Issue 1 March 2003

Buntine-Marchagee Catchment News

Welcome

Welcome to the first issue of the Buntine-Marchagee Catchment news

The Buntine-Marchagee Catchment is one of six Natural Diversity Recovery Catchments selected by the Department of Conservation and Land Management as an area of special focus under the State Salinity Strategy.

The aim of natural diversity recovery catchments is to conserve biodiversity values - the native plants, animals and ecosystems - within a defined area by carrying out work in partnership with the community.

While the Buntine-Marchagee Catchment is in reasonably good condition compared to similar systems across the northern Wheatbelt, it is starting to show symptoms of secondary salinity, which threatens the survival of plants and animals found nowhere else.

To facilitate working with the community, a steering committee with representatives from key stakeholder groups was set up to assist the Department draft a recovery plan and set the direction of the recovery catchment project.

The committee was formed by sending an open invitation to the community through advertisements in papers, information days, announcements on ABC Rural radio and a letter drop to stakeholders in or near the project boundary. The Department also identified key stakeholder groups and invited a representative to join the Steering Committee.

The first meeting of the Buntine-Marchagee Steering Committee was held in March 2002 where members were able to clarify the role of the Department and the committee as well as develop objectives and strategies for the project, with an agreed list of action items for the first 12 months.

These objectives and strategies formed the basis of a strategic plan, which is printed in this newsletter.

In this the first issue of the Buntine-Marchagee Recovery Catchment News, we have included articles that provide you with information on past, present and future planned activities of the Recovery Catchment Project.

We have also included information on other projects associated with the Recovery Catchment and some more general information you will hopefully find useful.

The Buntine-Marchagee Catchment News will be issued quarterly for the duration of the project. Readers are invited to suggest subjects for articles.

I would like to take this opportunity to thank all those who have provided valuable assistance to the project so far and I look forward to meeting those whom I haven't met. In the meantime, if you have any queries regarding the Recovery Catchment Project, please contact me.

Jodie Watts

Buntine Marchagee Catchment

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Government of Western Australia

Department of Conservation and Land Management
Conserving the nature of WA

Inside this issue:

Buntine-Marchagee natural diversity recovery catchment facts

- The total area of the catchment is 181,008 hectares.
- There are approximately 106 landholders in the recovery catchment.
- The average (median) size parcel of land managed by any one landholder is 1,879 hectares.
- There are 23,704 hectares of remnant vegetation (13.1 per cent of catchment).
- There are 56,479 hectares within the Coorow Shire (31.2 per cent of catchment).
- There are 108,977 hectares within the Dalwallinu Shire (60.2 per cent of catchment).
- There are 2,008 hectares within the Perenjori Shire (1.1 per cent of catchment).
- There are 13,544 hectares within the Moora Shire (7.5 per cent of catchment).
- There are 169,527 hectares of private property (93.7 per cent of catchment).
- There are 2,225 hectares of land managed by the Department of Conservation and Land Management (1.2 per cent of catchment).

Please note Road Reserves have not been included in the above statistics.

Saline pans which form part of the saline drainage lines (or braided channels) of the Buntine-Marchagee Catchment.

Land managed by the Department of Conservation and Land Management in catchment area

Name	Name Status	Tenure Category	Area (Ha)
Buntine Nature Reserve	Gazetted	Nature Reserve	1784
Jocks Well Nature Reserve	Unofficial	Nature Reserve	40
Nugadong Nature Reserve	Unofficial	Nature Reserve	10
Un-named	Un-named	Nature Reserve	390

There are 1,726 hectares of unallocated crown land (UCL) (1 per cent of catchment).
There are 4,888 hectares of 'other' type reserves (2.7 per cent of catchment).

Buntine-Marchagee Natural Diversity Recovery Catchment Project Timeline

Progress to date

- Biological Survey – Salinity Action Plan
- Buntine-Marchagee Catchment designated (December 1999)
- Recovery Catchment Officer appointed (RCO – July 2001)
- Recovery Catchment team drafted outline
- RCO visited other Recovery Catchments (Oct 01)
- CSIRO commenced Focal Species Study (Sept 01)
- Agreement for CSIRO to map all remnants in catchment
- State Landcare Conference
- Field officer appointed to map remnant vegetation
- Representatives invited to join project's Steering Committee
- Steering Committee membership confirmed (3 years)
- Appointed part-time GIS Officer
- Initial Steering Committee meeting Coorow (March 2002)
- Temporary Technical Assistant employed (TA)
- Commenced groundwater investigation drilling (April 2002 to May 2002)
- Commenced monitoring bores
- Communications officer appointed (Fiona Falconer)
- Initial Steering Committee proceedings released
- Surface Water Management Working group formed, drafted pilot project proposal
- Surface Water Contract appointed (August 2002)
- Commenced drafting community survey and communications plan
- Commenced drafting project newsletter-call for articles
- Wetland Biological Survey Group formed-drafted survey proposal to assist in prioritising wetlands
- Preparation for second Steering Committee Meeting
- Geophysics information day
- Commenced drill completion report with Department of Agriculture
- Commenced surface water pilot project within the rejuvenated zone
- Minister's media release about the Recovery Catchment Project
- Second Steering Committee meeting Dalwallinu (August 2002)
- Second Steering Committee proceedings released
- Technical Officer appointed (two years full time)
- Publish project newsletter

Future projects

- Complete surface water pilot contract
- Publish drill completion report
- Wetland biological survey
- Commence community surveys
- Catchment risk assessment
- Community workshops
- Continue developing partnerships with the community agencies and educational institutions
- Develop salinity management demonstration sites in catchment
- Steering Committee meeting Aug/Sep 03
- Appoint revegetation officer
- Draft recovery plan

Meet the Steering Committee members

- Liam Carter, Landholder, member of Marchagee Catchment Group and Liebe Group;
- Anthony Desmond, Regional Leader, Nature Conservation, Midwest Region, Department of Conservation and Land Management;
- Noel Dodd, Landholder, Private Consultant, Landcare Technician;
- Alison Doley, Landholder, President Waddy Forest LCDC;
- Fiona Falconer, Landholder, Land For Wildlife Officer, member Waddy Forest LCDC; Department of Conservation and Land Management;
- Roger Forte, Landholder, President Latham LCDC, member Moore Catchment Council;
- Kelly Gillen, Regional Manager, Midwest Region, Department of Conservation and Land Management;
- Dr. Stuart Halse, Principal Research Scientist, Woodvale, Department of Conservation and Land Management;
- Professor Richard Hobbs, Professor of Environmental Science, Murdoch University;
- Dr. Andrew Huggett, Sustainable Ecosystems, CSIRO;
- Greg Keighery, Principal Research Scientist, Woodvale, Department of Conservation and Land Management;
- Peter Muirden, Senior Hydrologist, Water and Rivers Commission;
- Vern Muller, Landholder, member Marchagee Catchment Group;
- Helen Nankivell, Landholder, Dalwallinu Shire Councillor, member Moore Catchment Council;
- Michael O'Callaghan, Landholder, President Marchagee Catchment Group, member Moore Catchment Council and Liebe Group;
- John Stacey, Landholder, Coorow Shire Councillor; Member Marchagee Catchment Group;
- Deon Utber, Bushcare Facilitator, Midwest Region, Department of Conservation and Land Management;
- Jodie Watts, Recovery Catchment Officer, Midwest Region, Department of Conservation and Land Management; and
- Peter Whale, Technical Officer, Catchment Management, Department of Agriculture.

Buntine-Marchagee Natural Diversity Recovery Catchment Strategic Plan

Steering Committee's mission:

"Our mission is to, in partnership with the community, conserve and enhance biodiversity for its intrinsic values and for the appreciation and benefit of present and future generations whilst allowing for productive and sustainable agriculture and vibrant social systems."

Objectives	Strategies and Tasks
Identify high biodiversity values within the catchment where resources maybe focused, by December 2003.	1. Remnant vegetation survey 2. Wetland biological survey 3. Risk assessment 4. Prioritise biodiversity values 5. Identify priority areas for on-ground intervention 6. Incorporate and build on conservation work undertaken within the project area 7. Identify indicators for biodiversity health 8. Set targets and goals
Understand and identify how groundwater and surface water hydrology within the catchment contributes to secondary salinity.	1. Determine existing and predicted hydrological situation (groundwater surface water) 2. Increase knowledge of geological features affecting water movement 3. Produce a water management strategy 4. Investigate options for water use
Develop and promote community understanding of the value and importance of the natural environment. *Increase public awareness and participation in conservation works aimed at protecting biodiversity values at risk of secondary salinity.*	1. Establish demonstration sites -demonstrating remedial actions able to reduce salinity (revegetation, engineering, sustainable agriculture) 2. Landholder Survey 3. Catchment Newsletter 4. Develop partnership agreements between agencies 5. Assist community catchment groups and projects to facilitate partnerships between landholders and between agencies and landholders
Develop methods for integrating sustainable farming systems and conservation works	1. Investigate incentive schemes 2. Communication and education of conservation values and sustainable agricultural practices
Develop a system of monitoring and evaluating the overall effectiveness of the project	1. Collate and maintain a database on the recovery project 2. Development of a recovery plan 3. Monitor biodiversity health 4. Evaluate progress

Bore monitoring network

By Russell Speed

A preliminary objective of the Recovery Project is to understand and identify how groundwater and surface water hydrology within the catchment contributes to secondary salinity.

A drilling program was undertaken from mid-May to early June 2002. Piezometers and observation bores were installed at 52 sites throughout the catchment. Piezometers measure groundwater pressure and are used to determine hydraulic gradients. Observation bores measure the position of the watertable in the soil (the upper surface of the groundwater).

The aims of the drilling program were to establish a groundwater monitoring network, build a better understanding of the catchment's profile and hydrology and provide data to input to computer models to simulate the effect of 'what if...' management options.

To achieve this, drill sites were selected to form seven transects across the catchment from the topographic divide to valley floor and in some cases from divide to divide across the valley floor. The transects were selected to represent all the known and obvious features in the catchment and be spatially representative of the whole catchment.

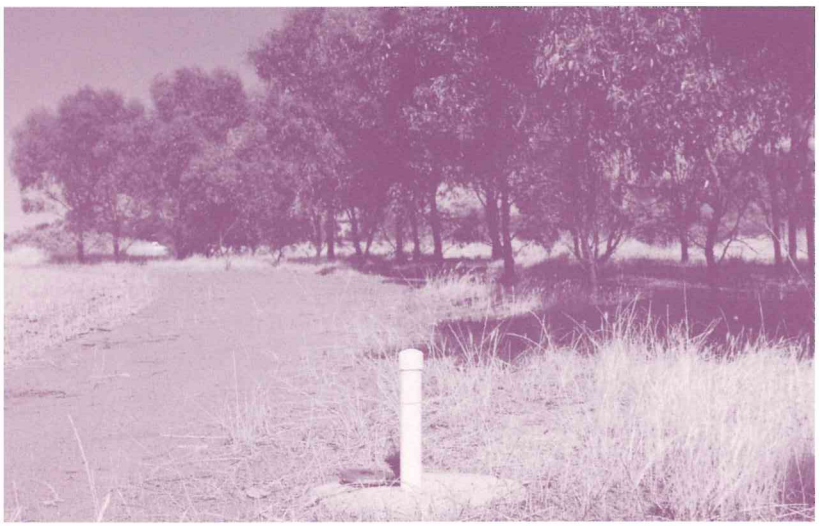
At all sites the aim was to drill to granitic basement which typically ranged from a few metres in some upslope areas to more than 30 metres depth in the valley floor. Where drilling progressed to sufficient depth, nested piezometers and observation bores were installed. However, when basement rock was encountered at shallow depths observation bores alone were installed.

The drilling program is a preliminary investigation and therefore drill sites within a transect are typically about a kilometre apart. Hence, the picture that can be built by constructing cross sections along the transects is at a catchment scale which is perhaps too broad to identify potential management features such as paleo-channels or resolve in detail the causes of individual seeps or management influences such as blocks of trees.

The drilling program has generated an enormous amount of data. We are still considering geophysically logging the holes with an EM39 Downhole Electrical Conductivity probe to determine the zones of highest salt store in the profiles. In addition, a gamma logging probe would be used to indicate clay content down the profile.

The next step is to complete a Drill Completion Report that documents the drilling methodology, bore construction details and present results in the form of cross sections along the drilling transects. This should provide the input to the next step of developing a computer model utilising the Flowtube Model to test 'what if...' scenarios.

Meanwhile, regular groundwater monitoring will be carried out. Bores will be monitored on a monthly basis for the first three years, then quarterly. Existing bore data held by farmers and other records gathered in previous initiatives will also need to be collated.



Observation well set up in saline area to monitor water table levels.

Strategic pathways

Sound scientific basis for decision-making

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Community involvement, education and training

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Strategic planning-recovery plan

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Accessible data management

↓

Promotion, marketing, sponsorship

↓

Incentive schemes and investment opportunities

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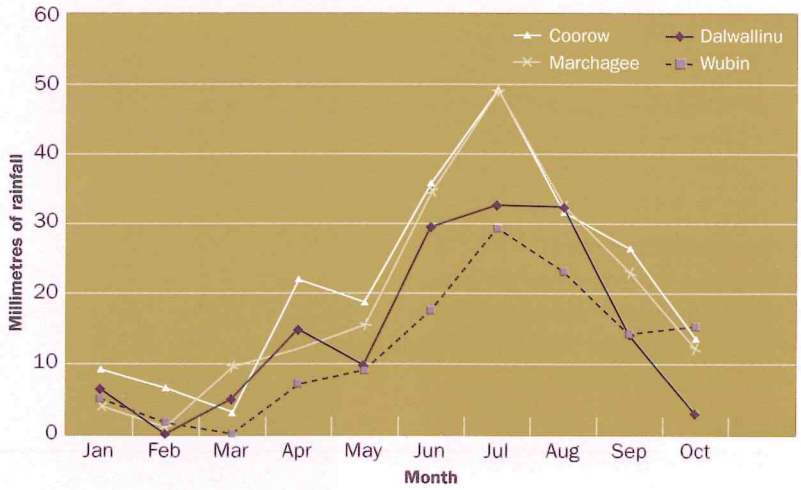
Integrated Monitoring and Evaluation

Did you know?

- Before clearing, there was little or no run-off or groundwater recharge.
- Replacing perennial deep-rooted vegetation with shallow rooted annual crops and pastures, has increased run-off and groundwater recharge, resulting in serious water erosion, waterlogging, flooding and salinity.
- Lateral groundwater discharge out of a catchment is limited by the physical properties of the material in the catchment and the groundwater hydraulic gradient.
- The movement of water through soil, regolith, fracture zones, aquifers and aquitards is governed essentially by the perme-



Rainfall data – comparisons 2002

Summary of precipitation from January to October 2002 for Dalwallinu, Wubin, Coorow and Marchagee.

Official recordings were provided for the towns of Dalwallinu, Wubin and Coorow by the Western Australian Bureau of Meteorology. Recordings for Marchagee were provided by a landholder.

ability of the material, not the amount of water.

- Compared to rates of surface water movement, which are typically measured in the order of metres per hour to metres per second, the lateral rate of groundwater movement in the Wheatbelt of Western Australia is very slow.
- The increase in groundwater recharge following clearing is not matched by an increase in lateral groundwater flow. In clayey profiles typical of the Wheatbelt, rates of lateral groundwater movement might be only centimetres per year.

Surface Water Management Pilot Study

By Jodie Watts

The Department of Conservation and Land Management has begun to prepare a surface water management plan for the Buntine-Marchagee Natural Diversity Recovery Catchment.

The surface water management plan will be prepared by Sinclair Knight Merz, a leading Australian firm of consultants with a high level of technical knowledge and experience with environmental issues.

The plan will provide information and analysis on the surface water control options for a section of the catchment and assist in planning on-ground works to reduce the impact of erosion, waterlogging and flooding events on wetlands. The work is being funded through the State Salinity Strategy.

The study area is approximately 44,000 hectares. It focuses on a section of the recovery catchment in the rejuvenated zone, because this is the area where surface water control structures are most likely to make a difference in the short to medium term.

The study will have several benefits for recovery programs planned for this catchment. These include:

- helping to determine the options available to alleviate the impact of surface water movement on biodiversity values;
- helping to raise community awareness and understanding of surface water management options and issues;
- accelerating the implementation of on-ground works needed to control surface water; and
- enabling the recovery catchment Steering Committee and Management Team to make better investment decisions when selecting the most effective salinity management treatments to apply in, and around the catchment.

The study will involve extensive liaising with landholders, including discussions on projects they have implemented or may be planning, to control surface water. While the study will include surveys and desk-top studies of hydrological and other factors in the catchment, local knowledge will be critical to the success of the strategy that is developed.

The Department is keen to involve landholders and looks forward to their ideas on the type of actions that should be included in the management plan.

Each of the landholders involved in the study is being provided with a set of tools, including detailed maps of the catchment. Landowners will also receive a copy of the final surface water management catchment report and plans.

The consultant will also prepare a surface water management plan for a proposed surface water control demonstration site at the junction of Buntine-Marchagee Road and Mamboobie Road.

The plan will include an assessment of the current culvert problem and will design appropriate repairs and modifications.

The final surface water management plan will encompass a series of catchment maps showing recommended areas for various treatments and treatment combinations based upon an integrated catchment approach.

The Marchagee Bushcare Project

By Rachel Bagshaw

In 1996, the Marchagee Catchment was selected as a 'Focus Catchment'. Focus Catchments were an initiative of the Western Australian Salinity Action Plan. The concept involved having a number of specialists concentrating their efforts over a short period of time within the catchment to provide a high level of planning and technical support. These specialists included an agronomist, hydrologist, tree extension officer, economist, ecologist and co-ordinator. The Focus Catchment initiative was delivered by the Department of Agriculture.

The Marchagee Catchment Group recognised that, on completion of the Focus Catchment initiative, they would have to look at their future direction. They had to consider ways in which to implement lasting on-ground improvements to the condition and management of natural resources, combined with sustainable agricultural practices.

As a result, the Group submitted an application to the Natural Heritage Trust and obtained funding for a Bushcare Project. A management committee was formed within the Catchment Group to appoint a Project Co-ordinator and to work co-operatively to decide where the money from the Project would be best spent.

Initially, the Project was funded by the Natural Heritage Trust. Recently, however, the Department of Conservation and Land Management's Recovery Catchment Project has also contributed to the project to help extend the Wildlife Corridor throughout the Marchagee Catchment.

The primary purpose of the project has been to facilitate on-ground improvements to the condition and management of natural resources.

To work towards achievement of this purpose, group objectives have included:

- reducing groundwater recharge and salinity,
- maintaining and increasing biodiversity in the catchment,
- maintaining remnant vegetation and improving its quality and extent,
- integrating nature conservation with traditional farming activities,
- increasing revegetation with local provenance species and other native species, and
- creating a system of wildlife corridors in the catchment.

Project achievements:

While some initiatives have been more successful than others because of variables such as weather conditions, most have had great results.

Results:

- 2,200 hectares of native vegetation is protected.
- 300 hectares has been revegetated using native plant species.
- 290,000 Bushcare and landowner funded seedlings were planted, including 75,000 oil mallees.
- 90 kilometres of Bushcare subsidised fencing at $600 per kilometre was erected by landowners
- Fencing materials provided by the Department of Conservation and Land Management were used to fence priority remnant vegetation.
- The installation of 60 observation bores and piezometers monitored and recorded by landowners each month.
- Demonstration sites of Pinus species, oil mallees and sandalwood were established in the catchment.
- Raised awareness of the values of remnant vegetation was created through training and information sessions.
- Flora and fauna surveys were conducted in the catchment (an Eremophila species, *Eremophila vernicosa*, was found, last recorded in 1938).
- Volunteers gained valuable experience by conducting on-ground works within the Marchagee Catchment.
- A 40 kilometre bush corridor, passing through seven landholders' properties and protecting more than 1,200 hectares of native vegetation, was fenced and covenanted.

The future:

Work in the Marchagee Bushcare Project has seen on-ground objectives achieved, and allowed landowners and the community to gain awareness and understanding of the value and importance of incorporating nature conservation with farming practices.

Flora surveys conducted in the catchment resulted in the discovery of an Eremophila species, Eremophila vernicosa, last recorded in 1938.

Coming Events

- Appointment of a Technical Officer.
- Appointment of a contract officer to assist the Recovery Catchment Project.
- Community information and training day on groundwater and surface water hydrology. The date and time are still to be confirmed.
- A Community Survey will be conducted in early 2003 to determine:
  - What conservation works have already been tried by landholders? What worked, what didn't work and what lessons can we learn?
  - What conservation works landholders are interested in trying? What are their current environmental issues? What would they like assistance with?
- A biological survey of wetlands within the catchment to assist in determining biodiversity values and priorities for action.

Resources

Reports and case studies

- Speed, Russell and JA Simons. 1992. Deep drains, a case study and discussion. (re: drainage and groundwater in the Buntine region).
- Speed, Russell. 2001. Groundwater study of the Perenjori townsite.
- Raines, Julie. 1995. Nomination of wetlands of outstanding ornithological importance for the Register of the National Estate: Pinjarrega Lake Wetland System. Victoria: (Royal Ornithologists Union).
- Drill completion report for Buntine-Marchagee Natural Diversity Recovery Catchment. Will be available in May 2003 for anyone who would like a copy. A copy will be issued to all those landholders involved in the drilling program.
- Pilot Surface Water Management Study. Will be available in April 2003 for anyone who would like a copy. A copy will be issued to all those landholders involved in the study.

Mostly free publications

Both Land and Water Australia and Environment Australia have many publications that are available free of charge, either as hard copies or downloaded files from the Internet. Titles include:

- The value of Native Vegetation: Urban and Rural Perspectives
- International Year of Freshwater-Environmental Events Calendar.

Land and Water Australia (www.lwa.gov.au) and Environment Australia (www.ea.gov.au).

Western Weeds on-line

Many sections of the out-of-print publication Western Weeds by B.M.J. Hussey G.J.Keighery R.D.Cousens J.Dodd S.G.Lloyd are now available on the Plant Protection Society website with a search engine feature (http://members.iinet.net.au/~weeds/western-weeds.htm#contents).

Contacts

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New Publications

Wajarri Wisdom

Estelle Leyland

A fascinating book in which Estelle Leyland has documented food and medicine plants of the Mullewa/Murchison District of Western Australia as used by the Wajarri people. The book is divided into two sections, Part A Bush Food and Part B Bush Medicine. Chapters include discussion of nutritional values of bush foods, ancient apothecaries, how food was gathered and traditional implements used in the transportation and storage of items of food and medicine. Foods described include seeds, pods and beans, seeds from grasses, roots, tubers and bulbs, fruits, fungi, galls and insects, sweeteners, vegetables and water sources. There are full-colour photographs or line drawings illustrating each plant listed.

Published by The Yamaji Language Centre, PO Box 433, Geraldton, WA 6531 $30.

Books can also be purchased from the office at 22 Sanford Street, Geraldton, WA 6530.

How to Plan Wildlife Landscapes: a guide for community organisations

Stephen Platt

The objective of this guide is to give a concise overview of general principles of landscape protection and restoration. Although written and illustrated with examples from the largely cleared rural landscapes of south-eastern Australia, the information is still applicable to property planning in the Western Australian Wheatbelt.

Available ($16 plus postage and handling) from the Department of Natural Resources and Environment, Victoria. Contact DNRE on (03) 9627 8325

Seed Notes for Western Australia

Anne Cochrane

A series of leaflets written by Anne Cochrane, from Department of Conservation and Land Management's Threatened Flora Seed Centre in Kensington. These leaflets provide information on seed identification, collection, biology and germination for a range of native plants. Available ($10) from the Perth branch of the Wildflower Society, the Wildflower Society Office (phone: (08) 9383 7979 or fax: (08) 9383 9929) and the Department's Headquarters at 17 Dick Perry Avenue, Technology Park, Kensington (phone: 9334 0481).

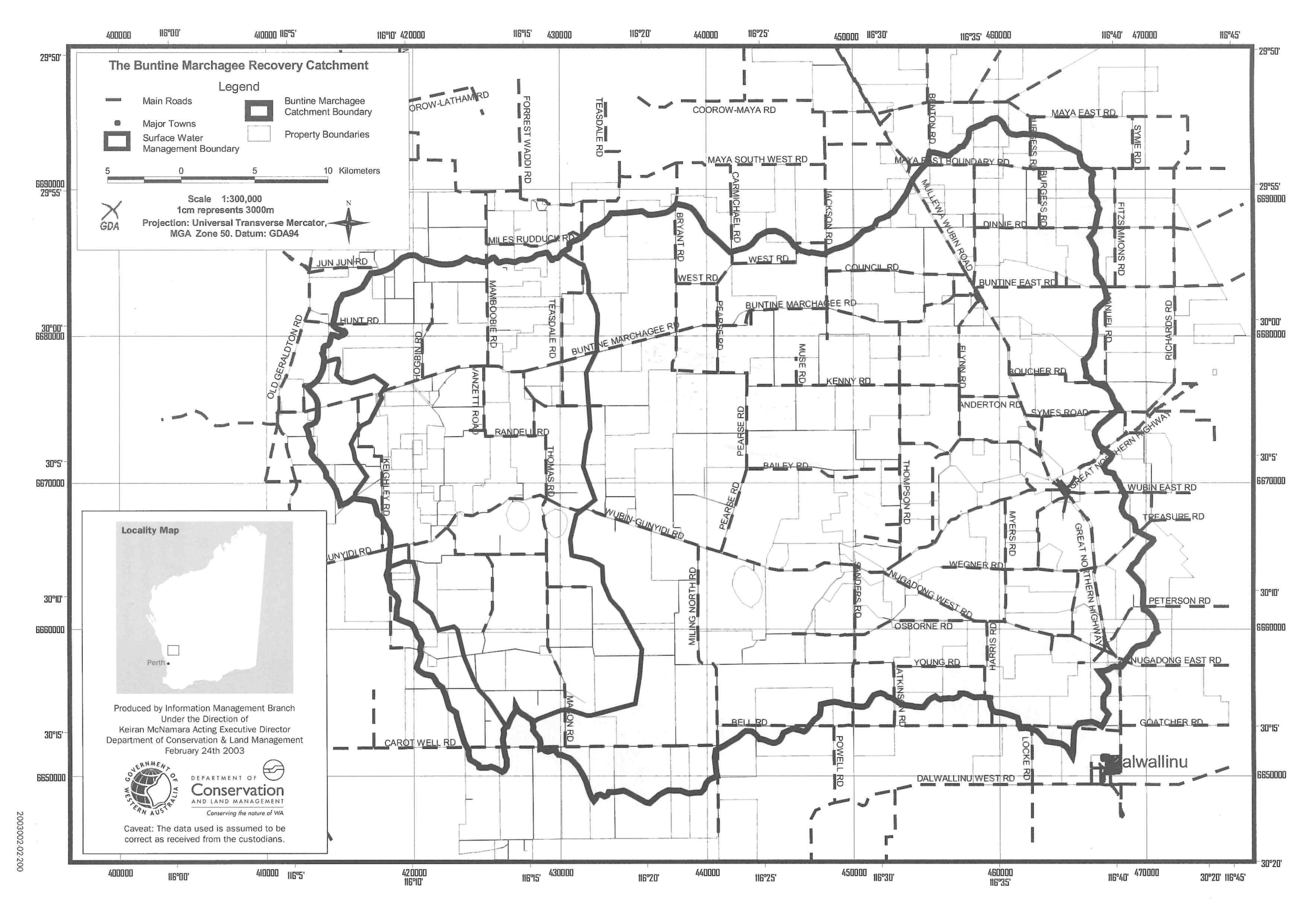
Natural Resource Management Information for the Northern Agricultural Region

CALCI Project Community Access to Local Catchment Information. CALCI is an initiative of the Northern Agricultural Catchments Council (NACC). The project aims to source, collate and disseminate information about the Northern Agricultural Region (NAR) of Western Australia.

Available from 20 Gregory Street, Geraldton, WA 6531. Phone: (08) 9921 8016. Email: pclayton@agric.wa.gov.au

Funding opportunities

Envirofund: Available for individual and community groups to undertake small projects aimed at conserving biodiversity and sustainable resource use. It will help groups carry out on-ground actions to target local problems. Phone 1800 056 823 or visit www.nht.gov.au



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