



**Department of Environmental Protection System 6 Update: Flora and vegetation report for Reserves 2336 and 17680, part System 6 Area C25 Mound Springs, Muchea**  
Bronwen Keighery May 1995

### Summary

Recent work for the System 6 update has established that the study area is of significant flora conservation value. The study area is one of the few remaining bushland remnants on the eastern side of the Plain. An unusual combination of soil types of aeolian (Bassendean Sands) and alluvial origin (Guildford Formation and Muchea Limestone) occur in the study area. This combination of soil types and the vegetation associated with these soil types is not known from any other conservation reserve or proposed reserve on the Plain.

### Vegetation Associations

A series of vegetation associations are present in the study area:

- Mixed Shrublands on the thin Bassendean Sands overlying gravelly silt (Sites 2 & 3)
- Banksia* Woodland on the deeper Bassendean Sands (Site 1)
- Marri Forest /Woodland over *Melaleuca huegelli* Thicket on Muchea Limestone (site 4)
- Marri and Flooded Gum Woodland on the gravelly silts of the Guildford Formation.

Floristic sites were established at four locations in three of the vegetation associations (see above). These sites identified floristic community types 6 (site 2), 21a (site 1) and 28 (site 1&3) according to Gibson *et al* (1994), that is an eastern side of the Plain heavy soil wetland community (type 6), central Jarrah/*Banksia* Woodlands (type 21a) generally associated with Bassendean Sands and north eastern *Banksia* Woodlands and shrublands (type 28) generally associated with Spearwood Sands but occasionally with sands of the Muchea-Bullsbrook area (also recorded from Bullsbrook Nature Reserve and Yurine Swamp Nature Reserve). The time of sampling in the area did not allow sites to be established in the Marri and Flooded Gum Woodland.

### Floristic Community Types

The floristic community types identified in the study area reflect the combination of sands and heavy soils in the area. Of further interest in the floristic sites are:

- a) the taxa in these sites that are not recorded from any other sites (singletons) - *Grevillea curviloba* subsp. *incurva*, *Stipa tenuifolia* and *Darwinia* sp. Muchea
- b) the presence of taxa that have not previously been recorded in association with heavy soils - *Melaleuca huegeli* and *Conostylis candicans*
- c) the combinations of taxa not previously recorded together - *Melaleuca huegeli* and *Conostylis candicans* (taxa typical of coastal limestones) with *Eucalyptus calophylla*, *Stipa tenuifolia* and *S. campylachne* (the grasses are associated with the eastern side of the Plain)

The unusual occurrences and combinations of these taxa are not reflected in the identification of unique floristic community types as the singletons were not used in the analysis and the unusual combinations of taxa are not shared with other sites.

### Flora

One hundred and fifty three taxa were recorded from the study area, including 128 native taxa and 25 non-native taxa. This represents approximately 65% of the taxa expected to be found in the study area and as such indicates that the area has a diverse flora. This is to be expected as the study area contains a combination of taxa typically associated with sands and heavy soils on the Swan Coastal Plain as well as several taxa generally found on the coastal limestones.

Examples of these are:

- taxa associated with sands: *Allocasuarina humilis*, *Conostephium pendulum*, *Anigozanthos humilis*, *Calytrix angulata*, *Banksia menziesii*. and many others.
- taxa associated with heavy soils on the eastern side of the Swan Coastal Plain: *Borya scirpoidea*, *Cyathochaeta avenacea*, *Mesomelaena tetragona*, *Drosera macrantha* "Swan Coastal Plain form" (BJK&NG 228), *Drosera neesii*, *Anigozanthos viridis*, *Conostylis festucacea* subsp. *festucacea*, *Darwinia* sp. Muchea, *Kunzea limnicola*, *Verticordia lindleyi* subsp. *lindleyi*, *Stipa tenuifolia*, *Banksia telmatiaea*, *Grevillea curviloba* subsp. *incurva*, *Grevillea*

*obtusifolia*, *Petrophile seminuda*, *Trichocline spathulata*, *Pimelea imbricata* var. *piliger* and *Scaevola lanceolata*.

• taxa associated with Muchea limestones: *Melaleuca heugelii* and *Conostylis candicans*

### Significant Flora

Two taxa in the study area are listed on the CALM Priority list (Atkins 1994), *Grevillea curviloba* subsp. *incurva* and, Priority 1 and *Verticordia lindleyi* subsp. *lindleyi*, Priority 4. The population of *Grevillea curviloba* subsp. *incurva* in the study area is the only population known from a proposed conservation area. Other known populations are on degraded roadsides and one is known from private land. Recent work by Olde and Marriot (1995) lists *Grevillea curviloba* subsp. *incurva* as Endangered (Category 2E). Two forms of *Grevillea obtusifolia* are recognised, an upright and prostrate form, the prostrate form is found in the study area. *Grevillea obtusifolia* is also listed as Endangered (Category 2E) being only known by the authors from disturbed roadsides. Recent work has located small populations of this taxon on a conservation reserve and a proposed conservation reserve (Gibson et al 1994 and System 6 update). Both *Grevillea curviloba* subsp. *incurva* and the prostrate form of *Grevillea obtusifolia* (also called 'Gingin Gem') are cultivated throughout Australia. *Darwinia* sp. Muchea has been recommended to be listed as Priority 1 (G.J. Keighery pers. comm.) as it is presently known from less than five populations none of which are on conservation lands.

### Vegetation Condition

The condition of the study area varies from very good to degraded but is generally in good condition (Keighery 1994). That is the vegetation structure is significantly altered by obvious signs of multiple disturbance but the basic vegetation structure is retained or considered able to be regenerated if the disturbance factors are removed. Grazing by cows and rabbits appears to be impacting on the study area. There is significant weed invasion associated with this disturbance and past clearing. Significant weeds are mainly grasses such as Perennial Veldt Grass (*Ehrharta calycina*), Annual Veldt Grass (*Ehrharta longiflora*), Blowfly Grass (*Briza major*) and *Vulpia* species. In much of the reserve the grasses are such densities that they form a structural layer. Active management to remove the grasses is advised. The drainage line was disturbed to such an extent that most herbaceous species were weeds. The disturbance of this area is probably associated with increased nutrient levels along the drainage line and grazing.

### Previous Information on the Study Area

The conservation values of the study area have been recognised in three previous reports, System 6, Keighery (1989) and Keighery and Trudgen (1992).

Keighery (attached) concluded that the 'The reserve is of biological significance because of the species present, and the degree of clearing of the heavy soils of the coastal plain.'

Keighery and Trudgen recognised the area (Recommendation for Area 10, Location 118b, page 30) as

'The only area of Marri and Flooded Gum Woodland and associated with Melaleuca Shrubland over Low Shrubland remaining with significant understorey...'  
and recommended the 'CALM liaise urgently' with the management authority 'to retain and manage the area for its flora conservation values'.

### References

Department of Conservation and Environment. (1983) Conservation Reserves for Western Australia. The Darling System - System 6. Parts 1 & 2. Report 13. Department of Conservation and Environment, Perth.

Department of Conservation and Land Management (14/9/1994) Declared Rare and Priority List for Western Australia. Department of Conservation and Land Management, WA.

Gozzard, J.R. (1982) Muchea Sheet 2034 II and part Sheets 2034 I and part 2134 IV, Environmental Geology Series. Geological Survey of Western Australia, Department of Minerals and Energy, Perth.

Keighery, B.J. (1994) Bushland Plant Survey. Wildflower Society of WA Inc., Nedlands.

Keighery, B.J. and Trudgen, M.E. (1992) "The Remnant Vegetation of the Eastern Side of the Swan Coastal Plain." Unpublished report to the Department of Conservation of Land Management for the National Estate Grants Programme.

Olde, P and Marriot, N (1995) The Grevillea Book. Volumes 2 & 3. Kangaroo Press.

**Appendix 1: Department of Environmental Protection System 6 Update: Site Based Flora List C25 Mound Springs, Muchea**  
(155 taxa: Much Sites 1-5, B.J. Keighery, 3/4/95)

Anthericaceae

Borya scirpoidea  
Caesia micrantha  
Corynotheca micrantha  
Sowerbaea laxiflora  
Thysanotus arenarius  
Thysanotus manglesianus  
Thysanotus patersonii  
Thysanotus sparteus  
Thysanotus thyrsoides  
Tricoryne elatior

Apiaceae

Homalosciadium homalocarpum  
Hydrocotyle callicarpa

Asteraceae

Asteridea pulverulenta  
\* Hypochaeris glabra  
Lagenifera huegelii  
Milotia tenuifolia  
\* Osteospermum clandestinum  
Podotheca gnaphalioides  
Siloxerus humifusus  
\* Sonchus oleraceus  
richcline spathulata  
\* Ursinia anthemoides  
Waitzia suaveolens

Campanulaceae

\* Wahlenbergia capensis  
Wahlenbergia preissii

Caryophyllaceae

\* Petrorhagia velutina  
\* Silene gallica

Casuarinaceae

Allocasuarina humilis

Centrolepidaceae

Centrolepis aristata  
Centrolepis drummondiana

Colchicaceae

Burchardia umbellata

Crassulaceae

Crassula colorata

Cyperaceae

Baumea juncea  
Cyathochaeta avenacea  
\* Isolepis marginata

Lepidosperma angustatum  
Lepidosperma scabrum  
Lepidosperma tenue  
Mesomelaena tetragona  
Schoenus curvifolius  
Schoenus rigens  
Schoenus sp. scps  
Tetraria octandra

Dasyopogonaceae

Lomandra caespitosa  
Lomandra preissii  
Lomandra sericea

Dilleniaceae

Hibbertia aurea  
Hibbertia hypericoides  
Hibbertia racemosa

Droseraceae

Drosera erythrorhiza  
Drosera glanduligera  
Drosera macrantha "Swan Coastal Plain form" (BJK&NG 228)  
Drosera menziesii subsp. menziesii  
Drosera menziesii subsp. penicillaris  
Drosera neesii  
Drosera stolonifera subsp. stolonifera

Epacridaceae

Astroloma pallidum  
Conostephium pendulum  
Leucopogon australis

Euphorbiaceae

Poranthera microphylla

Goodeniaceae

Dampiera linearis  
Scaevola lanceolata  
Scaevola phlebopetala

Haemodoraceae

Anigozanthos humilis  
Anigozanthos manglesii  
Anigozanthos viridis  
Conostylis candicans  
Conostylis festucacea subsp. festucacea  
Conostylis juncea  
Conostylis setigera  
Haemodorum spicatum  
Phlebocarya ciliata

Haloragaceae

Gonocarpus pithyoides

Iridaceae

\* Gladiolus caryophyllaceus  
\* Homeria flaccida

- Patersonia occidentalis
- \* Romulea rosea

Juncaceae

- \* Juncus capitatus

Lauraceae

- Cassytha pubescens
- Cassytha racemosa

Lobeliaceae

- Lobelia tenuior

Loganiaceae

- Mitrasacme paradoxa

Mimosaceae

- Acacia huegelii
- Acacia pulchella
- Acacia saligna

Molluginaceae

- Macarthuria apetala

Myrtaceae

- Agonis linearifolia
- Calytrix angulata
- Darwinia sp. Muchea
- Eucalyptus calophylla
- Eucalyptus todtiana
- Kunzea littericola "white" scps
- Melaleuca huegelii
- Melaleuca raphiophylla
- Melaleuca sp. B (BJK&NG 054)
- Melaleuca sp.
- Regelia ciliata
- Verticordia densiflora
- Verticordia lindleyi subsp. lindleyi

Orchidaceae

- Caladenia flava
- Caladenia marginata
- Caladenia paludosa Hopper & AP Brown
- Microtis media

Papilionaceae

- Aotus gracillima
- Daviesia physodes
- Gompholobium tomentosum
- Hovea trisperma var. trisperma
- Jacksonia sternbergiana
- Kennedia prostrata
- \* Lotus angustissimus
- \* Medicago polymorpha
- Nemcia capitata
- \* Trifolium campestre

Poaceae

- \* *Aira caryophyllea*
- Amphipogon turbinatus*
- \* *Avena barbata*
- \* *Briza maxima*
- \* *Briza minor*
- \* *Bromus diandrus*
- Danthonia occidentalis*
- Danthonia sp. scps*
- \* *Ehrharta calycina*
- \* *Ehrharta longiflora*
- \* *Lolium rigidum*
- Microlaena stipoides*
- Stipa campylachne*
- Stipa compressa*
- Stipa tenuifolia*
- \* *Vulpia sp. scps*

#### Primulaceae

- \* *Anagallis arvensis* var. *arvensis* FPR

#### Proteaceae

- Banksia littoralis*
- Banksia menziesii*
- Banksia telmatiaea*
- Dryandra nivea*
- Grevillea curviloba* subsp. *incurva*
- Grevillea obtusifolia*
- Grevillea vestita*
- Hakea prostrata*
- Petrophile linearis*
- Petrophile seminuda*
- Stirlingia latifolia*

#### Restionaceae

- Hypolaena exsulca*
- Loxocarya fasciculata*
- Lyginia barbata*

#### Rubiaceae

- Opercularia vaginata*

#### Scrophulariaceae

- \* *Dischisma capitatum*

#### Stackhousiaceae

- Stackhousia monogyna*

#### Stylidiaceae

- Levenhookia stipitata*
- Stylidium brunonianum*
- Stylidium calcaratum*
- Stylidium dichotomum*
- Stylidium junceum*
- Stylidium repens*

#### Thymelaeaceae

- Pimelea imbricata* var. *piligera*

Xanthorrhoeaceae

Xanthorrhoea preissii

Zamiaceae

Macrozamia riedlei

**Department of Environmental Protection System 6 Update: Flora and vegetation report for Reserves 2336 and 17680, part System 6 Area C25 Mound Springs, Muchea**  
Bronwen Keighery May 1995

### Summary

Recent work for the System 6 update has established that the study area is of significant flora conservation value. The study area is one of the few remaining bushland remnants on the eastern side of the Plain. An unusual combination of soil types of aeolian (Bassendean Sands) and alluvial origin (Guildford Formation and Muchea Limestone) occur in the study area. This combination of soil types and the vegetation associated with these soil types is not known from any other conservation reserve or proposed reserve on the Plain.

### Vegetation Associations

A series of vegetation associations are present in the study area:

- Mixed Shrublands on the thin Bassendean Sands overlying gravelly silt (Sites 2 & 3)
- Banksia* Woodland on the deeper Bassendean Sands (Site 1)
- Marri Forest /Woodland over *Melaleuca huegeli* Thicket on Muchea Limestone (site 4)
- Marri and Flooded Gum Woodland on the gravelly silts of the Guildford Formation.

### Floristic Community Types

Floristic sites were established at four locations in three of the vegetation associations (see above). These sites identified floristic community types 6 (site 2), 21a (site 1) and 28 (site 1&3) according to Gibson *et al* (1994), that is an eastern side of the Plain heavy soil wetland community (type 6), central Jarrah/*Banksia* Woodlands (type 21a) generally associated with Bassendean Sands and north eastern *Banksia* Woodlands and shrublands (type 28) generally associated with Spearwood Sands but occasionally with sands of the Muchea-Bullsbrook area (also recorded from Bullsbrook Nature Reserve and Yurine Swamp Nature Reserve). The time of sampling in the area did not allow sites to be established in the Marri and Flooded Gum Woodland.

The floristic community types identified in the study area reflect the combination of sands and heavy soils in the area. Of further interest in the floristic sites are:

- a) the taxa in these sites that are not recorded from any other sites (singletons) - *Grevillea curviloba* subsp. *incurva*, *Stipa tenuifolia* and *Darwinia* sp. Muchea
- b) the presence of taxa that have not previously been recorded in association with heavy soils - *Melaleuca huegeli* and *Conostylis candicans*
- c) the combinations of taxa not previously recorded together - *Melaleuca huegeli* and *Conostylis candicans* (taxa typical of coastal limestones) with *Eucalyptus calophylla*, *Stipa tenuifolia* and *S. campylachne* (the grasses are associated with the eastern side of the Plain)

The unusual occurrences and combinations of these taxa are not reflected in the identification of unique floristic community types as the singletons were not used in the analysis and the unusual combinations of taxa are not shared with other sites.

### Flora

One hundred and fifty three taxa were recorded from the study area, including 128 native taxa and 25 non-native taxa (Appendix 1). This represents approximately 65% of the taxa expected to be found in the study area and as such indicates that the area has a diverse flora. This is to be expected as the study area contains a combination of taxa typically associated with sands and heavy soils on the Swan Coastal Plain as well as several taxa generally found on the coastal limestones. Examples of these are:

- taxa associated with sands: *Allocasuarina humilis*, *Conostephium pendulum*, *Anigozanthos humilis*, *Calytrix angulata*, *Banksia menziesii*. and many others.
- taxa associated with heavy soils on the eastern side of the Swan Coastal Plain: *Borya scirpoidea*, *Cyathochaeta avenacea*, *Mesomelaena tetragona*, *Drosera macrantha* "Swan Coastal Plain form" (BJK&NG 228), *Drosera neesii*, *Anigozanthos viridis*, *Conostylis festucacea* subsp. *festucacea*, *Darwinia* sp. Muchea, *Kunzea limnicola*, *Verticordia lindleyi* subsp. *lindleyi*, *Stipa tenuifolia*, *Banksia telmatiaea*, *Grevillea curviloba* subsp. *incurva*, *Grevillea obtusifolia*,

*Petrophile seminuda*, *Trichocline spathulata*, *Pimelea imbricata* var. *piligera* and *Scaevola lanceolata*.

• taxa associated with Muchea limestones: *Melaleuca heugelii* and *Conostylis candicans*

### Significant Flora

Two taxa in the study area are listed on the CALM Priority list (Atkins 1994), *Grevillea curviloba* subsp. *incurva* and, Priority 1 and *Verticordia lindleyi* subsp. *lindleyi*, Priority 4. The population of *Grevillea curviloba* subsp. *incurva* in the study area is the only population known from a proposed conservation area. Other known populations are on degraded roadsides and one is known from private land. Recent work by Olde and Marriot (1995) lists *Grevillea curviloba* subsp. *incurva* as Endangered (Category 2E). Two forms of *Grevillea obtusifolia* are recognised, an upright and prostrate form, the prostrate form is found in the study area. *Grevillea obtusifolia* is also listed as Endangered (Category 2E) being only known by the authors from disturbed roadsides. Recent work has located small populations of this taxon on a conservation reserve and a proposed conservation reserve (Gibson et al 1994 and System 6 update). Both *Grevillea curviloba* subsp. *incurva* and the prostrate form of *Grevillea obtusifolia* (also called 'Gingin Gem') are cultivated throughout Australia. *Darwinia* sp. Muchea has been recommended to be listed as Priority 1 (G.J. Keighery pers. comm.) as it is presently known from less than five populations none of which are on conservation lands.

### Vegetation Condition

The condition of the study area varies from very good to degraded but is generally in good condition (Keighery 1994). That is the vegetation structure is significantly altered by obvious signs of multiple disturbance but the basic vegetation structure is retained or considered able to be regenerated if the disturbance factors are removed. Grazing by cows and rabbits appears to be impacting on the study area. There is significant weed invasion associated with this disturbance and past clearing. Significant weeds are mainly grasses such as Perennial Veldt Grass (*Ehrharta calycina*), Annual Veldt Grass (*Ehrharta longiflora*), Blowfly Grass (*Briza major*) and *Vulpia* species. In much of the reserve the grasses are at such densities that they form a structural layer. Active management to remove the grasses is advised. The drainage line was disturbed to such an extent that most herbaceous species were weeds. The disturbance of this area is probably associated with increased nutrient levels along the drainage line and grazing.

### Previous Information on the Study Area

The conservation values of the study area have been recognised in three previous reports, System 6 (Department of Conservation and Environment 1983), Keighery (1989) and Keighery and Trudgen (1992).

Keighery (attached) concluded that the 'The reserve is of biological significance because of the species present, and the degree of clearing of the heavy soils of the coastal plain.'

Keighery and Trudgen recognised the area (Recommendation for Area 10, Location 118b, page 30) as

'The only area of Marri and Flooded Gum Woodland and associated with Melaleuca Shrubland over Low Shrubland remaining with significant understorey...'

and recommended the 'CALM liaise urgently' with the management authority 'to retain and manage the area for its flora conservation values'.

### References

Department of Conservation and Environment. (1983) Conservation Reserves for Western Australia. The Darling System - System 6. Parts 1 & 2. Report 13. Department of Conservation and Environment, Perth.

Department of Conservation and Land Management (14/9/1994) Declared Rare and Priority List for Western Australia. Department of Conservation and Land Management, WA.

Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A. and Lyons, M. 1994 A Floristic survey of the southern Swan Coastal Plain. Unpublished report for the Australian Heritage Commission prepared by department of CALM and the Conservation Council of WA (Inc).

Gozzard, J.R. (1982) Muchea Sheet 2034 II and part Sheets 2034 I and part 2134 IV, Environmental Geology Series. Geological Survey of Western Australia, Department of Minerals and Energy, Perth.

Keighery, B.J. (1994) Bushland Plant Survey. Wildflower Society of WA Inc., Nedlands.

Keighery, B.J. and Trudgen, M.E. (1992) "The Remnant Vegetation of the Eastern Side of the Swan Coastal Plain." Unpublished report to the Department of Conservation of Land Management for the National Estate Grants Programme.

Olde, P and Marriot, N (1995) The Grevillea Book. Volumes 2 & 3. Kangaroo Press.

**Appendix 1: Department of Environmental Protection System 6 Update: Site Based Flora List for Reserves 2336 and 17680, part C25 Mound Springs, Muchea**

(Much Sites 1-4, B.J. Keighery)

Anthericaceae

Borya scirpoidea  
Caesia micrantha  
Corynotheca micrantha  
Sowerbaea laxiflora  
Thysanotus arenarius  
Thysanotus manglesianus  
Thysanotus patersonii  
Thysanotus sparteus  
Thysanotus thyrsoides  
Tricoryne elatior

Apiaceae

Homalosciadium homalocarpum  
Hydrocotyle callicarpa

Asteraceae

Asteridea pulverulenta  
\* Hypochaeris glabra  
Lagenifera huegelii  
Millotia tenuifolia  
\* Osteospermum clandestinum  
Podotheca gnaphalioides  
Siloxerus humifusus  
\* Sonchus oleraceus  
Trichocline spathulata  
\* Ursinia anthemoides  
Waitzia suaveolens

Campanulaceae

\* Wahlenbergia capensis  
Wahlenbergia preissii

Caryophyllaceae

\* Petrorhagia velutina  
\* Silene gallica

Casuarinaceae

Allocasuarina humilis

Centrolepidaceae

Centrolepis aristata  
Centrolepis drummondiana

Colchicaceae

Burchardia umbellata

Crassulaceae

Crassula colorata

Cyperaceae

Baumea juncea  
Cyathochaeta avenacea

- \* *Isolepis marginata*
- Lepidosperma angustatum*
- Lepidosperma scabrum*
- Lepidosperma tenue*
- Mesomelaena tetragona*
- Schoenus curvifolius*
- Schoenus rigens*
- Schoenus* sp. scps
- Tetraria octandra*

#### Dasyogonaceae

- Lomandra caespitosa*
- Lomandra preissii*
- Lomandra sericea*

#### Dilleniaceae

- Hibbertia aurea*
- Hibbertia hypericoides*
- Hibbertia racemosa*

#### Droseraceae

- Drosera erythrorhiza*
- Drosera glanduligera*
- Drosera macrantha* "Swan Coastal Plain form" (BJK&NG 228)
- Drosera menziesii* subsp. *menziesii*
- Drosera menziesii* subsp. *penicillaris*
- Drosera neesii*
- Drosera stolonifera* subsp. *stolonifera*

#### Epacridaceae

- Astroloma pallidum*
- Conostephium pendulum*
- Leucopogon australis*

#### Euphorbiaceae

- Poranthera microphylla*

#### Goodeniaceae

- Dampiera linearis*
- Scaevola lanceolata*
- Scaevola phlebopetala*

#### Haemodoraceae

- Anigozanthos humilis*
- Anigozanthos manglesii*
- Anigozanthos viridis*
- Conostylis candicans*
- Conostylis festucacea* subsp. *festucacea*
- Conostylis juncea*
- Conostylis setigera*
- Haemodorum spicatum*
- Phlebocarya ciliata*

#### Haloragaceae

- Gonocarpus pithyoides*

#### Iridaceae

- \* *Gladiolus caryophyllaceus*

- \* *Homeria flaccida*
- Patersonia occidentalis*
- \* *Romulea rosea*

Juncaceae

- \* *Juncus capitatus*

Lauraceae

- Cassytha pubescens*
- Cassytha racemosa*

Lobeliaceae

- Lobelia tenuior*

Loganiaceae

- Mitrasacme paradoxa*

Mimosaceae

- Acacia huegelii*
- Acacia pulchella*
- Acacia saligna*

Molluginaceae

- Macarthuria apetala*

Myrtaceae

- Agonis linearifolia*
- Calytrix angulata*
- Darwinia* sp. *Muchea*
- Eucalyptus calophylla*
- Eucalyptus todtiana*
- Kunzea limnicola*
- Melaleuca huegelii*
- Melaleuca raphiophylla*
- Melaleuca* sp. B (BJK&NG 054)
- Melaleuca* sp.
- Regelia ciliata*
- Verticordia densiflora*
- Verticordia lindleyi* subsp. *lindleyi*

Orchidaceae

- Caladenia flava*
- Caladenia marginata*
- Caladenia paludosa* Hopper & AP Brown
- Microtis media*

Papilionaceae

- Aotus gracillima*
- Daviesia physodes*
- Gompholobium tomentosum*
- Hovea trisperma* var. *trisperma*
- Jacksonia sternbergiana*
- Kennedia prostrata*
- \* *Lotus angustissimus*
- \* *Medicago polymorpha*
- Nemcia capitata*
- \* *Trifolium campestre*

## Poaceae

- \* *Aira caryophyllea*
- Amphipogon turbinatus*
- \* *Avena barbata*
- \* *Briza maxima*
- \* *Briza minor*
- \* *Bromus diandrus*
- Danthonia occidentalis*
- Danthonia sp. scps*
- \* *Ehrharta calycina*
- \* *Ehrharta longiflora*
- \* *Lolium rigidum*
- Microlaena stipoides*
- Stipa campylachne*
- Stipa compressa*
- Stipa tenuifolia*
- \* *Vulpia sp. scps*

## Primulaceae

- \* *Anagallis arvensis* var. *arvensis*

## Proteaceae

- Banksia littoralis*
- Banksia menziesii*
- Banksia telmatiaea*
- Dryandra nivea*
- Grevillea curviloba* subsp. *incurva*
- Grevillea obtusifolia*
- Grevillea vestita*
- Hakea prostrata*
- Petrophile linearis*
- Petrophile seminuda*
- Stirlingia latifolia*

## Restionaceae

- Hypolaena exsulca*
- Loxocarya fasciculata*
- Lyginia barbata*

## Rubiaceae

- Opercularia vaginata*

## Scrophulariaceae

- \* *Dischisma capitatum*

## Stackhousiaceae

- Stackhousia monogyna*

## Stylidiaceae

- Levenhookia stipitata*
- Stylidium brunonianum*
- Stylidium calcaratum*
- Stylidium dichotomum*
- Stylidium junceum*
- Stylidium repens*

## Thymelaeaceae

- Pimelea imbricata* var. *piligera*

Xanthorrhoeaceae

Xanthorrhoea preissii

Zamiaceae

Macrozamia riedlei

Site Commonwealth Land



lyth sp 770%

Mel raph } 5-15 30-70%  
Bank lit }

Stylid juncea / see bag

lj Pair / Ast / Hyp / Eut  
30 770% scattered

Mel pries: Darwinia sp  
Hyp. exulca.

v

-MUCHEA

17/11/94

Separate N1 blades

Regia (30-70%) 10-30 - 0

Per. Veldt Love Gums

Bank. incana

Constep. minus

6/9/94

Madras

Excavations

Darwinia sp. in flower

Yorine <sup>Susam</sup> (50' x 100') W YORK #1

① Kod/Sand Ridge  
Orange = Dark Wood

Yellow Sand Flat = Major VO Wood

② Yorine #1

Swamp area disturbed low  
around ironstone - much from  
area grassy disturbed but  
regeneration NOTE in case

• Leptocarpus clay flat

③ Euc. redis / Low Woodland

Me. saple  
single site could be  
located adj to Rd

Orchids - (see kilometre) tur  
J. Diuris

④ B. prismata Woodland

scattered Chaco area

• Drosera anglica

• Drosera menz. ssp. P.

• Calladenia terrey

Thys. pit

Airfield Rd Ironstone

Timaru Rd - 100

Ironstone - point 37

**AREA INFORMATION**

System 6 Area (C or M) or Update Area (Update) *C25*

Conservation Area	<i>Mound Springs Muchoa</i>
Nature Reserve	
Reserve No	
National Park	
Reserve No	
Local Government	
Reserve No	
Other	
Proposed Conservation Areas	
Local Government	
Reserve No	
Other	

**Conservation Area**

Nature Reserve	
Reserve No	
National Park	
Reserve No	
Local Government	
Reserve No	
Other	

**AREA**

Total Area	hectares
Completely Degraded	hectares
comments:	

**AREA MAPPED FLORISTIC UNITS**

Boundaries: System6 CALM

Units	Site (Condition)	Code	Bound	Area (ha)	Area(ha)

Boundaries determined by use of

aerial photograph
orthophoto
vegetation map
soil map



C25  
MUCH  $\phi$ 1

MUCH  $\phi$ 2



MUCH  $\phi$ 3



MUCH 04

CREEK BED

EAST

WEST





C25



C25



C25



C25