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WESTERN AUSTRALIAN NATURE RESERVE MANAGEMENT PLAN NO. 6
(AUDIT OF PUBLIC SUBMISSIONS AND AMENDMENTS TO THE DRAFT PLAN)

NATURE RESERVES OF THE SHIRE OF TOODYAY

BY

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INTRODUCTION

This audit of public submissions is part of the "Western Australian Nature Reserve Management Plan" series. Each plan in the series is published as a draft for public comment. In this case, because of the interest shown by the local community, a "prepublication draft" was published for review by reserve neighbours and other members of the local community, and by the Toodyay Shire Council. The prepublication draft was revised, guided by submissions received, and published as the usual draft complete with acknowledgements to contributors. Following three months of public comment, this audit of public submissions, incorporating all comments, was prepared. This is accompanied by the preparation of an "amended draft", based on the original, and influenced by the public submissions. The amended draft is then submitted to the Western Australian Wildlife Authority (WAWA), Minister for Fisheries and Wildlife and Bush Fires Board for approval. Following this the plan is published in its final form.

The draft management plan (DMP) for nature reserves in the Shire of Toodyay is sixth in the series and the third to adopt a regional approach. Although the region is administrative, rather than geographic, it does allow the placement of nature reserves in the spatial context of landform, soils, geology and vegetation. Most importantly, the nature reserves in the Shire of Toodyay are recognised in a regional context as an integral part of land use in the area.

DISTRIBUTION OF THE DRAFT PLANS

The prepublication draft for the Toodyay nature reserves was published in October 1983. It was released at a public meeting held in Toodyay on 2 November 1983. The public release received substantial media coverage, with articles appearing in both the Northam Advertiser and West Australian (App. I). Copies of the prepublication draft were distributed to the Toodyay Shire Council, local associations and organisations and reserve neighbours, giving them the opportunity to provide input prior to the publication of the formal draft. This first draft remained open for comments and submissions until the end of December 1984.

The draft, with a significant input from residents of Toodyay Shire, was published in May 1984. It remained open for submissions until mid-August 1984. This draft was distributed to two groups:

1. Standard Mailing List

This is a standard list held by the Department of Fisheries and Wildlife. It includes Commonwealth and State government organisations and conservation groups, plus naturalists and members of the public who have expressed a general interest in the management planning series.

2. Members of the local community

This is the group to whom copies of the prepublication draft were distributed, and includes members of the local community, reserve neighbours, the Toodyay Naturalists' Club, the Toodyay branch of the Primary Industry Association and the Toodyay Shire Council.

The distribution of a prepublication draft to the local community, and of the draft itself to a wider audience maximised opportunities for public comment, particularly for Shire residents. Such drafts encourage all concerned to become actively involved in the planning process.

A total of 80 copies of the prepublication draft were distributed to members of the local community. All submissions received on the prepublication draft came from within this group. About 210 copies of the draft plan were distributed. Of these 100 went to people or organisations on the Department's standard mailing list, 70 went to members of the local community and 40 went to people requesting copies, either by letter or phone.

Submissions to the prepublication draft were received from the following individuals and organisations (App. II):

Local Authority

Toodyay Shire Council

Local associations or organisations

The Primary Industry Association of Western Australia-Toodyay Branch
Toodyay Naturalists' Club

Reserve neighbours/members of the local community

Mr Jim Masters (pers. comm.)
Mr Wally Chitty
Mr Sydney Cook
Mr Malcolm Butterly (pers. comm.)

Submissions to the draft were received from the following individuals and organisations (App. III):

1. Standard mailing list

State government organisations

Forests Department
Bush Fires Board

Conservation groups

Conservation Council of Western Australia
West Australian Wildflower Society
W.A. National Parks and Reserves Association
(W.A.N.P.A.R.A.)

The Tree Society

Tertiary institutions

Dr Brian Collins (School of Biology, Western Australian
Institute of Technology)

2. Members of the local community

Local Authority

Toodyay Shire Council

Reserve neighbours/Shire residents

Hon. Margaret McAleer, M.L.C.

Ms Ray Paynter

Mr Hector Wood

Mr Wally Chitty

3. Other

Ms Betty Wellington (Western Australian Naturalists' Club)
(pers. comm.)

Mr Otto Mueller (Western Australian Naturalists' Club)

Mr P.L. Ridgway (Consulting Archaeologist)

Mr K. Griffiths (Western Australian Naturalists' Club)

ISSUES RAISED IN THE SUBMISSIONS AND AMENDMENTS TO THE DRAFT
PLANS

The tone of all submissions was favourable, indicating a strong positive response to the DMP. The following comment by the Forests Department provides a good example of the tone and sentiments expressed in many of the submissions:

"Thank you for the opportunity to comment on this publication. Appreciating the problems inherent in the concept and practice of preparing management plans I can only recommend your efforts in providing an excellent balance between the "readability", management guidelines and background information presented within your series of plans.

The draft for Management Plan No. 6 is a clear, well researched document, enthusiastically presented."

The following two comments, the first from the Toodyay Naturalists' Club and the second from W.A.N.P.A.R.A., are also typical of the strong positive tone:

"Members of this Club would like to compliment your Department on the compilation of the ... Management Plan. We feel it is certainly a positive step forward in the protection and preservation of the wildlife and habitats in our Shire.

We would especially like to congratulate the Department on the release of the Draft Document to interested local residents at a meeting in Toodyay. The opportunity to comment given to those affected by the Reserves, and the general interest generated indicated this was very well received."

"This Association congratulates your Department on the content and proposals of this draft management plan ..."

In the remainder of this document issues are treated under the headings and in the order they appear in the management plan. A final section of general considerations covers issues of a less specific nature.

The majority of submissions concerned Beelaring and Goonaring (Nos. 529 and 659) and Wongamine (No. 33697) Nature Reserves. Strategies for fire protection and control of public use were the main areas of concern.

1. INTRODUCTION

A. GENERAL INTRODUCTION

In their submission the Forests Department drew attention to the importance of including, in the introduction, "... a brief statement of the need for, and the basis of, the nature reserve system in Western Australia". Such a statement is important as it clarifies, to the local community and government departments alike, the rationale behind the existence of nature reserves. A brief statement will be included in the introduction to the final plan.

B. THE SHIRE OF TOODYAY

The W.A. Wildflower Society, W.A.N.P.A.R.A. and Forests Department all emphasised the importance of a regional overview in the achievement of successful planning for wildlife conservation. The W.A. Wildflower Society expressed a strong interest in the concept, as the following extract from their submission indicates.

"1. What is the level of duplication of habitats within and between reserves with respect to the possibilities of wildfire wiping out particular habitats?

2. Where only one or none of the original vegetation types is represented, are there reserves in neighbouring Shires which contain the community? e.g. Salmon gums, sand heath and Jarrah/Wandoo woodland.

3. Could the reserves in this Shire be examined in a regional context by describing the reserves

in each of Beard's vegetation types in the neighbouring Shires?

4. Are there further areas of natural bushland within the Toodyay Shire which are suitable for reservation?"

The Forests Department also alluded to the importance of a regional, or even State, overview.

"A table showing the area of each vegetation type in each reserve would provide an indication of their relative abundance within the Toodyay nature reserve system. This could be related to the relative abundance of vegetation types in other reserves in other Shires. Progressively, this approach will indicate the relative importance of each vegetation type in the nature reserve system throughout the State."

As part of this regional overview, the area of State Forest in the Shire of Toodyay as given by the Forests Department in their submission (28 300 ha), will be included in the final plan.

Both of the above submissions emphasise one of the most important functions of management planning - that of continuing review of the reserve system. One of the first steps in this process is the classification of nature reserves, via management plans, either as key sites† or wildlife refuges*. Then, as more information becomes available and planning horizons broaden, these early classifications can be reviewed.

The W.A. Wildflower Society also drew attention to the benefits of ... "land classification information e.g. what are the boundaries of the State Forest and are there any areas of Vacant Crown Land." Land classification will obviously become an increasingly important consideration as the management planning process develops further.

W.A.N.P.A.R.A. also emphasised the importance of regional planning for conservation and drew reference to the importance of road verges, farm planning, wildlife sanctuaries and sympathetic retention of bushland by farmers. The Department of Fisheries and Wildlife recognises the importance of all four considerations in any regional strategy for wildlife conservation.

†The key site concept is based on the recognition of representative areas of natural and semi-natural environments. Four types of key sites are recognised, these being ecosystem, species, wilderness and specified management.

*Nature reserves which are important reservoirs of plants and animals, but do not warrant designation as key sites, are recognised as wildlife refuges.

Vegetation

One minor point in this section required clarification. The W.A. Wildflower Society rightly suggested that the vegetation map given is based on the original vegetation (as extrapolated by Beard, 1979) rather than on the vegetation of today. The final plan will be amended accordingly.

2. BEELARING (NO. 529) AND GOONARING (NO. 659) NATURE RESERVES

A. THE RESERVES

The high degree of interest shown in these two "Springs" reserves has added further detail to the resource information. Some general considerations regarding reserve location and associated information are also included.

Physical Characteristics and Relationships

Mr Wally Chitty, a resident of the Shire of Toodyay, who has long been committed to the protection of the two Springs reserves, drew the attention of the Department to a second well on Goonaring Nature Reserve, to the south of the Perth-Toodyay Road. Fortunately, following suggestions by Mr Chitty, it was confirmed that the nature reserve did extend south of the road, ensuring that the well remained protected. Addition to this reserve of the closed section of the old Perth-Toodyay Road on the southern boundary, as suggested by Mr Chitty, would provide further protection for this southernmost well and its associated plants and animals. Discussions are underway with the Department of Lands and Surveys.

The W.A. Wildflower Society was generally concerned that clear descriptions of access routes to reserves and distances between the reserves and Toodyay should be given. Fortunately, this information introduces each reserve description. Concern was also expressed regarding the status of gazetted roads, which in reality might be non-existent. Again, this information is given in the management plan.

Fauna

Opportunistic collecting by members of the Department of Fisheries and Wildlife has added two skinks (Leiolopisma trilineata and Hemiergis initialis initialis) and the Barking Gecko (Phyllurus millii) to the reptile record for Goonaring Nature Reserve.

B. PLAN FOR MANAGEMENT

Submissions were received regarding the whole gamut of management concerns - fire protection, weed control,

rehabilitation, public use and research. Most of the submissions received were from interested members of the local community.

Fire Protection

Mr Hector Wood, a member of the Toodyay Springs Protection Committee and the Toodyay Branch of the Primary Industry Association, suggested that ...

"... some protective burning should be done every few years, in strips, to prevent any wildfires from completely burning out either reserve in one fire."

Mr Chitty advocated a similar approach.

Within the context of this plan protective burning is not visualised as being a viable management measure on either of the Springs reserves. The reasons for this are fivefold. First, to safely divide the reserve for protective burning would necessitate the construction of firebreaks at least 6 m wide. Not only would this increase the accessibility of the reserve, it would reduce the effective reserve area by 5-10%. Second, until adjacent areas regenerate, these two small areas provide the only refuge for kangaroos and many bird species. Third, burning decreases people's respect for an area, and this combined with greater accessibility, encourages rubbish dumping and timber removal. Fourth, the small size of the reserves reduces the likelihood of fire starting on the reserve from natural causes. Fifth, preventing the movement of vehicles onto the reserve, using the management measures advocated in the plan, will reduce to negligible levels, camping and picnicking fires on the reserve. This will result in a similar reduction in fire risk.

However, these prescriptions are only an interim measure, and management strategies will be redefined once Lot 194 (the area separating and to the north of Beelaring and Goonaring, and to the south of Morangup Hill) has been set aside for the conservation of flora and fauna, and vested in WAWA.

Weed Control

Mr Wood drew the attention of the Department to the invasion of kykuyu grass along parts of the southern boundary of Beelaring Nature Reserve. Discussions have been instigated with the Agriculture Protection Board, the constraint being minimisation of damage to the native vegetation.

Rehabilitation of the Natural Environment

From the submissions received two main areas of concern became apparent.

The first was increasing salinity on Beelaring Nature Reserve. Mr Chitty and Mr Wood drew the attention of the Department to the effect of saline seepage on the Flooded Gum (Eucalyptus rudis) woodland in the south-eastern corner. The flow of brackish water through this corner appears to be the result of clearing upslope (to the south of the reserve) and the location and alignment of Main Roads Department drains. Consultation is continuing between the Department of Fisheries and Wildlife and the Main Roads Department regarding a solution to this problem.

It was suggested that the degenerate Flooded Gums in the south-eastern corner of Beelaring would benefit from a hot fire. However, as the problem is one of increasing salinity, rather than senescence due to old age or the absence of fire, burning is ill-advised as it will only place further stress on this community.

The second area of concern was rehabilitation of the recently cleared Lot 194. The Toodyay Branch of the Primary Industry Association expressed the following views regarding this area:

"... 3. The disputed catchment area should become an extension to the reserves in joint management with the Toodyay Shire Council with frequent consultation with local interested bodies.

... 5. It is our considered opinion that if the whole of the watershed of these two reserves is not allowed to return as near as possible to its natural state the reserves will be destroyed by salinity."

This is in general agreement with ideas expressed by the Department of Fisheries and Wildlife.

Mr Otto Mueller (member of the W.A. Naturalists' Club) expressed concern regarding rehabilitation of the cleared area. At the moment these concerns are unnecessary, as the area appears to be regenerating rapidly. Although the shrub cover is sparse, much of it is up to half a metre tall, and some of the Marri (Eucalyptus calophylla) are a metre or more in height. Shrubs reappearing include Black Boys (Xanthorrhoea preissii), Couch Honeypot (Dryandra nivea), Prickly Moses (Acacia pulchella), Candle Hakea (Hakea ruscifolia), Adenanthos sp. and Leptospermum sp. Grasses, and occasionally sedges, occupy the ground layer.

Public Use

The main areas of concern were fencing, closing tracks and roads on the reserves, and limiting access to pedestrians.

First, a consideration of fencing. The Toodyay Branch of the Primary Industry Association suggested fencing of the southern boundary of Goonaring, excluding the swamp where vegetation provides a dense barrier making fencing unnecessary. Mr Chitty, similarly to the Department, felt that the vegetation along this boundary was sufficiently dense to make fencing unnecessary.

However, small sections of each reserve will be fenced, as part of management to guide public use. This limited amount of fencing will not restrict the movement of kangaroos to and from the fresh water springs on the reserves. This alleviates one of the concerns of the Toodyay Naturalists' Club, that complete perimeter fencing would reduce accessibility for native animals.

The second area of concern was tracks and roads on the reserves. Mr Chitty, Mr Wood and the Toodyay Naturalists' Club agreed that the road through the north-eastern corner of Goonaring Nature Reserve should be closed. Discussions are underway between the Department of Fisheries and Wildlife and the Toodyay Shire Council.

On both reserves all access tracks will be closed, and fences, gates and signs used to control public access. Mr Mueller agreed that ... "proper signing and fencing would ... be supportive".

The third area of concern, closely allied to fencing and closure of tracks, is the exclusion of vehicles from the reserves. Mr Chitty felt that public use of the two reserves should be minimal, and when fenced, entry gates should be locked. Although we agree that public use should remain of secondary importance to nature conservation, the reserves should remain accessible to vehicles carrying the disabled and reserve management vehicles. All other users will be encouraged by gates and signs to walk, rather than drive, onto the reserve. Mr Mueller was fully in favour of the proposed limited access classification, which restricts access to people on foot only.

Concern was expressed by Mr Chitty regarding water removal from Beelaring Nature Reserve. Fencing, gates and signs should limit this inappropriate use.

Research

Suggestions regarding monitoring of the regenerating area between the Springs reserves, particularly through the use of annual photographic records, were made by the Forests Department. Such a concept would be explored in detail in any future management plan for the combined area.

3. RUGGED HILLS NATURE RESERVE (NO. 21429)

A. THE RESERVE

Fauna

Opportunistic collecting by members of the Department of Fisheries and Wildlife have added the Bobtail (Tiliqua rugosa) and Burton's Snake-lizard (Lialis burtonis) to the reptile record for Rugged Hills Nature Reserve.

B. PLAN FOR MANAGEMENT

Rehabilitation of the Natural Environment

Concern was expressed by Mr Mueller that Rugged Hills Nature Reserve was "much modified" by grazing. Fortunately the reserve appears to have been little damaged by grazing, the only area used to any degree being the Wandoo woodland in the north-western corner. This formation has a naturally sparse understorey.

4. POISON GULLY NATURE RESERVE (NO. 19900)

A. THE RESERVE

Interesting information was added to the resource base by Mr Sydney Cook and the Toodyay Naturalists' Club.

History

Both Mr Cook and the Naturalists' Club added information to the prepublication draft, and this was included in the draft plan. In the initial stages of information collection some uncertainty had existed as to the timber species removed from Poison Gully. Mr Cook confirmed that Mallet had never been cut from the reserve. Good Wandoo, however, was taken to Oliver's Saw Mills in Northam, and the inferior trees were used by Industrial Extracts Ltd for their tannin, but this use was limited by competition from synthetics.

Mr Cook also explained that the reserve was named after the dense thickets of York Road Poison (Gastrolobium calycinum) that occurred in the area.

Fauna

Mr Cook, in his submission to the prepublication draft, reported a large Wedge-tailed Eagle's nest on the reserve, which has apparently been used for many years. This observation was included in the draft plan.

B. PLAN FOR MANAGEMENT

The main area of concern indicated in the submissions was fire protection.

Fire Protection and Fuel Accumulation

Mr Chitty expressed doubts about the lack of fuel accumulation on Poison Gully Nature Reserve, as suggested in the DMP. This reserve is dominated by Powderbark, Wandoo and Marri woodlands - the first two very commonly having minimal understorey development. Although the understorey may be occasionally dense it is generally patchily distributed, and as such presents a minimal fire hazard.

5. FLAT ROCK GULLY NATURE RESERVE (No. 22096)

PLAN FOR MANAGEMENT

No further information was added to the resource base, however, the issue of fire protection was raised in a submission from the Forests Department.

Fire Protection

The Forests Department emphasised the importance of inter-departmental liaison with respect to fire protection for Flat Rock Gully (which abuts Julimar State Forest). Existing fire management of this reserve provides a good example of successful liaison between the two departments - in particular correspondence and discussions regarding the proposed burning of the Julimar block which abuts the reserve.

6. BEWMALLING NATURE RESERVE (No. 30306)

THE RESERVE

History

Mr Malcolm Butterly drew the attention of the Department to a land exchange in April 1970 which resulted ultimately in the dedication of Bewmalling as a reserve for Flora. This information was included in the draft plan.

7. WATTENING NATURE RESERVE (NO. 2393)

A. THE RESERVE

Physical Characteristics and Relationships

The Toodyay Naturalists' Club, similarly to the Department of Fisheries and Wildlife, was concerned about the clarification, on the ground, of the boundaries of Wattening Nature Reserve. In response to requests from Fisheries and Wildlife, the Department of Lands and Surveys recently re-surveyed the reserve boundaries. Fencing, to formalise these boundaries, should follow.

B. PLAN FOR MANAGEMENT

The Toodyay Naturalists' Club expressed an interest in the management strategies for Wattening, in particular the research needs.

Research

The Club emphasised the importance of maintaining water quality to protect the conservation values of the reserve, and the need to "... study the quality and quantity of the water resource, its variability and origins." The Department of Fisheries and Wildlife is in complete agreement.

8. WONGAMINE NATURE RESERVE (NO. 33697)

A. THE RESERVE

Significant additions, through submissions to the draft plan, were made to the flora and fauna records for Wongamine Nature Reserve. The importance of existing research programs on the reserve was highlighted.

Flora

The W.A. Wildflower Society suggested that reference should be made to any rare plants on the Toodyay nature reserves. To date, Wongamine is the only nature reserve in the Shire on which rare plant species have been noted. Three rare and geographically restricted species occur on the reserve - Urocarpus grandiflorus, Wurmbea drummondii and Hibbertia montana.

Mr Kevin Griffiths of the W.A. Naturalists' Club, provided a list of 36 fungi species which occur in the Wandoo woodland on Wongamine Nature Reserve. This list has been added, as Appendix IX, to the final plan.

Fauna

Opportunistic collecting by Ms Betty Wellington, a member of the W.A. Naturalists' Club, has added three new species - the Black-headed Whip-snake (Denisonia gouldii), the Clawless Gecko (Crena dactylus ocellatus) and another gecko, Diplodactylus polyophthalmus - to the reptile record for Wongamine Nature Reserve.

Research

Intensive research has been undertaken, on Wongamine Nature Reserve, since 1976, by Dr Brian Collins and his colleagues from the School of Biology, W.A. Institute of Technology. This research has concentrated on the energetics and feeding strategies of honeyeaters. Dr Byron Lamont, from the same Institute, has also been involved in research on the reserve - investigating the ecology of Wandoo (Lamont, pers comm., 1984).

B. PLAN FOR MANAGEMENT

The main area of concern was fire protection, with submissions being received from the Bush Fires Board, the Toodyay Shire Council and Mr Mueller (member of the W.A. Naturalists' Club).

Fire Protection and Firebreaks

Both the Toodyay Shire Council and Bush Fires Board emphasised the importance of maintaining the standard of both the internal and perimeter firebreaks. The Council recommended that both north-south orientated internal firebreaks be maintained to the high standard of the westernmost one. The Board suggested that all internal breaks should "... be maintained to 4 m rather than the 3 m prescribed." The Department agrees with both suggestions.

Mr Mueller felt that undue emphasis was being placed on "the need to protect the assets of adjacent landholders". Throughout the plan it has been emphasised that management should "protect the assets of adjacent landholders and the nature conservation values of the reserve." The Department, as a landholder, is required to hold due regard for the life and property of other landholders. Hence the need for this dual management aim.

Concern was also expressed regarding prescribed burning on this reserve. This management strategy is only contemplated as a last resort in the case of fuel accumulating to such a level that it presents a threat to the integrity of the reserve, or poses a clearly definable threat to adjacent property. Ideally, since 25% of the reserve was burnt in 1980/81, it would be best to exclude fire from this reserve during the currency of this plan, or until more is known about its fire ecology and the range of responses to fire exhibited by the wildlife of the area.

9. GENERAL CONSIDERATIONS AND CONCLUSIONS

The W.A. Wildflower Society emphasised the importance of a section covering general management objectives and strategies. This highlights the importance of this final section in the plan.

The Toodyay Nature Reserves: Moondyne Nature Reserve

The Forests Department drew attention to the importance of integrated management, especially for fire control and access, for Moondyne Nature Reserve, the Avon Valley National Park and vacant Crown land on the western boundary of Moondyne. This suggestion emphasised the importance of the Avon Valley Fire Protection Plan which covers these three areas and is co-ordinated by the Bush Fires Board, and in which the Department of Fisheries and Wildlife is an active participant.

10. THE APPENDICES

Several minor and major changes will be made to the following appendices, in the light of the submissions received.

Appendix II

Mr Chitty drew the attention of the Department to further historical details regarding Beelaring Spring.

"The original Guildford-Newcastle Road passes the well which was enlarged, deepened and timbered during the 1930s to supply a timber mill with water..."

The plan will be amended accordingly.

The W.A. Wildflower Society expressed an interest in the close association between changing land use and the dedication of areas for conservation. Fortunately this appendix is based on this close association.

Appendix IV

Mr Jim Masters made a significant contribution to the draft plan by revising and updating the bird list, for the Shire of Toodyay, as given in the prepublication draft.

Appendix VI

Mr Greg Keighery of the Department of Fisheries and Wildlife, in a recent survey of Wongamine Nature Reserve, added approximately 150 plant species to the flora list. These additions are obviously an important amendment to the final plan. Dr Brian Collins (W.A. Institute of

Technology) added four species to the revised flora list.

Initially the Department felt that flora lists based on scientific names only, as given in the prepublication draft and draft plans, would be adequate. However, comments received indicate that their value would be greatly enhanced by the inclusion of common names, where available (Forests Department submission).

11. GENERAL CONSIDERATIONS

A number of submissions dealt with general issues and problems of management. These ranged from comments on nature reserve size, to fire protection, to monitoring, to the value of nature reserve guides.

Nature Reserve Size and Nature Conservation Values

Mr Mueller expressed concern regarding the small size of most reserves, commenting that "their areas run counter to any established theory on viable ecosystems". While the Department agrees with the philosophy that underlies these concerns, such areas are important as they contain representative samples of habitats once widespread across the Toodyay Shire. Also, these small reserves provide important habitats for birds, reptiles, frogs and invertebrates.

Mueller also expressed concern about the low level of documentation for many nature reserves. However, one of the main problems which faces nature conservation is not the low level of documentation, but the lack of available land. This problem is particularly acute in terms of the nature reserve system which seeks to conserve representative habitats throughout the State. Fortunately, because of this criterion, there is not a pressing need to "prove" the values of an area in every respect, via detailed documentation. It is often sufficient that it is representative of a particular habitat type.

Mr P.L. Ridgway, in his submission, emphasised the importance of protecting other values (in addition to wildlife conservation values), such as Aboriginal sites and historic relics. This is obviously an important management consideration.

Linking Corridors of Vegetation

W.A.N.P.A.R.A. and Mr Mueller drew the attention of the Department to the need for linking corridors of vegetation
....

"The only way that many animals can move from one area of natural vegetation to another is through road and railway corridors."

(W.A.N.P.A.R.A.)

Such corridors are vitally important for the movement of fauna. The Department of Fisheries and Wildlife has an active policy of encouraging the retention of native vegetation on road verges. Also, the Main Roads Department is becoming increasingly aware of the values, to wildlife conservation, of these areas.

Fire Protection

The Bush Fires Board was in general agreement with the strategies detailed in the draft plan

"The Board is in agreement with the general concept of fire control in the Plan based on provision and maintenance of firebreaks with fuel reduction by prescribed burning should this be found to be necessary."

However, concern was expressed by the Bush Fires Board that ...

"...the avenue for review of the adequacy of fire protection measures is between adjacent landholders and the Director. The Board believes that the review function should be widened to include the Toodyay Shire Council who are the body having overall fire protection responsibility for the area."

Unfortunately it was implicit rather than explicit that "adjacent landholders" included the Shire Council. Therefore in the final plan it will be made clear that the opportunity for review will be available to both reserve neighbours and the Toodyay Shire Council.

As liaison with other government departments is an important facet of plan development, it is heartening to note that this plan will be "... a most important element (in) ... a detailed District Fire Protection Plan for the whole Shire"... to be produced in about 18 months time.

Monitoring

The W.A. Wildflower Society reinforced the importance of ongoing monitoring, as mentioned in the management plan, and suggested that reserve neighbours could become successfully involved.

Public Involvement in Planning

Submissions emphasised the importance not only of general public involvement in planning, but also the importance of involving the local community and reserve neighbours.

The Department's belief that successful planning and management is highly dependent on active public involvement was reinforced by the following comment from W.A.N.P.A.R.A.:

"The Association believes that a conservation approach would have a good chance of succeeding within the Shire of Toodyay, because -

- . the Shire Council appears to have a supportive attitude towards wildlife conservation, or certainly, an open mind on the matter;

- . the district contains an active and responsible conservation group, the Toodyay Naturalists' Club; and

- . respected members of the community, such as Messrs Masters and Chitty, actively promote wildlife conservation with landholders."

Mr Mueller reinforced these comments by emphasising that management "... of these small wheatbelt reserves could only be successful if it was based on local community involvement". The Department of Fisheries and Wildlife, is in complete agreeance.

The nature reserve system within the Shire of Toodyay is fortunate as the local community, including reserve neighbours, places high importance on the protection of the conservation values of "their" reserves. In several cases reserve neighbours have been instrumental in setting aside an area adjacent to their property as a nature reserve. And, over the years, they have continued to protect it.

Nature Reserve Guides

The recent publication of a guide to Moondyne Nature Reserve, following and complementing the production the Moondyne Nature Reserve Management Plan, was greeted with enthusiasm ...

"This style of "popular" booklet will promote public interest in the conservation value of a site, encourage visitation and help the visitor gain a greater appreciation and enjoyment from the visit. Some of these visitors are also likely to become supporters of management efforts. At the local level, such publications are likely to arouse a local interest in an area that was otherwise little known or appreciated, and foster local pride and support.

The publication of similar guides following the approval of management plans should be considered as a standard procedure, where resources permit. In the case of the other reserves in the Toodyay Shire, it might be possible to commission the Toodyay Naturalists' Club (for example) to break the back of this task; it would be a logical extension of the Club's own booklet on the natural history of the

Toodyay Shire."

(W.A.N.P.A.R.A.)

Such suggestions completely concur with future publication proposals within the Department.

APPENDIX I : PRESS CLIPPINGS

Dept calls on public in draft land plan

THE Department of Fisheries and Wildlife took a big step forward in public participation last night when it made the first release of its draft management plan for the Toodyay shire.

The release was made at a meeting of local residents.

The meeting, which was opened by the Minister, Mr Evans, underlined the importance of co-operation with local land owners in conserving the flora and fauna.

Advance copies of the 160-page plan were available to those at the meeting.

Copies will be generally available to the public in February.

The draft management plan was drawn up by the Wildlife Research Centre at Wanneroo as part of a continuing programme for managing WA's nature reserves.

After public comments have been assessed it will be revised before release in its final form.

Range

It covers eight nature reserves within the shire, ranging from 40 hectares at Beelaring to 386 hectares at Flat Rock Gully. A management plan for the shire's biggest reserve, 1991 hectares at Moondyne, is already in operation.

All reserves contain

wilderness or other specified management representative examples of flora and fauna over a range of rainfall and soil zones.

The plan gives two options. One defines the reserves as key sets of management sites or wildlife refuges and the second gives access classification.

Key sites are determined according to their importance in ecosystem, species, wilderness or other specified management purposes.

The plan defines wildlife refuges as reserves that are important plant and animal habitats but do not qualify as key sites.

Species

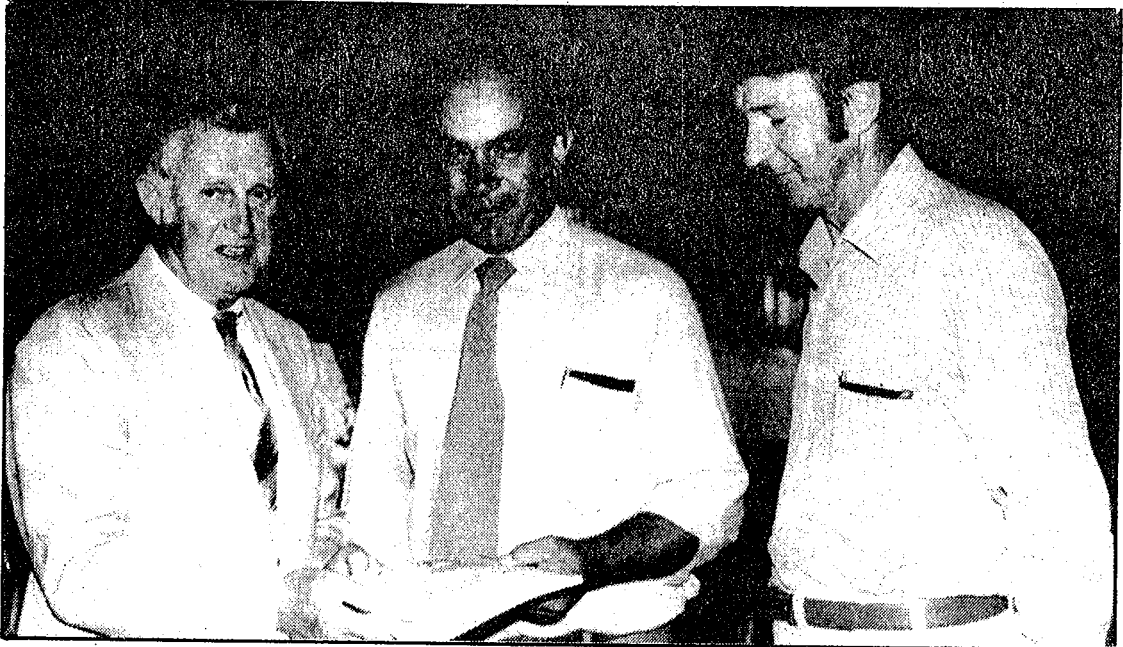
They could contain plant species poorly represented in other WA nature reserves or complement bigger gene pools held in other reserved crown land.

They could also provide breeding sites for birds and tree-dwelling marsupials, food sources for migratory and nomadic birds or refuges for wallabies and kangaroos.

The plan stressed that reserves management in WA aimed at maintaining and enhancing conservation values.

This strategy is being applied to the Toodyay shire and includes fire protection, research and provision for public use.

In all cases, however, public use will take second place to nature conservation.



Fisheries and Wildlife Minister Mr Evans with Toodyay Shire President Geoff Ludemann and Deputy President John Dival at the public presentation of the Management Plan for Reserves in the Toodyay Shire Council.

Parks plan launched

THE Fisheries and Wildlife Minister, Mr Evans MLA, launched the pre-publication management plans for nature reserves in the Shire of Toodyay at a function in the Town Hall on November 2.

The minister said that the Toodyay plan was the sixth management plan prepared by his Department but was unique in that it dealt with all reserves in the Shire rather than a particular reserve.

He said that the State of WA has 1070 nature reserves with 900 in the SW land division. These reserves provided reassurance that populations of plants and animals would survive.

It was essential that the

reserves be maintained and that they were managed well.

The public function was held so that the entire community of Toodyay could have access to the pre-publication document and be able to make an input prior to final publication.

Mr Geoff Ludemann, president of the Toodyay Shire Council, welcomed the minister and other

guests to the function. Guests included A. V. Crane MLA, M. Macaleer MLC, Tom McNeil MLC, Mr B. Bowen, director of the Department of Fisheries and Wildlife, and Dr Burbridge, chief researcher officer with the Department.

Department officer Ian Crook presented a series of slides depicting the flora and fauna of the Toodyay Reserves.

APPENDIX II : SUBMISSIONS TO THE PREPUBLICATION DRAFT



Toodyay Shire Council

All communications to be addressed to the Shire Clerk.

Telephone 096-262258 . 262237

Post Office Box 96

Our Ref DS:RMLS R1.14

Your Ref

Council Chambers,
Fiennes Street
TOODYAY, W.A. 6566

11th January, 1984

Department of Fisheries
& Wildlife
108 Adelaide Terrace
PERTH W.A. 6000

ATTENTION: MR I. CROOK

Dear Sir,

As the result of Council's Fire Advisory Committee meeting held in December 1983 which considered aspects of your Departments Management Plan for Reserves within our Shire, Council wishes to make the following recommendations.

"That the track shown in red on the enclosed map be upgraded to the same standard firebreak as that shown in green."

Enclosed is a copy of Council's Road Verge By-Laws as discussed.

Yours faithfully,

K. C. Williams

K.C. WILLIAMS,
SHIRE CLERK.

K. D. [Signature]

Encl

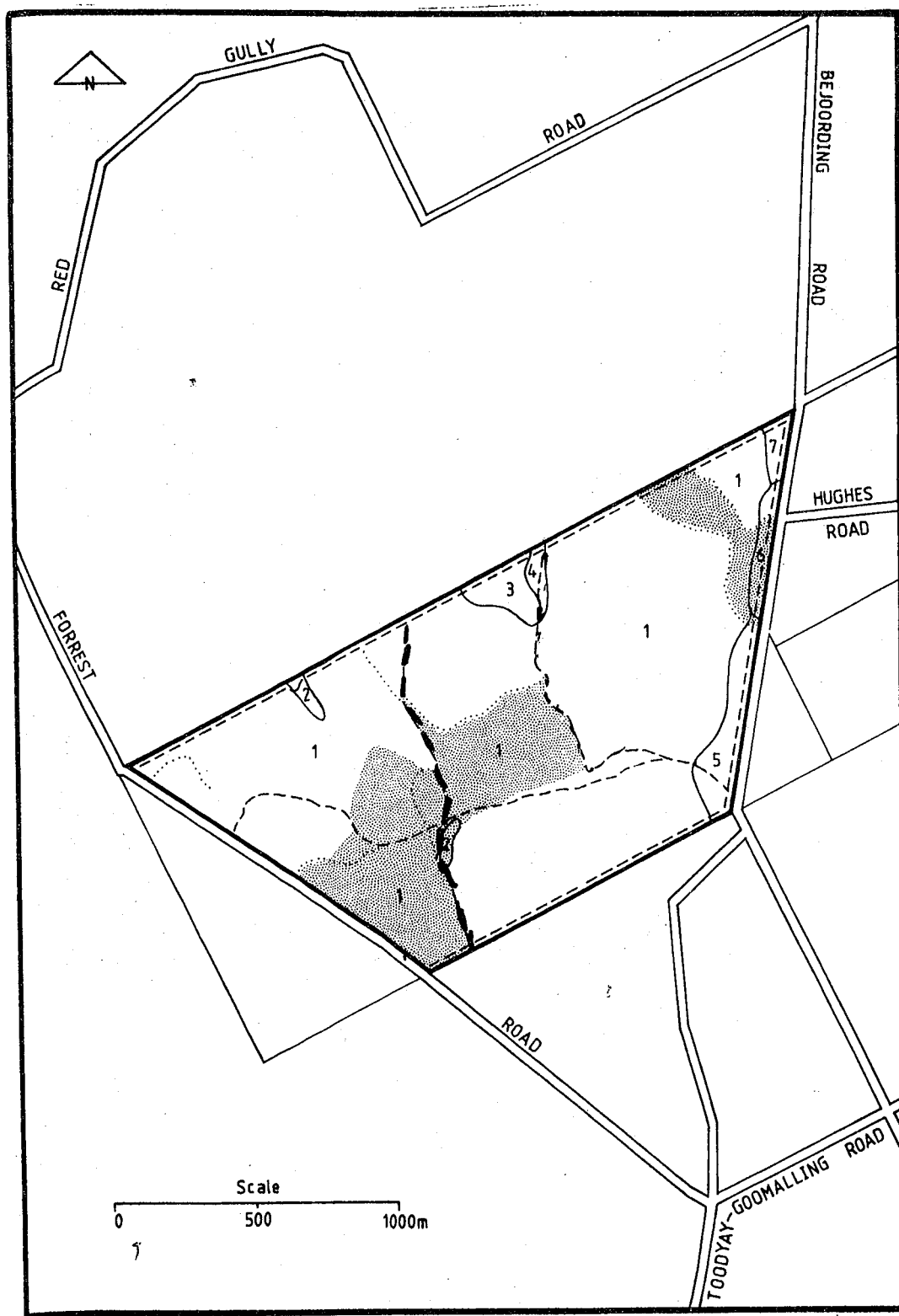


Figure 19. Wongamine Nature Reserve showing its relationship with surrounding lands, firebreaks and tracks (dashed lines) and vegetation formations (identified by numbers, and described in the associated text).

LOCAL GOVERNMENT ACT 1960-1982

The Municipality of the Shire of Toodyay.

By -laws Relating to Road Reserves

IN pursuance of the powers conferred upon it by the abovementioned Act and of all other powers enabling it, the Toodyay Shire Council hereby records having resolved on 21 June 1982, to make and submit for confirmation of the Governor, the following by-laws:-

1. These by-laws may be cited as the "Shire of Toodyay Road Reserves By-laws".
2. In these by-laws unless the context otherwise requires:-
 - (a) The "Act" means the Local Government Act 1960-1982.
 - (b) "Carriageway" has the same meaning as "Carriageway" in the Road Traffic Code provided in the Road Traffic Act 1974.
 - (c) "Carriageway boundary" means the boundary of the road carriageway on land vested in Council as a street under the Act.
 - (d) "Council" means the Municipality of the Shire of Toodyay and shall include its duly authorised officers.
 - (e) "Damage" in relation to any plant or structure means to cut up, disfigure, deface, interfere with or destroy.
 - (f) "District" means the District of the Shire of Toodyay.
 - (g) "Permission" means the permission of the Council first obtained and expressed in writing.
 - (h) "Pick" means to pluck, pull up, dig up, or remove.
 - (i) "Plant" includes any tree, sapling shrub, fern, grass, creeper, vine, palm and any part or parts thereof.
 - (j) "Property Line" means the boundary between the land comprising a road reserve and abutting land.
 - (k) "Road verge" means that land comprising a street under Council's care, control and management, including all vegetation cover thereon but excluding any authorised carriageway.
 - (l) "Road reserve" means that land comprising a street under Council's care, control and management, including the road verge and any authorised carriageway.
 - (m) "Structure" includes any improvement, work, fitting, or installation.
 - (n) "Vegetation Cover" means all plants on the road reserve whether living or dead.
3. For the purposes of these by-laws the road verge within the district shall be of three classes-
 - (a) Without substantial vegetation cover.
 - (b) With substantial vegetation cover.
 - (c) Special Areas.

"Without substantial vegetation cover" means those parts of the road verge which in the opinion of the Council do not have a substantial amount of vegetation cover.

"With substantial vegetation cover" means those parts of the road verge which have in the opinion of Council a substantial proportion of vegetation cover.

"Special Areas" means those parts of the road verge on each side and within fifty (50) metres of any parking facility, bridge or building (whether or not situate upon the road verge) and designated as such and shown on the map referred to in By-law 4 herein.

4. The Council shall keep at its offices a map clearly displaying the distribution of the three classes of road verge within the district, dated and signed by the President of the Council.
5. No person shall without authority damage or remove any structure situated upon or attached to the road reserve.
6. No person shall without authority-
 - (a) Pick or damage any plant growing on, or
 - (b) Break up, damage, or disfigure, the surface of a road reserve.
7. Any person who without the written permission of the Council-
 - (a) Cuts or removes any dead wood or
 - (b) Removes any stone, gravel or earth, in upon or from a road verge, commits an offence.
8. Subject to By-law 9 no person shall light any fire upon, set fire to or wilfully permit or suffer a fire to encroach upon the road reserve.
9.
 - (a) A person being an occupier of lands adjoining the road reserve may make an application to the Council for a permit to burn-off on part of the road verge adjoining those lands.
 - (b) A person seeking such a permit shall submit to the Council an application in writing together with a sketch plan clearly displaying the extent of those lands occupied by him, the road reserve adjoining those lands and that part of those parts of the road verge for which the permit is sought.
 - (c) The Council may issue a permit under this by-law subject to such conditions as it thinks fit for the protection of plants growing upon the road reserve and for the safety of the public during burning-off operations.
 - (d) No permit shall be issued to any person to burn-off on any part or parts of the road verge indicated on the sketch plan submitted, the total of which in proportion to the total adjoining road verge shown thereon:
 - (i) is greater than one third of that total where the road verge is without substantial vegetation cover.
 - (ii) is greater than one quarter of that total where the road verge has substantial vegetation cover.

9. (e) Where a person has obtained a permit to burn a part or parts of the road verge no permit shall issue for that same part or any of those same parts of the road verge:
- (i) during the next succeeding three (3) years where the road verge is without substantial vegetation cover:
 - (ii) during the next succeeding eight (8) years where the road verge has substantial vegetation cover.

And no permit shall issue in any year to any person for any part of the road verge shown on the sketch plan which is directly opposite any other part of the road verge for which a permit is sought by that person or has issued to that or any other person in that year.

- (f) No permit shall issue for the period commencing on the 31st day of August and ending on the 1st day of May in the next succeeding year.

10. (a) A person may apply to the Council for a permit to clear or maintain in a cleared state the surface of any land on the road verge that is:
- (i) within an area one (1) metre immediately abutting that person's property line: or
 - (ii) a special area.
- (b) All applications for permits under subclause (a) herein shall be in writing and accompanied by a sketch plan clearly displaying the extent of the land occupied by him, the road reserve adjoining his land, that part of the road verge for which the permit is sought, and the method to be used for clearing the said area.
- (c) A permit issued pursuant to subclause (a) herein shall not be subject to the provisions of By-law 9 (d) and 9 (e) of these By-laws.
11. (a) The Council may issue a permit under By-law 9 or 10 hereof upon and subject to such conditions for the protection of plants growing on the road verge as it sees fit to impose and a person who interferes with the road reserve otherwise than in compliance with those conditions commits an offence.
- (b) The holder of any such permit must carry the permit with him at all times whilst engaged in any activity authorised by the permit.
12. Any person who contravenes and fails to comply with the requirements of these by-laws commits an offence and shall be liable to a maximum penalty of two hundred dollars (\$200) and also a daily penalty of ten dollars (\$10.00) per day for any continuance of the offences.
13. In any prosecution under these by-laws where it is necessary to prove the existence of a street or the alignment width or location of a street the provisions of section 656 of the Act shall apply.

Dated this 2nd day of September, 1983.

The Common Seal of Shire of Toodyay was
hereunto affixed in the presence of:-

G.L. LUDEMANN,
President.

B.F. HARRIS,
Shire Clerk.

Recommended

JEFF CARR,
Minister for Local Government.

Approved by His Excellency the Governor in Executive Council this 22nd day of
November, 1983

G. PEARCE,
Clerk of the Council.

**The Primary Industry Association
of Western Australia (Inc.)**

President

Phone

Secretary *F. L. LEAVER*

Phone

096 262486

Goodyear

Branch or ~~Zone~~

Address *Box 18*

Date *22-12-83.*

*The Director,
Dept of Fisheries & Wildlife
Adelaide Terrace
Perth*

Dear Sir,

*In response to your request for comments
on reserves within the Goodyear Shire, this branch
tenders the enclosed submission, in regard to
the Goonaring and Beelaring Spring Reserves,
located on the Red Hill Road.*

*Yours faithfully
F. L. Leaver
Hon Sec*

GOONARING AND BEELARING SPRINGS RESERVES
MANAGEMENT PROPOSALS

After inspection of the reserves it is felt that the fuel reduction measures mentioned in the report are not applicable, especially in the case of the Beelaring Reserve which is in a very dirty state particularly near the Toodyay Road, and does not appear to have been burnt for fifteen years or more and would lead to a very extreme fire in the summer months. We therefore make the following proposal.

1. Protection from fire.

Some autumn protective burning should be done every few years, in strips, to prevent any wildfires from completely burning out either reserve in one fire. Such a fire would kill out the wildlife completely from the small reserve which is surrounded by cleared land which means very little chance of re-stocking from outside. Vehicles should be excluded. All road entrances should be blocked or fenced and locked. The old road tracks inside the reserves should be left as they are to help protective burning or wildfire fighting. Out of season protective strip burning could be done along some of these tracks instead of bulldozing firebreaks.

2. Public use of reserves.

Use of Goonaring and Beelaring Springs by the public should not be encouraged at this point of time. However, the Access Classification as defined in the report is endorsed by us providing the words 'by appointment' or 'under supervision' are added.

Fencing. Goonaring's road frontage should be fenced except the dense swamp area. To attempt to fence swamp road frontage would be costly and environmentally damaging.

Beelaring should have roads closed and the salt affected east end should have a drain dug to drain salt water from fresh water swamp, i.e. a drain along the road verge.

3. The disputed catchment area should become an extension to the reserves in joint management with the Toodyay Shire Council with frequent consultation with local interested bodies.

4. The area between the Old and present Toodyay Road at the Goonaring Spring reserve be left in its natural state. Should any widening of the road be found necessary in this area consideration be given to dividing the road at this point to preserve this area of the original reserve.

5. It is our considered opinion that if the whole of the watershed to these two reserves is not allowed to return as near as possible to its natural state the reserves will be destroyed by salinity.

6. An honorary warden should be sought to advise the Department of Fisheries and Wildlife of any misuse of the reserves should it occur.

7. The making of the area worthy of Key Site ecosystem management is most desirable.

Toodyay Naturalists' Club

Box 67
P.O., Toodyay.
6566.

28/12/83

The Director,
Department of Fisheries and Wildlife,
108 Adelaide Tce.,
PERTH. 6000
W.A.

Dear Sir,

Re Draft Management Plan Nature Reserves of the
Toodyay Shire.

Members of this Club would like to compliment your Department on the compilation of the above Management Plan. We feel it is certainly a positive step forward in the protection and preservation of the wildlife and habitats in our Shire.

We would especially like to congratulate the Department on the release of the Draft Document to interested local residents at a meeting in Toodyay. The opportunity to comment given to those affected by the Reserves, and the general interest generated indicated this was very well received.

Enclosed please find some particular comments on some aspects of the Management Plan. In general our members agree with the basic philosophy and approach when dealing with all reserves. The suggestions that are enclosed refer to particular reserves.

We would like to recommend that consideration be given to placing more ranger staff in the region. It is felt that the present ranger has too big an area and too many diverse duties to adequately supervise and protect areas within his region.

Members of the Toodyay Naturalists Club who contributed to much of the data in the Appendix of "Nature Reserves of the Toodyay Shire" would like to feel that the Plan is only the start. We hope that further research on all reserves will be undertaken. Our members are most willing to assist and would appreciate feed back from your research officers concerning findings in the area.

Yours faithfully,


P.I. Masters
Secretary

Toodyay Naturalists' Club

Box 67
P.O., Toodyay.
6566.

28/12/83

COMMENTS on DRAFT MANAGEMENT PLAN NATURE RESERVES OF THE TOODYAY SHIRE.

- A. TABLE I p 21 : It is felt it would be appropriate if the area of reserved land in the Shire and the area of land under control of the Department of Fisheries and Wildlife could be added to this Table. This would offer a meaningful comparison to readers.
- B. GOONARING AND BEELARING RESERVES
ROADS: see p 42 . Our members make strong recommendations to have the road through the north east corner of Goonaring closed. It is felt the reserve is suffering from intrusion along this road and is too small an area to take such continuing abuse. We would recommend immediate consultation with the Toodyay Shire Council before land purchasers become used to using the ungazetted route.
FENCING: It is recognised that fencing the reserves will help to discourage casual misuse. However, concern has been expressed that access to animals outside the reserve to water within the reserve will be made more difficult if fencing takes place. It is suggested that fencing of the north boundaries of both reserves should be delayed pending future vesting of the land between the reserves.
- C. POISON GULLY RESERVE See p 54 Part 2 HISTORY par 2.
This should read.
" The reserve was subsequently cut over by Industrial Extracts Ltd to exploit the stands of Wandoo for their tannin, but this was limited by competition from synthetics." i.e. delete references to Black Wattle, Brown Mallet and South Africa.
- D. WATTENING NATURE RESERVE p 81
This reserve appears to be the most poorly defined on the ground. We would like to request that priority be given to defining clearly its boundaries and sign posting the area.
The management plan makes no mention of the protection of the quality and quantity of water that is a key part of the reserve's importance.
We would Suggest that under research p 91 a section be included for the study of the quality and quantity of the water resource, its variability and origins.

...../2

E. WONGAMINE RESERVE p 92

Members of this Club endorse limited access to this and all other reserves.

We would like to suggest that the Management Plan include the possibility of the area of this reserve being extended by purchase of the adjacent virgin land, now privately owned, on the northern boundary. The inclusion of this land, if such is possible in the future, would add to the viability and importance of the reserve.

Bees: Could encouragement be given to the beekeeper whose site is located on the S.W. end of the reserve to re locate on adjacent private or Shire land.

END

P. Master
Secretary

Phone 096

262257

PO Box 71

Toodyay 6566

27-12-1983

The Department of Fisheries & Wildlife

The Director

Dear Sir

Re nature reserves management
plan proposals for Toodyay Shire area.

My major comments will be on "goonaring" and
"Belaring" Springs reserves, because my knowledge
of the area goes back over fifty years.

1 Protection from fire. The two reserves should be
divided into several (about four) sections. Burning
one section every few years to make sure that the
reserves do not get completely burned out in any
one wildfire. Because wildlife have no joining
area of permanent bushland to draw new stock

Any interior firebreaks need not be wide if a strip
either side was burned out of season, about twenty
meters wide would give a reasonably safe line to
burn from in late autumn. That time of year being
the safest time for neighbors pasture. Some of
interior old roads could help this and need not
be revegetated. 3 The amount of rubbish dumped
in the reserves at present does not warrant any
removal expense. 4 Public use. The reserves are
close to Perth, joining a major road and need to

have public use cut to a minimum. When fenced, entry gates should be locked. With public entry by appointment only. Duplicate keys should be available to Toodyay Shire Council for their ranger and probably also for a wildlife officer or caretaker. 5. Fire. Fuel reduction measures are very necessary at Belering Spring. Contrary to your comment, part of Belering reserve has not been burned since before it was vested in WA wildlife authority in 1970. The three metre wide firebreaks are of little use to stop a hot forest or swamp fire, so the autumn strip burning is an extra safeguard.

The firefighting units from Wanneroo are of no use except for organized burns. The distance is too far. For your information Belering has been spelt with one E until very recently. The original Guildford-Newcastle road passes the well which was enlarged, deepened and timbered during the 1930's to supply a timber mill with water, after a few years the mill got burned down. Your map of Goonaring reserve did not show any reserve on south side of the new main road.

That is the main swamp area and well of excellent water at the present time. Does the reserve go west to original boundary or only as

Black Swamp place, road.?

Fencing. I do not feel it is necessary to fence the main swamp road frontage because this would be costly and prone to excess heat from fires and would have an adverse effect on the swamps and their appearance.

There has been a noticeable decline in some wildflower species of the area recently and this will surely get worse. So conservation must be put above public use from this time onwards.

If you carry out your fire control proposal for Poison Gully reserve you are surely setting up the wildlife of the reserve for certain destruction. from page 59 I quote. This plan therefore provides for the minimisation of fire occurrence, and advocates the exclusion of fire from the reserve. End quote.

The longer you leave the whole reserve unburned the bigger the danger to wildlife.

I was surprised at the poor quality of your colour slides at recent meeting. That is the lack of quality of wildflowers in Goonaring and Belaring areas.

The much disputed catchment area is apparently to be soon transferred to the Toodyay Shire Council and there is some doubts about

its final vesting. At electors (ratepayers) AGM on 18-12-1983 the president, Mr Ludemann said there was a proposal for it to become a public recreational area and returned to the crown. I spoke against it stating that Belaring and Loonaring are for conservation of flora and fauna, and could not survive as such if surrounded by a public recreational area.

I feel it is essential that the system of proposal for the area to be kept in its natural state is carried out. It should be an extension of the reserves and put under the W.A. wildlife authority, and declared a class to protect it for posterity. The particular area is one of the best wildflower areas of the state and carries a good number of birds all the year. I therefore appeal to you to approach the Toodyay shire council to see if the above proposal can be accomplished. The next shire meeting is on Monday 16 Jan. There has been times when I feel your Dept should have put a higher priority on protecting these important national assets.

yours faithfully
Wally Chitty

P.O. Box 91,
TOODYAY.....6566.

The Research Officer,
W.A. Wildlife Research Centre,
P.O. Box 51,
WANNEROO.....W.A. 6065.

Dear Sir,

RE: Pre-publication Copy of the "Nature Reserves
of the Shire of Toodyay."

The authors of the above publication, - Moore, Williams, Crook and Chatfield, have been thorough in their research in to the Reserves in the Toodyay Shire. I can only give praise to the management plans set out in the proposed publication.

However, since the publication will become a History of the Reserves, i would like to point out a minor inaccuracy in Part 4 - Poison Gully Reserve.

Part A-2 - History, "The Reserve was subsequently cut over by Industrial Extracts Ltd. to exploit stands of Brown Mallet". I have checked with Mr. Ray Chrimes, Clackline Road, Toodyay, who cut and carted the timber, and he confirmed my belief that no Mallet was ever cut from the reserve. To be correct, the good trees (Wandoo) were taken to Olivers Saw Mill then operating in Northam, and the inferior trees to the Extracts.

It would also have read more favourably to us if the reason Cooks Pastoral Co. applied for the release of the land had been mentioned. The early application was prompted by the fear that the Reserve would be allocated to someone who would clear the area. Salt encroachment was the main concern as a bore within 150 metres of the boundary produced water not even suitable for stock. The property depends entirely on this gully as a source of water and the Reserve plays a big part in keeping the water table stable.. It is for this reason we were pleased when the land was set aside as Reserve for Conservation of Flora and therefore remain uncleared.

In Part A-3, Soils & Vegetation, I found it strange to find that York Road Poison (*Gastrolobium Calycinum*) was not mentioned since the Poison Gully was so named because of the dense thickets of York Road Poison. This prompted me to inspect vegetation formation 1 & 2, Figure 10, once quite thickly covered with poison. I was surprised to find that it is now quite scarce and the older plants appear to have had the branches stripped of foliage and are struggling to survive. Is it possible that kangaroos, breeding freely on the adjacent farm pastures, are responsible, given their large numbers (24 or more in a mob) and their natural craving for green pickings during summer months?

Further to the research into the Reserve's faunistic value, I have recently identified a very large Wedge-tailed Eagle's nest, which has apparently been used for many years.

I hope that these further points identified may be of use in completing the Final Draft of the publication. I assure you of my co-operation in the future management of the Reserve.

Yours faithfully,

Sydney Cook

APPENDIX III : SUBMISSIONS TO THE DRAFT PLAN

FORESTS DEPARTMENT

60 HAYMAN ROAD, COMO, WESTERN AUSTRALIA
PO BOX 104, COMO, 6162. TELEPHONE (09) 367 6333

Address all correspondence: Conservator of Forests
Your ref:

Our ref:
Enquiries:



571/82 ERH:BM
Dr Hopkins

Director

DEPARTMENT OF FISHERIES AND WILDLIFE

Thank you for the opportunity to comment on this publication. Appreciating the problems inherent in the concept and practice of preparing management plans I can only recommend your efforts in providing an excellent balance between the "readability", management guidelines and background information presented within your series of plans.

The draft for Management Plan No. 6 is a clear, well researched document, enthusiastically presented. Particular comments arising from considerations within this Department are as follows:

1. It could be useful to the general public to include near the introduction a brief statement on the need for and the basis of, the nature reserve system in Western Australia. A listing of plans already completed would be of value.
2. A listing of common names of plant species should be included in the appendices; as is provided for fauna species.
3. A table showing the area of each vegetation type in each reserve would provide an indication of their relative abundance within the Toodyay nature reserve system. This could be related to the relative abundance of vegetation types in other reserves in other shires. Progressively, this approach will indicate the relative importance of each vegetation type in the nature reserve system throughout the State.
4. Table 1 would be improved if the component areas by tenure and crops are seen to equal the total area of the Toodyay Shire.
5. On page 20, paragraph 5, it would be helpful to indicate that the area of State forest in Toodyay Shire is 28 300 hectares.
6. An annual photographic record of regeneration on the cleared area between Goonaring and Beelaring reserves could be of value and related to the effect on the water of springs in the two reserves (pages 31, 32 of the management plan refer).

2.

7. The management of Moondyne nature reserve, especially for fire control and access, needs to be integrated with the Avon Valley National Park on its south eastern border, and the vacant Crown land on its western border.
8. I can see potential fire protection problems from both the prevention and suppression aspects in the small nature reserves, and also in Flat Rock gully reserve, which is adjacent to Julimar State Forest. It is desirable for the relevant staff in our two organisations to discuss these matters.



ASSISTANT CONSERVATOR OF FORESTS /*pe*

August 13, 1984



ALBERT HOUSE, 10 VICTORIA AVENUE,
PERTH, W.A. 6000. Telephone 325 8588 Area Code 09

1396P
Robley

The Director
Department of Fisheries and Wildlife
108 Adelaide Terrace
PERTH C.D.O.

ATTENTION: Ms S. Moore

DRAFT RESERVE MANAGEMENT PLAN NO. 6
NATURE RESERVES OF THE SHIRE OF TOODYAY

I must apologise for the lateness of this comment by the Bush Fires Board.

The Board is in agreement with the general concept of fire control in the Plan based on provision and maintenance of firebreaks with fuel reduction by prescribed burning should this be found to be necessary.

It is noted that the avenue for review of the adequacy of fire protection measures is between adjacent landholders and the Director. The Board believes that the review function should be widened to include the Toodyay Shire Council who are the body having overall fire protection responsibility for the area.

In general, the Board has received comment that maintenance of firebreaks on Nature Reserves in the Shire leaves much to be desired, unfortunately I cannot provide you with more details at this stage.

In the Wongamine Reserve the Board recommends that all internal access breaks as indicated on the plan at Fig. 11 page 93 be maintained to 4 m rather than the 3 m prescribed.

The Board believes that the improved access provided by the extra 1 metre will be most valuable. An access track constructed during the 1980 fires and which it is proposed to maintain is already 4 m wide.

The Bush Fires Board anticipates that there will be a detailed District Fire Protection Plan for the whole Shire in about 18 months time and the Plan for Nature Reserves will be a most important element.


DIRECTOR

29 August 1984

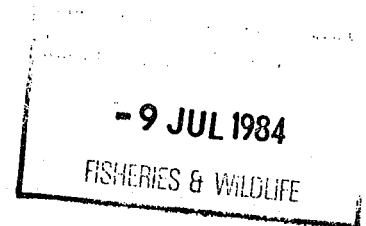
JAWR:DC



CONSERVATION COUNCIL OF WESTERN AUSTRALIA INC.

794 Hay St, Perth W.A. 6000
Telephone: 3214507

The Hon. H.D. Evans
Minister for Fisheries & Wildlife
Grain Pool Building
172 St. George's Terrace
Perth, W.A. 6000



Dear Mr. Evans,

RE: TOODYAY FIELD TRIP, 17th JUNE, 1984

The Conservation Council of Western Australia, on behalf of all members of the voluntary conservation movement present on the above field trip, would like to thank you for making available the opportunity to personally inspect Goonaring and Benaaring Springs and Wengamine Nature Reserves.

Not only are those who were present now more aware of the nature of environments which are the subject of the recently-released Draft Plan of Management for the Toodyay Nature Reserves, but they were able to gain an appreciation of the social and economic constraints which restrict the management options open to the Wildlife Authority.

Conservationists were particularly grateful that so many senior staff of your Department gave up their weekend to accompany us on this trip. A strong impression was gained that those staff have a genuine commitment to true public involvement in the planning and management of nature reserves.

Once again, many thanks for a most enjoyable and informative excursion. I believe that it will result in a considerably higher standard of public submission on the Draft Plan of Management.

Yours sincerely,

Dr. John Bailey
PRESIDENT

July 6, 1984



WEST AUSTRALIAN
Wildflower Society (Inc.)

P.O. Box 64,
MIDLANDS, 6009.

The Director,
Department of Fisheries and Wildlife,
108 Adelaide Terrace,
PERTH, 6000

Dear Mr Bowen,

The W.A. Wildflower Society welcomes the opportunity to comment on the report 'Nature Reserves in the Shire of Toodyay'. We commend the Department for preparing reserve descriptions and management plans for these reserves which are in one of the oldest agricultural areas of the state and are in close proximity to the city of Perth. Hence they are important for nature studies by groups and individuals like ourselves.

The Society's aims include the conservation of natural bush areas and the preservation of plants native to Western Australia through propagation and cultivation. These reserves inform us as to what grows where and how and as Toodyay is important for small rural holdings this information will help people to revegetate with local species.

We commend the Department's involvement with the Toodyay Naturalists Club and are pleased to see the acknowledgement of their work included in the report.

Considering the present staff limitations within the planning section of the Department we find the reserve descriptions, particularly that of the vegetation, are comprehensive and consistent in the use of common and scientific plant names (and superior to the System 6 report). The Society would have appreciated a copy of the earlier draft in order to organise excursions to the reserve to compile species lists. With only four newsletters per year we need plenty of time to notify our members of planned excursions.

Generally we found the report rather lengthy and repetitive. We realize the information for each reserve needs to be kept together especially when the report will be used in conjunction with a visit to a particular reserve. The purpose of the report is unclear. Is it just to be used by management staff or by the public? In the case of the latter, better access maps would be needed.



WEST AUSTRALIAN
Wildflower Society (Inc.)

It is felt that a section on General Management objectives and implementation strategies could be included in the introduction. This would eliminate repetition of common problems such as fire, weed infestation and notifiable authority. Problems which are unique or important in a reserve can then be highlighted within the reserve's description.

Several areas in Part 9, General Considerations, could be expanded to provide useful information for groups interested in studying these reserves and for looking at the reserve system on a wider scale. Some direction is needed as to the information required. Are species lists all that is required or are there proposed ongoing monitoring programmes which the public, particularly reserve neighbours, could be involved in?

On the subject of a regional overview there are some questions we would like to see discussed.

1. What is the level of duplication of habitats within and between reserves with respect to the possibilities of wildfire wiping out particular habitats?
2. Where only one or none of the original vegetation types is represented, are there reserves in neighbouring shires which contain the community? e.g. Salmon gums sand heath and Jarrah/Wandoo woodland.
3. Could the reserves in this shire be examined in a regional context by describing the reserves in each of Beard's vegetation types in the neighbouring shires?
4. Are there further areas of natural bushland within the Toodyay Shire which are suitable for reservation?

This may not be within the terms of reference for this report but some recommendations could be included as a result of the preparation of the report. There may be some road verges, for example, which form corridors between Nature Reserves and State Forest. These could be classified as vested in the Shire.



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Wildflower Society (Inc.)

There are several minor points which also deserve comment.

- a) Figure 3 should read 'Original Vegetation' and it may be useful to include reserve boundaries or have Figure 4 placed in the same position on the page so a quick flip of the page would show what vegetation type was in a reserve.
- b) Figure 25 would benefit from land classification information, e.g. the location of the boundaries of the State Forest and the presence of any areas of Vacant Crown Land.
- c) Table 2, column 3 could be eliminated by a line at the bottom of the table. Most of this table is repeated in Table 3 and in each reserve description.
- d) The reserve descriptions could be shortened by deleting information given on the maps, e.g. perimeter shape, and adding the area figure to the map.
- e) Reserve maps would be useful if road names and distances from Toodyay were included.
- f) Status of surrounding land (as cleared, uncleared, State Forest etc.) and inclusion of highest point and stream lines would be useful in later surveys.
- g) If reserves are only accessible through private property could the owners name and address or a shire or departmental contact be given. Flat Rock Gully NR has a road marked along the northern boundary but the text states that access is only through private property. If the maps are drawn from a lithographic map could the actuality of the roads be checked?
- h) The history if Toodyay makes interesting reading but more comments could be made on the effect of the various land developments on the bushland. E.g. possum hunting, cropping, pigs.



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- i) The clearing and land release maps appear to have been very time consuming in their drafting for the amount of use made of them. Some analysis of the amounts of each vegetation type cleared and when, and the relationships between land use and area cleared would have been interesting.
- j) There are no clear references to rare plants on these reserves (correct us if we are wrong) or the presence of any sandalwood.

The Society will now plan to visit these reserves in the future and add to the species list. We hope there will be avenues through which the updated lists can be circulated.

Thanking you again for this opportunity to comment. We look forward to many more such reports.

Yours sincerely,

Claire R Welsh

CLAIRE WELSH
President,
West Australian
Wildflower Society.



W.A. National Parks & Reserves Association (Inc.)

PATRON: W. H. BUTLER, C.B.E.

c/o "The Peninsula", 219 Railway Parade, MAYLANDS, WA 6051

W.A.N.P.A.R.A.

28th August 1984

The Director,
Dept. of Fisheries and Wildlife,
108 Adelaide Tce.,
Perth.

Dear Sir,

re: Nature Reserves of the Shire of Toodyay, Draft Management Plan No 6.

This Association congratulates your Department on the content and proposals of this draft management plan, as well as on the astute strategy adopted in presenting the plan locally.

We are unable to suggest improvements to the proposed management of specific Nature Reserves. However, the Association feels that perhaps some overall aspects of district wildlife conservation could also be included in the final document, which would then provide a systematic overview of nature conservation management in the Toodyay Shire. The "islands in a sea of farmland" nature of these reserves will no doubt increase in the future as clearing continues. Nevertheless there are a number of actions that the local community and individual landholders could take to lessen the effect of increased clearing. The Association believes that a conservation approach would have a good chance of succeeding within the Shire of Toodyay, because -

- the Shire Council appears to have a supportive attitude towards wildlife conservation, or certainly, an open mind on the matter;
- the district contains an active and responsible conservation group, the Toodyay Naturalists' Club; and
- respected members of the community, such as Messrs Masters and Chitty, actively promote wildlife conservation with landholders.

The following are points that we believe should be made in such a systematic overview.

1. Road// Railway Reserves

The only way that many animals can move from one area of natural vegetation to another is through road and railway corridors. In the Shire of Toodyay, the remaining vegetation fringing the Avon River and Toodyay Brook would seem to have similar potential. *The value of these corridors, while probably greater in more heavily cleared farming districts, should be referred to in the management plan.*

Roadside verges are a publically-owned amenity. The greatest threat to the survival of road verge vegetation is the narrowness of the verge width. Most roads in the Shire are on very old one chain (20m) reserves, most of which is taken up by carriageway and assorted drains, leaving extremely vulnerable narrow strips of vegetation.

Too frequent burning of road verge flora by adjoining landholders and local bush fire brigades can result in loss of native flora and its replacement with more hazardous flammable weeds. However, the Shire of Toodyay has recently had by-laws

/2

gazetted in an endeavour to control this particular problem. *The Council's farsightedness in formulating the by-laws should be supported in the management plan.*

Additionally, the Dept. of Fisheries and Wildlife should consider promoting these by-laws as a MODEL for other Local Authorities to adopt (eg Shire of Serpentine when Management Plan No 3 is revised, and the Shire of Dandaragan when Management Plan No 4 is finalised.)

2. Farm Planning

Enclosed is a copy of a "Farmnote" on farm planning. It is understood that the Dept of Agriculture is presently revising this leaflet and the opportunity may be available to include additional information on wildlife conservation measures that can be taken by farmers.

Farm planning to retain and protect buffers of natural vegetation should be advocated in the management plan for the Toodyay Shire.

3. Wildlife Sanctuaries

The provisions of the Wildlife Conservation Act regarding the possibility of agreements between the WA Wildlife Authority and landholders to manage private land should be explained in the management plan. It is understood that similar provisions will be retained in the Conservation and Land Management Bill.

This concept may be of particular value with regard to the apparently uncleared farmland adjoining the Wongamine Nature Reserve.

4. Private Land Clearing

The recent history of clearing the private land between the Beelaring and Goonaring Nature Reserves is noted with deep concern.

This Association believes that it is vital that a mechanism is developed which at least temporarily restrains a land clearing proposal, and thus provides time for other options to be negotiated. It is considered that the means to do this could be provided through the Soil and Land Conservation Act. Enclosed is further comment on this aspect.

The Association urges that this matter be taken up with the Commissioner of Soil Conservation.

5. Natural History Guides

The Association congratulates your Department, and the author, Gillian Crook, in producing the Guide for the Moondyne Nature Reserve. It is assumed that this is a pilot project which may be continued.

This style of "popular" booklet will promote public interest in the conservation value of a site, encourage visitation and help the visitor gain a greater appreciation and enjoyment from the visit. Some of these visitors are also likely to become supporters of management efforts. At the local level, such publications are likely to arouse a local interest in an area that was otherwise little known or appreciated, and foster local pride and support.

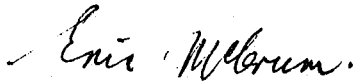
The publication of similar guides following the approval of management plans should be considered as a standard procedure, where resources permit. In the case of the other reserves in the Toodyay Shire, it might be possible to commission the Toodyay Naturalists' Club (for example) to break the back of this task; it would be a logical extension of the Club's own booklet on the natural history of the Toodyay Shire.

3.

A similar publication should certainly be considered for some Nature Reserves in "difficult" districts, such as the Shire of Dandaragan, and launched locally.

In conclusion, may we congratulate you once more on your excellent approach to Nature Reserve management.

Yours faithfully,

A handwritten signature in cursive script, reading "Eric McCrum".

Eric McCrum
President.

An introduction to conservation farm planning

By T. R. Negus, Narrogin District Office

Conservation farm planning involves adapting practices and enterprises for maximum production with minimum degradation of your most valuable resource—land.

The old way was to treat the farm as a homogenous unit—forcing unsuitable cultural practices onto some areas. The results of not using conservation planning methods can be seen throughout the sheep and cereal areas: Gully erosion, sheet erosion and hard-to-work paddocks containing different soil types.

The aim of conservation planning is to separate arable from non-arable areas, and to make it more convenient to use the soil management and special erosion control practices which prevent soil loss. Fencing plans, access tracks, contour banks and dams are incorporated to produce a system which is more in harmony, rather than conflict, with the farm environment.

This leaflet provides the basic ideas of conservation farm planning and a systematic approach for the implementation of such ideas on farm properties. In addition to this information farmers can contact their local Department of Agriculture and inquire about specialist areas of water conservation and soil reclamation. These include design and construction of roaded catchments, and reclamation of eroded gullies.

Initial mapping

An aerial photograph enlargement at 1:10 000 scale (1 millimetre = 10 metres) makes an ideal base map. It shows most of the natural features, the existing problems and the development relevant to farm planning. Draw the property boundaries on the photograph, using coloured grease pencils (two brands are Omnichrom and Chinagraph). The actual photos can be obtained from the Lands Department, Perth, at a price rarely exceeding \$20. The following can also be marked:

- Land classes—likely to need different management for conservation and full production.

Non-arable: mallet hills, breakaways, very steep land, solid rocky ridges, saltland.

Marginal-arable: water logged heavy clay flats, flood-prone flats, land with many scattered rock outcrops.

Arable (cropping): no contour banks needed, contour working advisable, contour banks and working advisable.

Cultivation boundaries and natural drainage lines. Mark major rivers and creeks with steep banks, major grassed waterways which carry sizeable water flows, and finally, the minor depressions which rarely (if ever) carry water. Ridge crest lines can also be marked at this stage.

- The existing stock water points.
- Existing roads which cannot be changed.

Land-use problems

The second stage of mapping is identifying and marking on the photograph specific land-use problem such as those paddocks chopped into awkward sections by erosion gullies, erosion effects at headlands, firebreaks, roads and possibly around buildings, and the lack of reliable water supplies in some paddocks.

As planning is the next step, treatment of land-use problems must also be considered. A list of specific problems and their remedies is included at the back of this leaflet.

Decisions on planning

Once all the individual areas have been considered in the total farm context, a finalised plan must be drawn up to show the changes to be implemented over a period of years. This plan should include:

- Soil conservation measures necessary to prevent or control the various erosion problems, e.g. contour banks, gully filling.
- Improved paddock and fencing layout. This should be to fit in with the natural features, different land classes, soil conservation works, watering points and stock shelter. The final fence layout should attempt the desired number of paddocks, as close as possible to the preferred paddock size. However, size based on pasture carrying capacities and convenience of flock and herd management, may be in conflict with the above mentioned conservation and land class divisions and result in awkward corners and cultivation patterns. Compromises may be necessary.

Note: fences are best located: along ridge crests, along creeks and grass waterways, along contour banks, and along the boundary between land classes. Otherwise, straight up and down hills, rather than diagonally across slopes.

Also, in the interests of economy, good existing fences can remain put, unless they cause an erosion problem or completely upset the proposed farm plan layout. As conversion to the complete plan will probably take several years, eventual moving of good fences can be planned for.

- Drought-proof water supplies in each paddock. This not only ensures better grazing control and pasture utilisation, but also helps prevent gateway and sheep pad erosion problems (caused by stock trekking from one paddock to another during summer). The new fence plan may enable existing dams to be more efficiently used and even shared between two or more paddocks. Water may have to be piped to troughs in saltland, deep sand and rocky paddocks.

- A system of access tracks for stock, machines and vehicles. Ideally, a good all-weather road right around the farm, with minimum gate opening, should be provided—perhaps also with a central raceway for stock movement. Roads should be sited on ridge crests or below contour banks if possible.

If roads tend to collect run-off, forming up may be necessary, with drainage by spur drains.

- Relocation of gateways and firebreaks. These often collect and concentrate run-off. To prevent this, site gateways on high ground. Firebreaks should preferably be ploughed along ridge crest and contour fencing. Avoid locating them along waterway fences or fences running diagonally across slopes where they tend to collect run-off and erode.

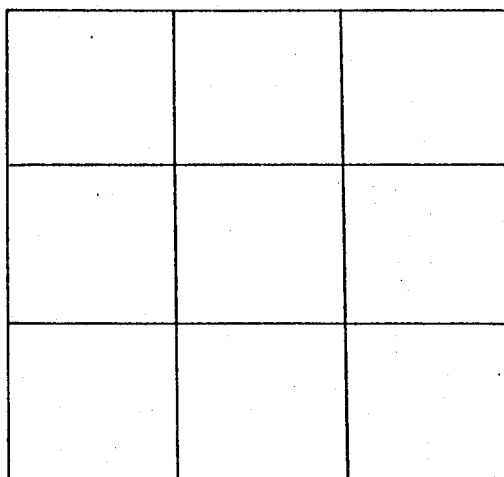
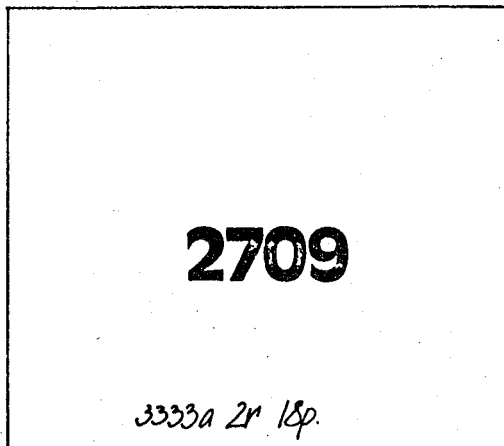
This is how a farm looks on a survey map. All it tells you is the location number (2709), and the size of the property (3 333 acres).

Fig 1

Completion of mapping

When all the above points have been considered, they can be drawn onto the aerial photograph. The plan is now in such a form as to work from.

Modifications to the plan can be made as and when necessary during implementation of the work, e.g. when dam sites have been test drilled, contour banks surveyed in on the ground, and so on.



Using survey maps while planning the development of their properties, many farmers have ended up with a square paddock layout like this.

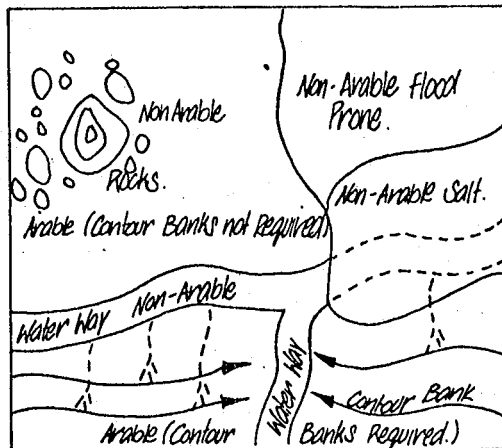
Fig 2.

But the land on a property is not all the same. Some is suitable for cropping and grazing (arable), while some can only be safely used for grazing (non-arable). Now shade in all the non-arable areas on figures 3 to 6 with a light red pencil. The remaining white areas are arable or potential cropping land. Fig. 3 is a simple Land Class map.

The main types of non-arable land are:— salt land, flood-prone and waterlogged land, creeks and grassed waterways, deep sands, mallet hills, ironstone breakaways, rocky hills and areas of scattered rock.

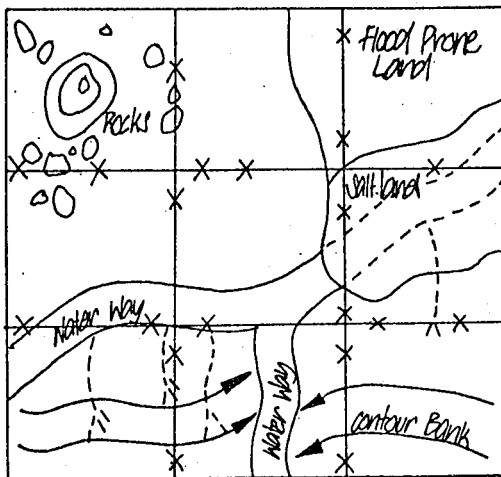
Fig 3.





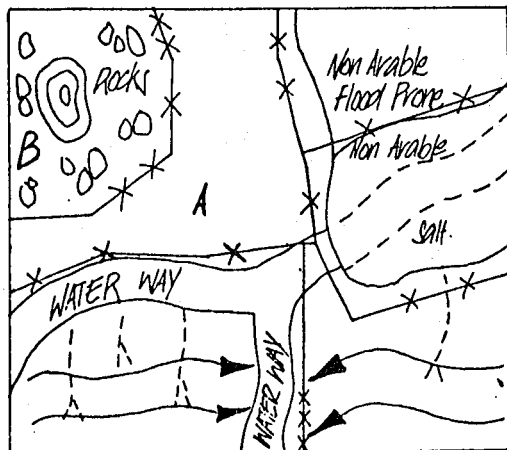
Taking a closer look at the arable land we see that some of the flatter land can be cultivated safely—often without contour cultivation. The steeper arable land, showing signs of erosion, must be protected with contour banks and good pastures, and cropped less frequently. The necessary contour banks have been marked on the Land Class map.

Fig 4



If we superimpose the square paddock layout (figure 2) onto the Land Class and Soil Conservation map (Figure 4) the result is a hopeless mess. Notice how different classes of land, requiring different management practices, have been fenced into the same paddock and how contour banks run through fences. Fences and waterways chop the arable land into small pieces, which are inconvenient for working with large machines.

Fig.5.



By giving a little thought to the position of fences, a far better layout results. Fences are best located along natural cultivation boundaries and to fit in with the contour layouts. As a result fences will often follow grass waterways or creeks, between arable and non-arable land, between major soil types, below contour banks, and along ridge crests.

After this stage is reached, by utilising natural boundaries for fence positions, there may still be a need for further subdivision of larger areas. For instance the large arable area (A) of about 300 hectares when in crop, cuts stock access to area (B). Various factors, including topography, soil type and cropping and stock management programmes, could determine the way that area (A) is subdivided into smaller paddocks.

Fig.6.

Land-use problems and their remedies—check-list

Land use problem.*	Prevention: Cure	Land use problem.	Prevention: Cure
Paddocks chopped into awkward sections by erosion gullies	Avoid cultivating natural depressions which carry run-off water. Protect natural depressions with contour banks to make them safe to cultivate. Fill gullies with roadgrader or bulldozer and protect with contour banks to prevent further erosion.	Poor access from sheds and yards to paddocks	Map existing permanent roads which cannot be changed. Map possible good track locations eg on ridge crests or below contour banks. Plan central laneway for stock movement. Use all-weather creek crossings.
Firebreak erosion	Avoid breaks where run-off will run towards them. Put breaks on lower downhill side of fence lines. Use scarifier not a plough to cultivate breaks. If a plough is used, raise the rear discs. Cultivate loops every 80 metres where erosion is likely. Spray chemical firebreaks. Cultivate breaks in safe locations along ridge tops or below contour banks.	Lack of shelter in some paddocks	(Essential for off-shears sheep, winter and spring shorn, and lambing ewes). Split existing natural bush between two or more paddocks. Plant new shelter plantation in awkward or unused corners.
Vehicle track erosion	Move tracks to safe location along ridge tops (especially laneways) or below contour banks. Form up road with a grader blade and drain at 80 metre intervals with spur drains. Flat grade track and divert run-off with broad-based contour banks across track.	Poor location of existing fences	Contributing to firebreak, headland or track erosion. Resulting in mixed land classes making it difficult to manage them correctly eg saltland and clover land in same paddock.
Headland erosion	Avoid working out downhill "funnel" headlands. If it is essential to work headlands, use a scarifier rather than a plough and cultivate and seed them before rest of paddock. Move fences causing downhill "funnel" headlands to ridge or contour locations. Fill gullied headlands and build contour banks across paddock corner.	Gateway erosion	Locate gateways on ridge tops. Keep gates closed as much as possible. Build humps across eroded gateways. Construct spreader/contour banks across eroded stock pad areas.
Stock pad and gateway erosion	Site dams or troughs in centre or at top end of paddock. Provide water in every paddock. If no dam or bore at present: select site for new supply; or fence through existing dam and share between two paddocks; or reticulate from existing dam.	Erosion around farm yards and buildings	Site new yards and sheds on well drained gravel ridge tops. Use contour banks to protect yards from run-off from hillslopes above yard. Form up broad contour roads through yards to handle run-off from shed roofs and bare ground.
		Parts of the farm particularly prone to wind erosion	These areas should be fenced and managed separately to avoid overgrazing, etc.
		Lack of reliable water supplies in some paddocks	If existing dam is too small and shallow: enlarge and deepen, or sink new dam. If existing dam water is too salty for stock: sink new dam or install syphon to remove saline water from dam bottom. If existing dam fails to fill: if natural catchment is good for run-off, but too small, enlarge it with contour banks; or if natural catchment too sandy, construct roaded catchment.

CONTROL ON LAND CLEARING

SOIL AND LAND CONSERVATION ACT, 1945

Introduction

1. Secondary soil and water salinity caused by clearing the natural vegetation for dryland agriculture is probably Western Australia's most serious environmental problem. In 1970 the Senate Select Committee's Report on Water Pollution in Australia stated that the major problem of water pollution in Western Australia was salinity. Quite some years since then State legislation has been passed to protect a number of salt-susceptible catchments from salt encroachment due to excess catchment clearing. There is still concern at continued encroachment of salt-affected farm land in inland agricultural districts. The extent of once productive agricultural land rendered useless through salinisation is equivalent to the loss of almost 250 wheat-belt farms, and the problem is still increasing.

2. In 1978 a major report was published on the Commonwealth-State Government Collaborative Soil Conservation Study of 1975-79. The purpose of the Study was to provide the Commonwealth and State Governments with information for the formulation of policy on soil conservation and associated land and water management programmes. A survey of agricultural and pastoral land in Australia indicated that half of the continent required some form of treatment for land degradation. In Western Australia the area involved amounted to about 44% of the State (ie. most of the agricultural and pastoral area); virtually none of this area of the State had been treated with "works" and the area requiring such intensive treatment was estimated to be 20% (1975); the remaining degraded land only required treatment involving management practices (eg. destocking pastoral areas). The construction costs for required works in Western Australia was estimated to total \$48 million, with annual maintenance costs of \$5.3 million.

3. The study report was reviewed in 1978 by the Standing Committee on Soil Conservation (comprising the Commonwealth and State Heads of Soil Conservation Agencies) and it agreed with Study Recommendations concerning the activities of State Governments, including :

- . "an examination of State soil conservation legislation and administrative relationships in regard to the mitigation of the various forms of land degradation"
- . "State Governments examine the provisions for grants and subsidies available to land users for soil conservation to ensure that these are adequate and equitable"
- . "large scale projects of a regional, catchment or sub-catchment dimension be increasingly undertaken by soil conservation authorities"

Of interest, the Standing Committee agreed with the study recommendation that due regard be given to the incorporation of soil conservation principles in the design, construction and maintenance of roads and other public works.

4. The Study Report pointed out that there is significant land degradation in Australia's arid zone where the nation's pastoral industry is based - the fundamental form being the damage to, modification and destruction of the vegetation. In 1979 the "Jennings Committee" report on 'The Present and Future Pastoral Industry of Western Australia' acknowledged that the

problem of loss of pasture base induced declining pastoral productivity and it concluded that productivity could only be raised by rehabilitation of the pasture base. In addition to the provision of Government incentives to pastoralists to combat land degradation, the Committee advocated pasture cultivation on pastoral leases. In 1980, Sections 105 and 107 of the Land Act were amended to facilitate the cultivation of pasture on pastoral leases. Section 105 now allows the Minister for Lands to approve of the sowing and cultivation of non-indigenous pasture species by a lessee. The provisions of Section 107 were formerly confined to the obligation of the lessee to seek approval to ring-bark trees; they now extend to the removal and destruction of vegetation generally for the improvement of the lease.

5. Soil salinisation and wind erosion remain serious land degradation problems in agricultural areas. About 500,000 ha of wheatbelt land has always been saline and supports salt tolerant plants. However, the 1979 saltland survey indicates that salinity now affect 263,700 ha of land previously used for crops and pasture across some 4270 farms. Compiled from questionnaire information provided by farmers, it shows a significant increase when compared to figures from a similar survey carried out in 1974. In 1980 a further 44,000 ha of farmland was severely damaged by wind erosion, affecting about 500 sandplain farms.

Soil and Land Conservation Act

6. Against this background, major amendments were made to the Western Australian Soil Conservation Act in 1981 :

- . Title - This was changed to the Soil & Land Conservation Act.
- . Land Degradation - The application of the Act was broadened to cover 'land degradation', of which soil erosion is only one aspect. In the Act, 'land degradation' is defined to include soil erosion, salinity and flooding, as well as the removal or destruction of natural and introduced vegetation.
- . Soil Conservation Advisory Committee - Altered to increase the proportion of non-government members.
- . Soil Conservation Service - Formerly the Act relied heavily upon the Government Departments represented on the Soil Conservation Advisory Committee to assist the Service in tackling problems. The amended Act now places this responsibility on the Soil Conservation Commissioner and his staff, and provides improved resources to do so.

In the future, the direct involvement of other Government Agencies is likely to be at the local level, such as through membership on District Committees when established.

- . Soil Conservation Districts - A new innovation is provision for Soil Conservation Districts to be established and the power to impose a rate on rateable land in a District to fund necessary soil conservation works. This 'levy' would be paid into District accounts in a Soil Conservation District Fund in the State Treasury, and be applied to soil conservation works of benefit to the District. Soil Conservation District Advisory Committees would be appointed to assist the Commissioner for Soil Conservation in combatting land degradation in the District.

- . Penalties - Generally increased ten-fold, and provision has been for stiff continuing fines for non-compliance with Soil Conservation Orders.

7. Section 32 of the Act enables the Commissioner of Soil Conservation to serve a Notice preventing land clearing likely to result in land degradation. Provisions for the Act can also be used to compel land owners to inform the Commissioner of clearing plans. It is therefore technically possible to declare agricultural regions of the State to be subject to clearing notification. Once such notification has been received, clearing proposals can be evaluated, enabling conditional approval or refusal to be made. Conditional approval, for example could require retention of farm shelter belts, and fencing to protect shelter belts from grazing stock.

Other Benefits

8. Should a clearing proposal be received involving land adjoining a conservation reserve, the Commissioner of Soil Conservation could inform the reserve management authority. Where appropriate, the reserve management authority could negotiate with the land owner to acquire the land before it was cleared, or enter into an agreement of mutual benefit which ensured that the land remained uncleared.

9. Such a scheme would have been of considerable value in 1981 when land held by Agnew-Clough Ltd under the Wundowie Charcoal-Iron Agreement was disposed of and cleared. This problem is exemplified by the Beelaring and Goonaring Nature Reserves in the Shire of Toodyay, details of which are attached.

W.A. NATIONAL PARKS AND RESERVES ASSOCIATION
AUGUST 1984

REFERENCES:

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A Basis for Soil Conservation in Australia (1978) : Commonwealth & State Government Collaborative Soil Conservation Study 1975-1977, Report 1.

A Review of 'A Basis for Soil Conservation Policy in Australia' (1978) : Standing Committee on Soil Conservation.

The Present & Future Pastoral Industry of Western Australia (1979) : Report of Committee appointed by Cabinet to review the industry ('Jennings Committee').

Dryland Agriculture and Secondary Salinity (1980) : Arthur Conacher (Uni. W.A.), in "Man and the Australian Environment - Current Issues and Viewpoints" (Ed Hanley & Cooper); McGraw-Hill Book Co. (Sydney).

Soil and Land Conservation Act, 1945-1982 (Western Australia) : Various Department of Agriculture Journals.

REPORT OF THE WORKING PARTY ASSISTING THE
AGRICULTURAL LAND RELEASE
REVIEW COMMITTEE

AUGUST 1984

6.6 CLEARING CONTROL ON FREEHOLD AGRICULTURAL LAND

Soil conservation farm plans provide an appropriate means of identifying areas unsuitable for clearing because of the hazards of land degradation and/or very low productivity. The conservation farm plans would also incorporate relevant managerial recommendations and would thus consider all aspects of land degradation both actual and potential. Regulation of land clearing on freehold agricultural land would remove the inconsistency of the present approach which deals with Conditional Purchase leases but becomes ineffective once the land is made freehold.

The Soil and Land Conservation Act 1945-82 could provide the administrative means of achieving clearing control. Indeed, the Government is already considering the implementation of clearing control procedures by this means.

1.2.2 Recommendations (Part Two)

(iv) The regulation of land clearing on freehold farms should be considered. (Section 6.6.1).



THE TREE SOCIETY

planting conservation education

CORRESPONDENCE TO: P.O. BOX 156
CLAREMONT 6010

14th August, 1984

The Director,
Department of Fisheries & Wildlife,
108 Adelaide Terrace,
PERTH, 6000.

Dear Mr. Bowen,

W.A. Nature Reserve Management Plan No. 6
Nature Reserves of the Shire of Toodyay (draft)

Thank you for forwarding a copy of the above plan to the Tree Society.

We commend the Department for an excellent plan and have no comments or submissions to make upon it.

Yours sincerely,
For The Tree Society,

Caroline Hooper

Caroline Hooper (Mrs)
General Secretary

School of Biology



Western Australian
Institute of Technology
Kent Street, Bentley
Western Australia 6102
Phone (09) 350 7368
Telex AA92983

BGC:JLL

22nd June, 1984

Ms S.A. Moore,
W.A. Wildlife Research Centre,
P.O. Box 51,
WANNEROO, W.A., 6065

Dear Sue,

Thank you for sending a copy of the draft report on "Nature Reserves of the Shire of Toodyay." It was a little disappointing to find that no acknowledgement was given of the intensive research that has been undertaken by my colleagues and I from WAIT, at the Wongamine Reserve, since 1976. I am enclosing copies of several published papers and extracts from student reports that may serve to highlight the kind of work that has been done. Our findings suggest that the plant species list (App. vi) is somewhat incomplete, e.g. Dryandra fraseri, Hakea trifurcata, Adenanthos cygnorum and Adenanthos drummondii are common in some parts of the Reserve, but are not listed.

I look forward to seeing a copy of the final report.

Yours sincerely,

Dr Brian G. Collins
Head,
School of Biology

Encs.



Toodyay Shire Council

All communications to be addressed to the Shire Clerk.

Telephone 096-262258 · 262237

Post Office Box 96

Our Ref. KCW:RMLS A6.7

Your Ref. Ms Moore

Council Chambers,
Fiennes Street
TOODYAY, W.A. 6566

25th June, 1984.

The Director
Department of Fisheries and Wildlife
108 Adelaide Terrace
PERTH W.A. 6000

Dear Sir,

W.A. NAT. RESERVE MANAGEMENT PLAN No. 6 (Draft)
NATURE RESERVES OF THE SHIRE OF TOODYAY

Thank you for providing copies of the draft amangement plan for the nature reserves in Toodyay which we are making available for persual by the public.

From Council's view we have no further suggestions to make to add to our comments on the initial draft of last year.

Yours faithfuNy,

K.C. WILLIAMS,
SHIRE CLERK.

10th November 1983

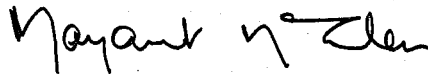
Mr B K Bowen
Director
Department of Fisheries & Wildlife
108 Adelaide Terrace
PERTH 6000

Dear Mr Bowen,

Just a brief letter to say how much I enjoyed the occasion at Toodyay on the 2nd November. I am sure you must have been pleased with the response of the local people and they must have been very pleased that the department took so much trouble to make the evening so interesting. I am sure they must have been impressed, as I was, by the presence of the Minister and the Director and so many departmental people. All in all it was a very good evening and the supper was very welcome at the end of the day.

With best wishes.

Yours sincerely,



Margaret McAleer, MLC
MEMBER FOR UPPER WEST PROVINCE

Bx 49

Gooday

20th June 84.

Dr. Ian Brock,
Wildlife Dept.
Wanneroo.

Dear Ian,

Thankyou for including the members of the
Gooday Naturalist Club in the tour of reserves on
Sunday last.

I have been impressed with the progress
of the Management Plan. By including local
naturalist in the plan right from assisting in the
field work, to the evening of launching the Programme
in the Gooday Town Hall has had excellent results.
Local naturalists have gained encouragement &
a more meaningful link has been formed
between local people & Wildlife Authority personnel.

Best wishes,

Yours faithfully,

Ray Paynter.

P.O. Box 99,
TOODYAY. 6566.

Tel. 096-262280.

24th June, 1984.

MISS SUSAN A. MOORE,
Department of Fisheries,
& Wildlife
108 Adelaide Terrace,
PERTH. 6000.

Dear Susan,

Mr. Chitty and I wish to thank you for meeting and discussing with us the managerial problems relating to Beelaring and Goonaring Reserves. It would however be advantageous for us to have your Department's decision on the matters so we can convey them to the local branch of the P.I.A. and the Reserves Protection Committee of the Toodyay Shire Council.

The points needing clarification are:-

1. Is an attempt to be made to drain the ~~sity~~ water on the south eastern corner of Beelaring Reserve where it has affected the existing vegetation?
2. What action is to be taken to eliminate the Kykuyu grass in the same area on the road verge?
3. Is the same Reserve to be burnt in quarter sections to give some control of the extreme fire hazard? If not what is the proposed plan and the reasons for not control burning?
4. Are all tracks in both Reserves to be sealed off from use by vehicles and suitable notices erected.
5. We suggest that the old Toodyay Road adjacent to the old well at Goonaring Reserve also be closed to vehicles and made part of the existing Reserve to preserve the old well.

An early reply would be appreciated so we can report back to the organisations mentioned.

Yours sincerely,

St. J. Wood

P.S. Mr Chitty would be pleased to receive a copy of map Nov. 1974 as discussed.

GOONARING AND BEELARING SPRINGS RESERVES
MANAGEMENT PROPOSALS

After inspection of the reserves it is felt that the fuel reduction measures mentioned in the report are not applicable, especially in the case of the Beelaring Reserve which is in a very dirty state, particularly near the Toodyay Road, and does not appear to have been burnt for fifteen years or more and would lead to a very extreme fire in the summer months. We therefore make the following proposals:-

1. Protection from fire.

Some autumn protective burning should be done every few years, in strips, to prevent any wildfires from completely burning out either reserve in one fire. Such a fire would kill out the wildlife completely from the small reserve which is surrounded by cleared land which means very little chance of re-stocking from outside. Vehicles should be excluded. All road entrances should be blocked or fenced and locked. The old road tracks inside the reserves should be left as they are to help protective burning or wildfire fighting. Out of season protective strip burning could be done along some of these tracks instead of bulldozing firebreaks.

2. Public use of reserves.

Use of Goonaring and Beelaring Springs by the public should not be encouraged at this point of time. However, the Access Classification as defined in the report is endorsed by us providing the words 'by appointment' or 'under supervision' are added.

Fencing. Goonaring's road frontage should be fenced except the dense swamp area. To attempt to fence swamp road frontage would be costly and environmentally damaging.

Beelaring should have roads closed and the salt affected east end should have a drain dug to drain salt water from fresh water swamp, i.e. a drain along the road verge.

3. The disputed catchment area should become an extension to the reserves in joint management with the Toodyay Shire Council with frequent consultation with local interested bodies.

4. The area between the Old and present Toodyay Road at the Goonaring Spring reserve be left in its natural state. Should any widening of the road be found necessary in this area consideration be given to dividing the road at this point to preserve this area of the original reserve.

5. It is our considered opinion that if the whole of the watershed to these two reserves is not allowed to return as near as possible to its natural state the reserves will be destroyed by salinity.

6. An honorary warden should be sought to advise the Department of Fisheries and Wildlife of any misuse of the reserves should it occur.

7. The making of the area worthy of Key Site ecosystem management is most desirable.

PO Box 71
Toodyay 6566
12 July 1984

The Department of Fisheries and Wildlife
The Director

Dear Sir (Submission),

Re Toodyay nature reserves management plan. Since recently talking ^{to} Susan Moore at the red-hill road reserves, and talks with the Toodyay Shire clerk. I have decided to make a further submission well before the 17th of August.

Firstly Goonaring reserve. The well used track through the reserve is not an official road. Therefore your department should close it off with a gate, and no road sign, or nature reserve sign. Goonaring swamp has been better known as the Black Swamp in past years. This was because of frequent fires. These fires kept dangerous fire hazards low, and regrowth in good order. Also because of moderate fires in the small swamp area, the rare crustacea, gilgies, minnow, frogs and other swamp creatures have survived. The habitat of these creatures at present is confined to an area something like one hundred metres long and half that width.

This includes the two road verges. The old well is only about one and a half metres deep in rocks. I only know of it going dry once. That was after the 1969 drought. It is about the northern edge of the old road survey. I request that you

2

give urgent consideration to try and get the old redundant road reserve closed and added to the reserve. Approximately four hundred metres would be ideal as it could take in the swamp watercourse, some excellent paperbark trees, the well and at the eastern end a group of young Drummond gums. I am confident the Toodyay Shire Council would support this.

The southern fringe of Boonaring reserve should never be allowed to build up an extreme fire hazard because when the swamp is dry and the well low. The rare crustacea and minnows would be cooked by a hot wildfire in late summer. Another point is, if the hobby-farmers find the well and start using it, the minnows have no chance as the well only holds one load of water. This indicates the well would often be emptied, fish and all.

There are signs of water carting from Belaring Spring this week. So what can we expect next summer.

It is urgent that the roads in both reserves be shut off from the public and nature reserve sign erected.

I am prepared to make available young wandoo trees at no cost, for gate posts and support rails. I have no chain saw. I am also prepared to give some fence posts if required. I understand Lot 194, their catchment, is in the process of being transferred to enlarge the reserve.

This area should not be open to the public in the near future but be kept for the longterm preservation of our flora and fauna. The nearby Cwon Valley National Park is for public recreation. Rugged hills and the river plus seasonal wildflowers should fill public demand. Last year a trial of young blue gum or flood gums were planted in the catchment to see if they would survive the summer. They did very well. We planted more this winter. But when 194 is put under your dept it is urgent that more young trees are planted in the semicleared land to check the expected salinity build up in the old reserves. The east end of Belaring reserve the salty water table is rising and needs to be lowered at the roadside.

I consider your fire control proposals for the nature reserves in Toodyay Shire to be totally inadequate for the long term welfare of the reserves. I will strongly put another point of view. Re poison gully reserve. Page fifty seven your proposals indicate it was probably not burned for about thirty years. Then on page 59. I quote, "These factors account for the long, firefree history of the reserve which has not been accompanied by a substantial build-up of litter or shrub-layer fuel." End of quote. I find that quite amazing to me. I will only quote one more. Re "Belaring" "In the south-eastern corner of the reserve the swamp vegetation

changes to a *melaleuca lateritia* dominated thicket - scrub to 2.5 m over dense tall sedges with occasional degenerate flooded gum emergent to 15 m."

If there is no regular strip burning of these reserves I expect the following to happen. Mature blackboys over many years will grow sufficient rushes to kill them. A hot summer fire will cook them, or if burned in winter they suffer shock of temperatures as well. Or in wet conditions I have found they collapse in windy conditions, being too top heavy. The general understorey when left unburned for a long time, finally collapses with age with accumulated litter smothering most regeneration growth. The old stuff being riddled with white ants (termites), grubs and beetles. No one can expect no fire forever. So when there is a fire, there ^{will} only be damaged timber and ashes. In such circumstances all live species of fauna (living creatures), could be wiped out of a reserve. With the joining farmland being cleared and use of herbicides and pesticides being common, plus cats and dogs. Wildlife coming back is unlikely except birds who could expect very little nectar and grubs for several years after a heavy fire. Please look at this problem again. It ^{is} very important. I am going to send copies of this information to some other people because I want the point of view expressed further.

Yours faithfully
Wally Britty

Otto Mueller

7 Haver Avenue,
Wembley Downs 6019

5th July, 1984

To the
Director,
Dept. of Fisheries and Wildlife,
108 Adelaide Terrace,
Perth, W.A. 6000

Comments on your Draft Reserve Management Plan No. 6

Dear Sir,

I recently (17.6.84) participated in a bus tour to visit the Toodyay Nature Reserves.

Unfortunately, only 3 out of 9 were superficially inspected.

First, some general remarks. I am disillusioned by the size of most reserves. Their areas run counter to any established theory on viable ecosystems. One cannot help the feeling that Mr. Casperson in 1975 was beset by a kind of closure panic and recommended any small remnant area for vesting into WAWA. In some cases we appear to be dealing with the retention of a mere few species of eucalypt or acacia which are plentiful elsewhere, in others they constitute a small representative floristic remnant of what used to be there once. I see the reserves as islands in an agricultural sea. Where are the inter-connections between them for the movement of fauna? It is not enough to rely upon a few species which utilize the edge effect or interface. Most areas have been logged, burnt, run over by weeds or are unfenced.

Because of the above reasons costly and extensive management will be required. Yet, I doubt their ultimate fate.

I do realize, of course, the scarcity of land available for extensions in that shire, but perhaps adjacent state forest (if any) could be incorporated to reduce their vulnerability.

It is further unique to read that various reserves are poorly documented. Only too often the public is told that before conservation can take place any area has to prove its value in every aspect.

Conservation issues, obviously, still take second place when one remembers the events surrounding reserves 529 and 659, or attempts to graze, amalgamated or cut up reserves 21429, 2393 and 220096.

It is sad that after 150 years of european type agriculture we still have so few enlightened farmers like Mr. L. Milhinch, Mr. Tony Mitchell, Mr. J. Masters, Mr. H. Arnold, or the late Mr. A.H. Robinson of Coolup.

I note that some reserves are quite inaccessible by being locked into private landholdings. One hopes the adjacent tenants are more favourably disposed towards the need for conservation than their predecessors. They, and not the public for a change, hold the key for continued existence of such areas.

- 2 -

Hopefully, they will concur with the plan's view that these "islands'" values are inestimable.

Now to the reserves in particular.

I am fully in favour of limited access, and support the amalgamation of reserves 659 and 529. They are small indeed but may be helped by the area in between being reserved as well. Proper signing and fencing would also be supportive. I do not know, however, how your management efforts can rehabilitate the extensive cleared areas in question.

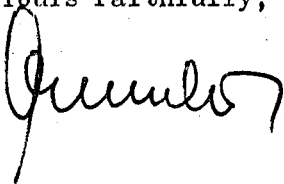
Reserve 33697 is very impressive with its array of tree species and recorded orchids. I am interested to read that two fires in 1980 started (as usual, one might say) on agricultural land adjacent and to the detriment of the reserve. Yet, your plan sets out "to protect the assets of adjacent landholders...." through active management. It seems to me that farmers all over the state are rather careless towards their own land, let alone an adjacent reserve, national park or state forest. Will we ever see the day when a public servant or a minister takes the stand and tells local government or the farmer that they also have a responsibility in respect to fire control and should be penalised for damages occurred in reserves?

How can you maintain or manage a key site ecosystem while already contemplating prescribed burning? The amount of dead wood in our eastern open woodlands are the assets of their diversity. Those controversial Forest Department ideas can hardly be entertained as a management tool in those areas. One does agree, of course, with firebreaks or firelines.

The amount of rubbish at our stopping point at the above reserve leaves much room for improvement and shows, again, difficulties in close management. I suggest that local groups should be more actively involved. Departmental staff would be far more expensive than a small financial incentive to those who are keenly interested in the retention of our environment.

Reserve 21429 is fairly large, but was not closely looked at. Again, a transitional type of reserve. Since grazing ceased only in 1980 the area must be much modified. Poor fencing and new subdivisions along the south-westerly periphery will call for costly management and educational campaigns for landowners and visitors to maintain what is left despite its comparatively large size. It will, indeed, be interesting to see whether the longterm objectives for this reserve can be achieved, like fire and pest exclusion and public use.

Yours faithfully,



Mr P.L.Ridgway B.A.
"Kiaka"
Coomberdale 6512
095 418033

Consultant Archaeologist
Associate, Australian Association of Consulting Archaeologists.

Director,
Western Australian Wildlife Research Centre,

Dear Sir,

Please consider this submission to the draft Management Plan for the Nature Reserves of the Shire of Toodyay.

Proposed Commonwealth and existing State legislation protects known and unknown aboriginal sites. The draft Management plan does not mention if there are any aboriginal sites located in the Reserves. The comprehensive draft Management plan would be further enhanced if a survey for aboriginal sites is conducted. If public use of the Reserves is intended, a Management plan that did not incorporate provisions for the protection of sites is not only incomplete but by association, condones the possible disturbing of sites. Infringement of the Heritage Act which governs aboriginal sites would also be a very real possibility even if no public use is envisaged because officers of the Management plan would presumeably enter the Reserves from time to time.

It could be said that the Management plan proposed is responsible for the care of aboriginal sites by virtue of its claim to be a Management plan.

Please feel free to contact me for any further information or help concerning this matter,

Yours Faithfully,

P.L.Ridgway

P.L.Ridgway
7/June/1984

FUNGI OF WONGAMINE NATURE RESERVE (1984)

by K. Griffiths

CLASS ASCOMYCETES

Peziza austrogeaster
Peziza vesiculosa
Peziza sp.

CLASS HYMENOMYCETES

Agaricus sp.
Amanita xanthocephala
Amanita sp.
Boletus sp.
Clitocybe sp.
Coltricia cinnamomea
Coltriciella dependens
Coprinus sp.
Coriolus versicolor
Cortinarius erythraeus
Gymnopilus sp.
Laccaria laccata
Leptonia sp.
Lopharia crassa
Panus fasciatus
Paxillus muelleri
Piptoporus portentosus
Pynoporus coccineus
Ramaria ochraceo-salmonicolor
Ramaria stricta
Russula flocktonae
Russula mariae
Stereum hirsutum
Stropharia semiglobata
Tremella mesenterica
Tremelloscypha australiensis
Tubaria rufo-fulva

CLASS GASTEROMYCETES

Calostoma luridum
Endoptychum melanosporum
Geastrum sp.
Lycoperdon glabrescens
Pisolithus tinctorius
Tulostoma sp.

N.B. Names are according to Hilton (1982) and Hilton, unpublished, 1984. The advice and enthusiasm of Dr Roger Hilton (University of Western Australia) are gratefully acknowledged.