions of this Working Plan will be amended if necessary in light of the results of the monitoring program.

8. ACKNOWLEDGEMENTS

This Working Plan was prepared by Gabriel Wilks, Forests NSW. The following people have contributed data, knowledge and expertise in the development of this document.

David Leslie, Ecologist, Riverina Region Forests NSW (fauna)
Doug Binns, Ecologist, Forests NSW (flora)
Duncan Watt , Planning Manager Hume Region, Forests NSW
Alice Williams, Forests NSW Aboriginal Co-ordinator, Tumut (Indigenous culture)
Janet Wild, Regional Soil Surveyor Murrumbidgee Region, Dept. of Infrastructure, Planning and Natural Resources (geology and soils).

9. REFERENCES

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10. APPENDICES

Appendix 1 Locality Map

Appendix 2 Murraguldrie Flora Reserve Topographic Map

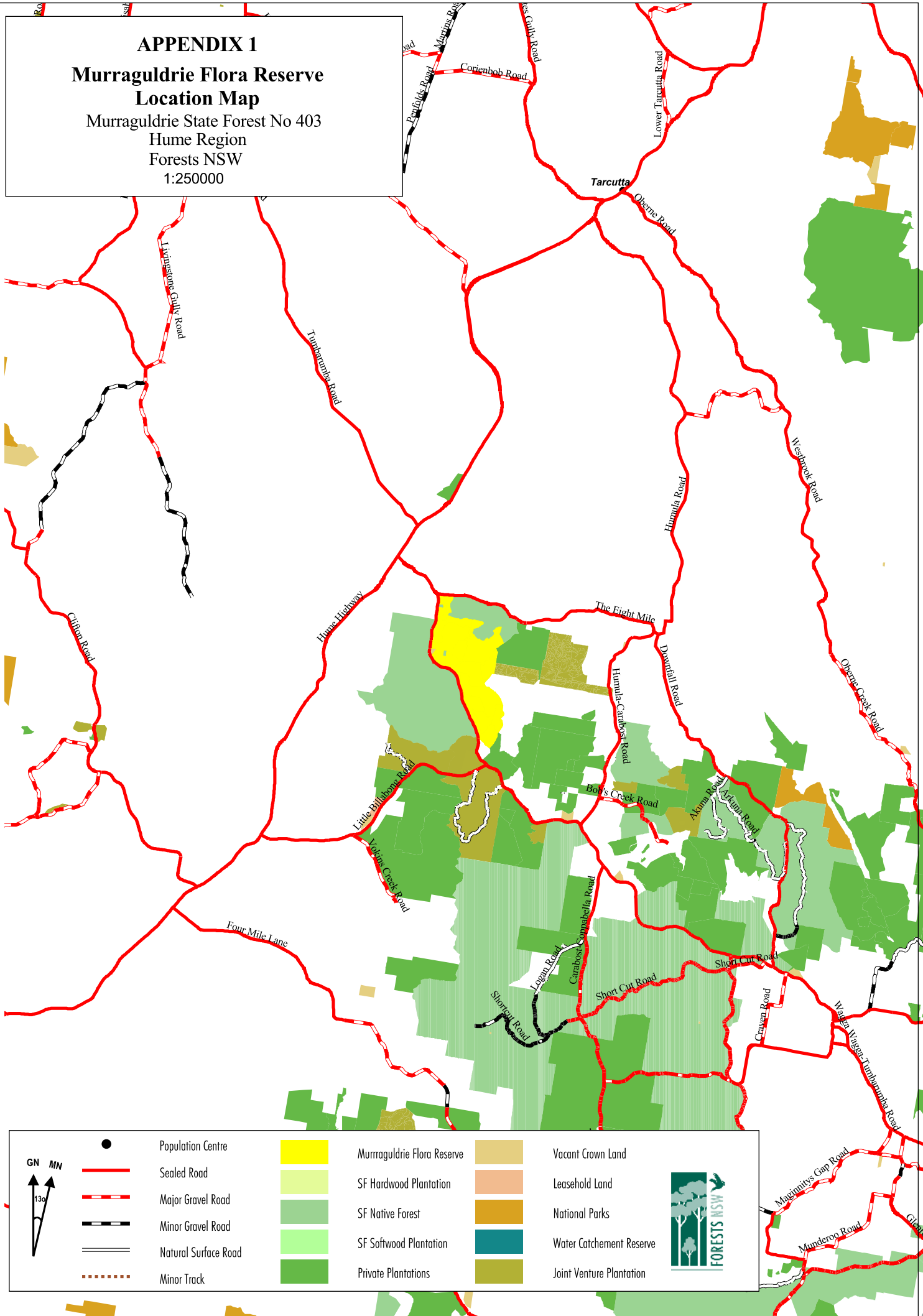
Appendix 3 Murraguldrie FR Flora Species List

Appendix 4 Murraguldrie FR Fauna Species List

APPENDIX 1

Murraguldrie Flora Reserve Location Map

Murraguldrie State Forest No 403
Hume Region
Forests NSW
1:250000



APPENDIX 2

Murraguldrie Flora Reserve
Topographical Map

Murraguldrie State Forest No 403

Hume Region
Forests NSW

Flora Reserve
FNSW Plantation
Other Non-Plantation Area
Environmental Exclusion
Powerline - 11-33kv; 66-132kv; 330-500kv
Gas Pipeline
Drainage Line
(Contour Interval 10 M)
Major Contour
Minor Contour
Closed Road
Sealed Road
Major Gravel Road
Minor Gravel Road
Natural Surface Road
Minor Track

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FORESTS NSW

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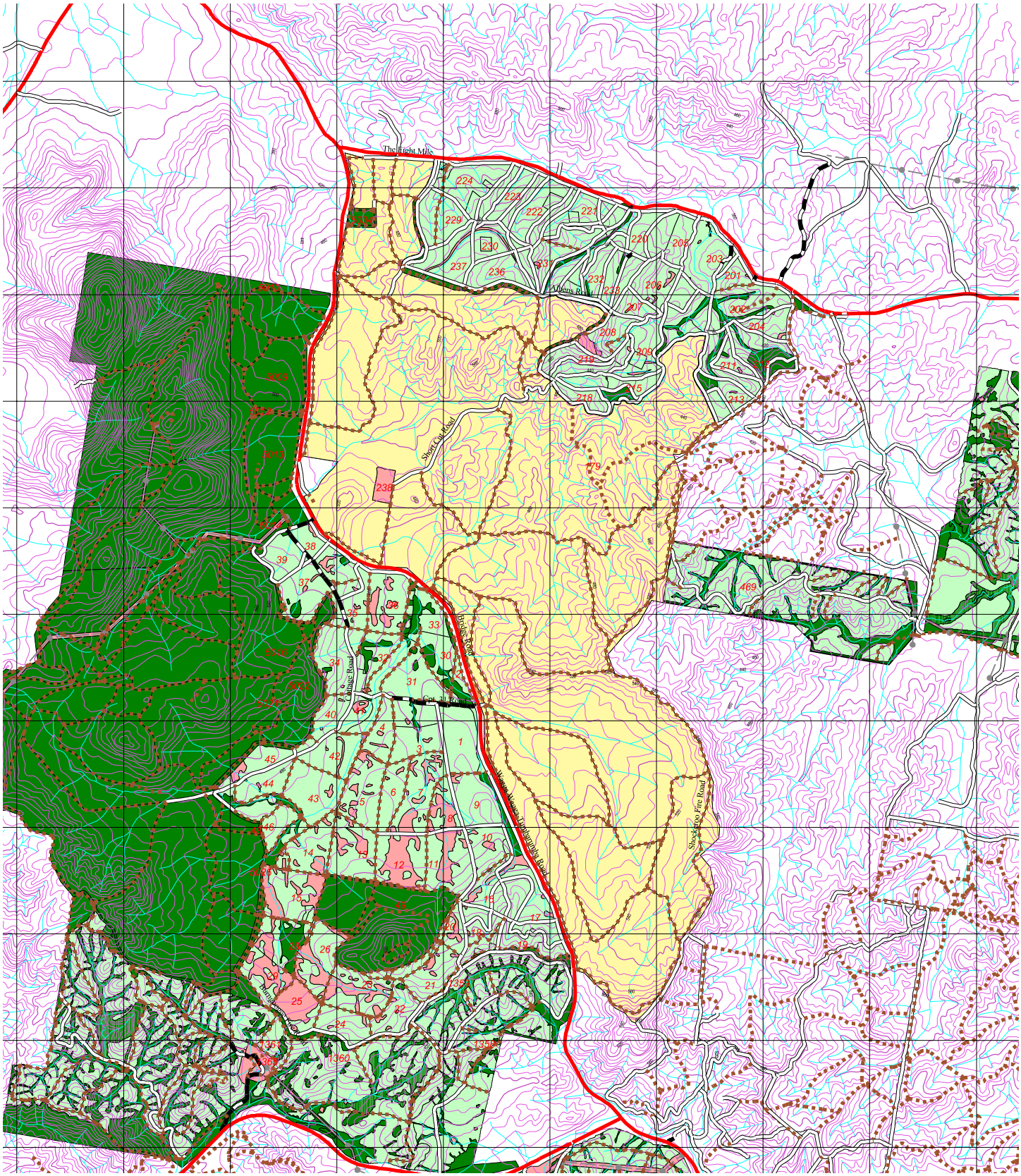

Appendix 3 Murraguldrie FR Flora Species List

Species list from survey conducted by Doug Binns and David Leslie, Forests NSW, November 2003.

FAMILY	SPECIES (* indicates introduced *)*
Anthericaceae	*Arthropodium minus*
Anthericaceae	*Caesia calliantha*
Anthericaceae	*Dichopogon fimbriatus*
Anthericaceae	*Dichopogon strictus*
Anthericaceae	*Thysanotus patersonii*
Anthericaceae	*Thysanotus tuberosus subsp. tuberosus*
Apiaceae	*Daucus glochidiatus*
Apiaceae	*Hydrocotyle laxiflora*
Asphodelaceae	*Bulbine bulbosa*
Asteraceae	**Arctotheca calendula*
Asteraceae	*Brachyscome sp.*
Asteraceae	*Craspedia variabilis*
Asteraceae	*Cymbonotus lawsonianus*
Asteraceae	*Cymbonotus preissianus*
Asteraceae	*Euchiton sphaericus*
Asteraceae	**Hypochaeris glabra*
Asteraceae	**Hypochaeris radicata*
Asteraceae	*Microseris lanceolata*
Asteraceae	*Senecio quadridentatus*
Asteraceae	*Senecio species*
Asteraceae	*Senecio tenuiflorus*
Asteraceae	*Stuartina hamata*
Asteraceae	**Tragopogon porrifolius*
Boraginaceae	**Echium plantagineum*
Boraginaceae	**Myosotis discolor*
Campanulaceae	*Wahlenbergia gracilis*
Campanulaceae	*Wahlenbergia stricta subsp. stricta*
Caryophyllaceae	**Moenchia erecta*
Caryophyllaceae	**Petrorhagia nanteuilii*
Caryophyllaceae	*Stellaria angustifolia*
Clusiaceae	*Hypericum gramineum*
Clusiaceae	**Hypericum perforatum*
Colchicaceae	*Burchardia umbellata*
Colchicaceae	*Wurmbea dioica subsp. dioica*
Convolvulaceae	*Convolvulus erubescens s.l.*
Convolvulaceae	*Dichondra repens*
Cyperaceae	*Carex breviculmis*

Cyperaceae	*Eleocharis acuta*
Cyperaceae	*Isolepis fluitans*
Cyperaceae	*Lepidosperma laterale*
Cyperaceae	*Schoenus apogon*
Cyperaceae	*Schoenus latelaminatus*
Dilleniaceae	*Hibbertia obtusifolia*
Dilleniaceae	*Hibbertia riparia*
Droseraceae	*Drosera auriculata*
Droseraceae	*Drosera peltata*
Epacridaceae	*Acrotriche serrulata*
Epacridaceae	*Brachyloma daphnoides*
Epacridaceae	*Lissanthe strigosa*
Epacridaceae	*Melichrus urceolatus*
Epacridaceae	*Monotoca scoparia*
Euphorbiaceae	*Poranthera microphylla*
Fabaceae (Faboideae)	*Daviesia leptophylla*
Fabaceae (Faboideae)	*Desmodium varians*
Fabaceae (Faboideae)	*Dillwynia phylicoides*
Fabaceae (Faboideae)	*Glycine clandestina*
Fabaceae (Faboideae)	*Hardenbergia violacea*
Fabaceae (Faboideae)	*Hovea heterophylla*
Fabaceae (Faboideae)	*Hovea linearis*
Fabaceae (Faboideae)	*Platylobium formosum*
Fabaceae (Faboideae)	*Pultenaea foliolosa*
Fabaceae (Faboideae)	*Pultenaea humilis*
Fabaceae (Faboideae)	*Pultenaea procumbens*
Fabaceae (Faboideae)	**Trifolium arvense*
Fabaceae (Faboideae)	**Trifolium campestre*
Fabaceae (Faboideae)	**Trifolium dubium*
Fabaceae (Faboideae)	**Trifolium glomeratum*
Fabaceae (Mimosoideae)	*Acacia buxifolia*
Fabaceae (Mimosoideae)	*Acacia dealbata*
Fabaceae (Mimosoideae)	*Acacia implexa*
Fabaceae (Mimosoideae)	*Acacia paradoxa*
Gentianaceae	**Centaurium erythraea*
Geraniaceae	*Geranium homeanum*
Geraniaceae	*Geranium retrorsum*
Geraniaceae	*Geranium solanderi var. solanderi*
Goodeniaceae	*Brunonia australis*
Goodeniaceae	*Goodenia hederacea subsp. hederacea*
Goodeniaceae	*Goodenia heterophylla subsp. heterophylla*
Haloragaceae	*Gonocarpus tetragynus*
Haloragaceae	*Haloragis heterophylla*
Hypoxidaceae	*Hypoxis hygrometrica var. hygrometrica*

Hypoxidaceae	*Hypoxis vaginata var. brevistigmata*
Juncaceae	**Juncus bufonius*
Juncaceae	*Juncus homalocaulis*
Juncaceae	*Juncus subsecundus*
Juncaceae	*Luzula densiflora*
Juncaceae	*Luzula flaccida*
Lamiaceae	*Ajuga australis*
Lobeliaceae	*Isotoma axillaris*
Lobeliaceae	*Pratia pedunculata*
Lomandraceae	*Lomandra bracteata*
Lomandraceae	*Lomandra filiformis subsp. coriacea*
Lomandraceae	*Lomandra filiformis subsp. filiformis*
Lomandraceae	*Lomandra longifolia*
Lomandraceae	*Lomandra multiflora subsp. multiflora*
Lythraceae	*Lythrum hyssopifolia*
Myrtaceae	*Eucalyptus albens*
Myrtaceae	*Eucalyptus blakelyi*
Myrtaceae	*Eucalyptus bridgesiana*
Myrtaceae	*Eucalyptus camphora subsp. humeana*
Myrtaceae	*Eucalyptus goniocalyx*
Myrtaceae	*Eucalyptus macrorhyncha*
Myrtaceae	*Eucalyptus melliodora*
Myrtaceae	*Eucalyptus microcarpa*
Myrtaceae	*Eucalyptus polyanthemos subsp. polyanthemos*
Myrtaceae	*Eucalyptus rossii*
Myrtaceae	*Eucalyptus sideroxylon*
Myrtaceae	*Leptospermum continentale*
Ophioglossaceae	*Ophioglossum lusitanicum subsp. coriaceum*
Orchidaceae	*Caladenia caerulea*
Orchidaceae	*Caladenia carnea var. carnea*
Orchidaceae	*Caladenia fitzgeraldii*
Orchidaceae	*Caladenia gracilis*
Orchidaceae	*Caladenia phaeoclavia*
Orchidaceae	*Corybas fimbriatus*
Orchidaceae	*Cyrtostylis reniformis*
Orchidaceae	*Glossodia major*
Orchidaceae	*Microtis unifolia*
Orchidaceae	*Pterostylis nutans*
Orchidaceae	*Pterostylis parviflora*
Orchidaceae	*Thelymitra pauciflora*
Oxalidaceae	*Oxalis exilis*
Oxalidaceae	*Oxalis perennans*
Phormiaceae	*Dianella revoluta var. revoluta*
Pinaceae	**Pinus radiata*

Pittosporaceae	*Cheiranthera cyanea var. cyanea*
Pittosporaceae	*Rhytidosporum procumbens*
Plantaginaceae	*Plantago varia*
Poaceae	*Agrostis avenacea var. avenacea*
Poaceae	**Aira caryophyllea*
Poaceae	**Aira elegantissima*
Poaceae	*Amphibromus pithogastrus*
Poaceae	**Briza maxima*
Poaceae	**Briza minor*
Poaceae	**Bromus diandrus*
Poaceae	**Bromus hordeaceus*
Poaceae	**Cynosurus echinatus*
Poaceae	*Danthonia monticola*
Poaceae	*Danthonia pilosa var. pilosa*
Poaceae	*Danthonia racemosa var. racemosa*
Poaceae	*Danthonia setacea*
Poaceae	*Deyeuxia quadriseta*
Poaceae	*Dichelachne hirtella*
Poaceae	*Echinopogon caespitosus var. caespitosus*
Poaceae	*Echinopogon ovatus*
Poaceae	*Elymus scaber var. scaber*
Poaceae	**Holcus lanatus*
Poaceae	*Joycea pallida*
Poaceae	*Microlaena stipoides var. stipoides*
Poaceae	*Pentapogon quadrifidus*
Poaceae	**Pentaschistis airoides*
Poaceae	*Poa labillardieri*
Poaceae	*Poa sieberiana var. hirtella*
Poaceae	*Poa sieberiana var. sieberiana*
Poaceae	*Themeda australis*
Poaceae	**Vulpia bromoides*
Poaceae	**Vulpia muralis*
Poaceae	**Vulpia myuros*
Polygonaceae	**Acetosella vulgaris*
Polygonaceae	*Rumex brownii*
Portulacaceae	*Montia fontana subsp. chondrosperma*
Portulacaceae	*Neopaxia australasica*
Primulaceae	**Anagallis arvensis*
Proteaceae	*Persoonia rigida*
Ranunculaceae	*Ranunculus lappaceus*
Ranunculaceae	**Ranunculus muricatus*
Ranunculaceae	*Ranunculus pachycarpus*
Ranunculaceae	*Ranunculus sessiliflorus var. pilulifer*
Ranunculaceae	*Ranunculus sessiliflorus var. sessiliflorus*

Rosaceae	*Acaena novae-zelandiae*
Rosaceae	*Acaena ovina*
Rosaceae	**Rosa rubiginosa*
Rosaceae	**Rubus fruticosus*
Rubiaceae	*Asperula conferta*
Rubiaceae	*Galium gaudichaudii*
Rubiaceae	**Galium murale*
Rubiaceae	*Opercularia aspera*
Rubiaceae	*Opercularia hispida*
Rubiaceae	**Sherardia arvensis*
Scrophulariacae	**Veronica arvensis*
Scrophulariaceae	**Linaria arvensis*
Scrophulariaceae	**Orobanche minor*
Sinopteridaceae	*Cheilanthes austrotenuifolia*
Sinopteridaceae	*Cheilanthes sieberi subsp. sieberi*
Sterculiaceae	*Brachychiton populneus*
Xanthorrhoeaceae	*Xanthorrhoea glauca subsp. angustifolia*

Appendix 4 Murraguldrie FR Fauna Species List

Note: It is anticipated many more species will be added to these lists with further survey work

Sources:

1. Forests NSW Bird Sites (2003, 2004)
2. Van der Rees (unpubl.)
3. NPWS Wildlife Atlas: npws.nsw.gov.au/wildlifeatlas

Status Key:
- I Introduced
- P Protected
- V Vulnerable (as per Threatened species Conservation Act 1995 schedule 2)
- E Endangered (as per Threatened species Conservation Act 1995 schedule 2)

FAMILY	SPECIES	COMMON NAME	**Notes**	**SOURCE**
BIRDS				
Acanthizidae	*Acanthiza pusilla*	Brown Thornbill	P	1
Acanthizidae	*Acanthiza lineata*	Striated Thornbill	P	1
Acanthizidae	*Acanthiza nana*	Yellow Thornbill	P	1
Acanthizidae	*Acanthiza reguliodes*	Buff-rumped Thornbill	P	1
Acanthizidae	*Gerygone fusca*	Western Gerygone	P	1
Acanthizidae	*Gerygone olivacea*	White-throated Gerygone	P	1
Acanthizidae	*Smicrornis brevirostris*	Weebill	P	1
Acanthizidae	*Sericornis sagittatus*	Speckled Warbler	Vulnerable	3
Alcedinidae	*Dacelo novaeguineae*	Laughing Kookaburra	P	1
Alcedinidae	*Todiramphus sanctus*	Sacred Kingfisher	P	1
Anatidae	*Chenonetta jubata*	Australian Wood Duck	P	1
Cacuatuidae	*Cacatua roseicapilla*	Galah	P	1
Climacteridae	*Climacteris picumnus*	Brown Treecreeper	Vulnerable	3
Climacteridae	*Cormobates leucophaeus*	White-throated Treecreeper	P	1
Climacteridae	*Climacteris erythrops*	Red-browed Treecreeper	P	1

Columbidae	*Geopelia piacida*	Peaceful Dove	P	1
Columbidae	*Phaps chalcoptera*	Common Bronzewing	P	1
Corcoracidae	*Corcorax melanorhamphos*	White-winged Chough	P	1
Cracticidae	*Strepera graculina*	Pied Currawong	P	1
Hirundinidae	*Hirundo neoxena*	Welcome Swallow	P	1
Maluridae	*Malurus cyaneus*	Superb Fairy-wren	P	1
Meliphagidae	*Anthochaera carunculata*	Red Wattlebird	P	1
Meliphagidae	*Lichenostomus fuscus*	Fuscous Honeyeater	P	1
Meliphagidae	*Lichenostomus leucotis*	White-eared Honeyeater	P	1
Meliphagidae	*Melithreptus lunatus*	White-naped Honeyeater	P	1
Meliphagidae	*Lichenostomus penicillatus*	White-plumed Honeyeater	P	1
Meliphagidae	*Acanthorhynchus tenuirostris*	Eastern Spinebill	P	1
Meliphagidae	*Lichenostomus chrysops*	Yellow-faced Honeyeater	P	1
Meliphagidae	*Lichenostomus fusca*	Fuscous Honeyeater	P	1
Meliphagidae	*Lichenostomus melanops*	Yellow-tufted Honeyeater	P	1
Meliphagidae	*Philemon corniculatus*	Noisy Friar Bird	P	1
Muscicapidae	*Colluricincla harmonica*	Grey Shrike-thrush	P	1
Muscicapidae	*Pachycephala pectoralis*	Golden Whistler	P	1
Muscicapidae	*Pachycephala rufiventris*	Rufous Whistler	P	1
Muscicapidae	*Eopsaltria australis*	Eastern Yellow Robin	P	1
Muscicapidae	*Falcunculus frontatus*	Crested Shrike-tit	P	1
Muscicapidae	*Rhipidura leucophrys*	Willie Wagtail	P	1
Muscicapidae	*Myiagra rubecula*	Leaden Flycatcher	P	1
Muscicapidae	*Rhipidura fuliginosa*	Grey Fantail	P	1
Muscicapidae	*Microeca leucophaea*	Jacky Winter	P	1
Muscicapidae	*Myiagra inquieta*	Restless Flycatcher	P	1
Muscicapidae	*Petrioca multicolor*	Scarlet Robin	P	1
Pardalotidae	*Pardalotus striatus*	Striated Pardalote	P	1
Pardalotidae	*Pardalotus punctatus*	Spotted Pardalote	P	1
Platycercidae	*Neophema pulchella*	Turquoise Parrot	Vulnerable	1

Platycercidae	*Platycercus elegans*	Crimson Rosella	P	1
Platycercidae	*Platycercus eximius*	Eastern Rosella	P	1
Polytelitidae	*Alisterus scapularis*	Australian King Parrot	P	1
Zosteropidae	*Zosterops lateralis*	Silvereye	P	1
MAMMALS				
Phalangeridae	*Trichosurus vulpecula.*	Brushtail Possum	P	2
Petauridae	*Pseudocheirus peregrinus*	Common Ringtail Possum	P	2
Petauridae	*Petauroides norfolcensis*	Squirrel Glider	Vulnerable	2
Petauridae	*Petaurus breviceps*	Sugar Glider	P	2

11. AMENDMENTS

Addendum – amendment to Murraguldrie Flora Reserve Working Plan

On 6 November 2014, The Hon. Katrina Hodgkinson MP, Minister for Primary Industries, approved the amendment of the Murraguldrie Flora Reserve Working Plan as follows:

Insert at the end of clause 6.3.2 (Activities Permitted with Standard Conditions) a bullet point and the following text:

> "The carrying out and maintenance of fence line clearing up to 6 metres wide from, and approximately 3.5 kilometres along, the eastern boundary fence of the Reserve adjoining private land holdings."

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