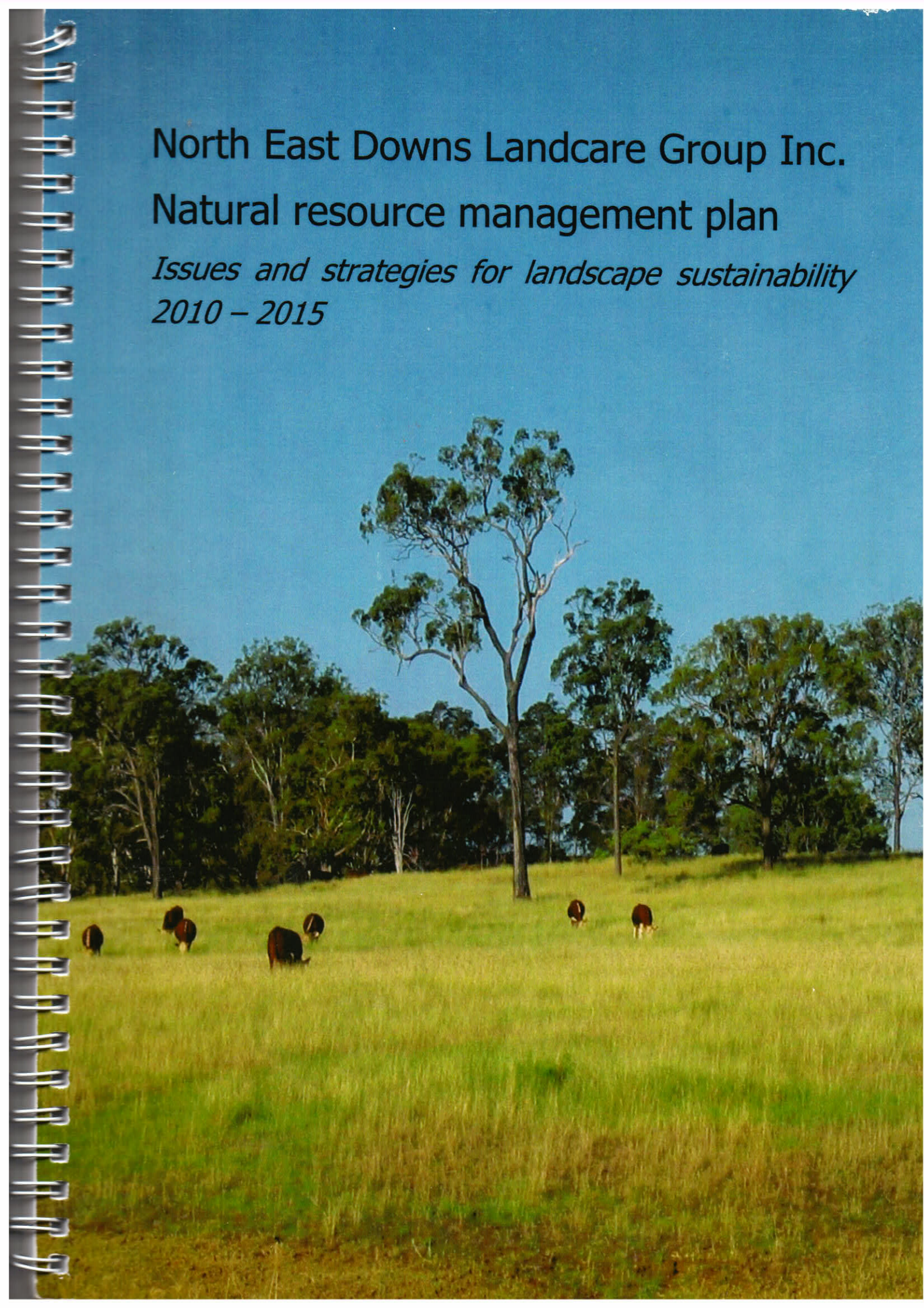


North East Downs Landcare Group Inc.
Natural resource management plan

*Issues and strategies for landscape sustainability
2010 – 2015*



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Introduction and Scope

North East Downs (NED) Landcare Group, located on the northern and eastern Darling Downs in southern Queensland, involves the local community in protecting their livelihood by minimising land degradation, promoting conservation and striving for a balanced ecosystem.

During the late 1990s NED Landcare facilitated the formation of 12 sub-catchment or community action member groups in the region, in order to engage landholders and community residents in strategic community areas to plan and implement activities for improved natural resource management.

The predicted potential impacts of climate change, together with a proposed emission trading scheme, has resulted in an urgent need to evaluate and review these previous planning activities, in terms of the success or otherwise of community engagement, and on-ground outcomes.

With the advent of the new Federal Government *Caring for our Country* program, we believe that it is an opportune time to review our past planning and project activities, and implement a community consultation process to engage or re-engage sub-catchment group landholders to develop plans for action for the future. External funding will always be very necessary to implement large sub-catchment projects, especially for activities with a large community benefit.

This plan, proposed for the 5 year period 2010 – 2015, is a result of the evaluation and review of existing sub-catchment plans, and the identification of new and emerging issues with member groups. This information has been incorporated into a natural resource management plan that will direct NED Landcare activities for the next five years through an engagement process with NED Landcare member groups.

This plan, funded by the Queensland Government's *Blueprint for the Bush – Our Place Our Future* program, will be the guide for future on-ground implementation of activities to ensure profitable, productive and sustainable land management for the next decade.

Peter Crawford

Special Projects Officer

April 2010

History and background

The NED Landcare region

The NED Landcare region is a broad area of land west between Toowoomba to the east, Dalby to the west, the Bunya Mountains to the north and Yarraman in the north-east. The NED Landcare area is approximately 7,300 square kilometres in size, with over 400 landholders and residents involved with the 13 member groups.

The 13 NED Landcare member groups combined areas of interest totals approximately 5,200 square kilometres, or around 70% of the NED Landcare region.

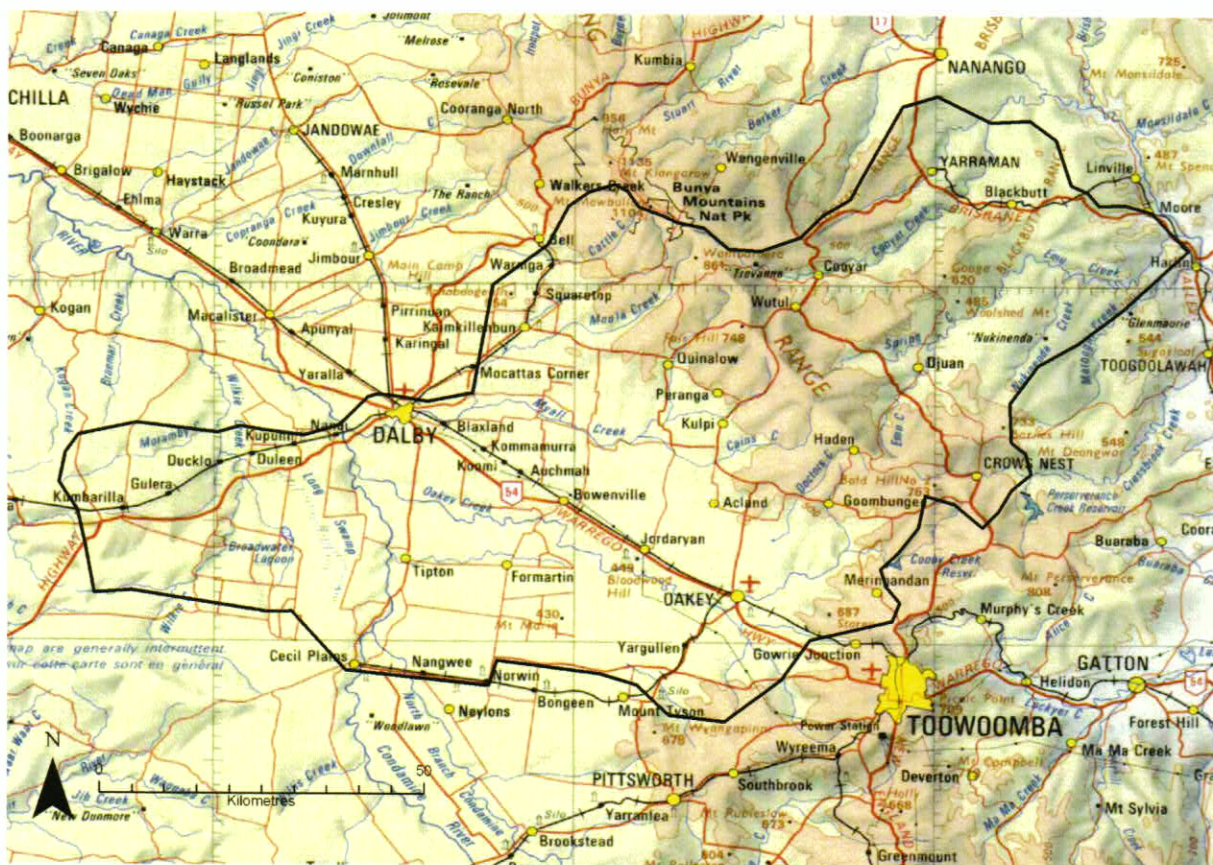


Figure 1: North East Downs Landcare region

The original NED Landcare area was based on the boundaries of Crows Nest, Rosalie and Jondaryan Shires, with the uplands of the Wambo Shire and Dalby town included in 1997. Since shire amalgamation in 2008, these shires have ceased to exist as such, but the group area of interest remains much the same as it was previously, with the previous council areas now included in the Toowoomba and Western Downs regions. Some newer members reside in the South Burnett Regional Council and Somerset Regional Council areas.

During the period 1999 to 2005 the Australian government facilitated the formation of 56 NRM regions across Australia. NED Landcare has had and continues to have a close relationship with two of these regional organisations: The Condamine Alliance, and SEQ Catchments. We expect to have a continuing relationship with both of these organisations over the coming five years.

Group history and activities

NED Landcare was formed in 1994, as a management group for Landcare activities across the north-eastern Darling Downs. The original membership was three shire based groups (Jondaryan, Rosalie and Crows Nest Landcare Groups), as well as the Rosalie North Landcare Group representing landholders in the Cooyar and Yarraman areas. During 1997 the Dalby-Wambo Landcare Group became a member of NED Landcare, resulting in a total membership of five groups and associated member landholders.

The early activities of NED Landcare were mainly based on information and awareness, in the form of field days and workshops. After several years of these types of activities, landholders indicated a desire to move from a broad shire based area to working in their local or sub-catchment areas. From 1997 to 2000 NED Landcare facilitated the formation of 12 sub-catchment groups, whilst the shire-based groups went into permanent recess.

The sub-catchment groups all developed sub-catchment action plans. These plans were the basis for action on a range of natural resource management issues in each of the group areas, and several large on-ground projects were implemented from 1999 to 2006.

NED Landcare employs a Landcare Coordinator to assist member sub-catchment groups to become established and to provide on-going support to groups, with project management and natural resource management activities.

NED Landcare and several sub-catchment groups were fortunate in obtaining funding through the Natural Heritage Trust (NHT) and the National Action Plan for Salinity and Water Quality (NAP) to assist sub-catchment groups to implement on-ground actions identified through the action planning process, during the period 1998 to 2006. All on-ground projects associated with these action plans have now been completed, with the priorities and targets in the action plans largely achieved.



Figure 2: Early NED Landcare activities were focused mainly on information and awareness

The success of sub-catchment planning activities

Previous planning activities have been extremely successful in engaging a large number of landholders, many of whom have implemented improved production and environmental conservation activities. The group process has been very valuable in achieving sub-catchment wide cooperation and involvement in tackling a range of conservation and environmental issues.

The Landcare ethic has been very well received in the NED Landcare area, although drought has limited the uptake of on-ground changes significantly. We believe that with a return to better seasons and with the development of a strategic long-term plan, regional landholders will be much better equipped to adapt to, and manage, the changes that will be thrust upon them over the next few years.

The success of past planning activities can be summarised by:

- The formation of several sub-catchment and local community groups to work on NRM issues in local communities
- The development of sub-catchment action plans through a community consultation process to identify and take action on sub-catchment NRM issues
- A cooperative approach with pre-amalgamation Shire Councils on environmental and noxious weed control, both on-farm and on the roadsides
- The implementation of sub-catchment action plans, with funding assistance for targeted and strategic sub-catchment priorities
- The large number of landholders now engaged with member groups, compared to a very low number prior to the action planning process



Figure 3: Members of the Aubigny Catchment Landcare Group at a planning meeting in 1999. From left, Gary Scheffe, Marilyn Scheffe (sec), Felicity Gunther, John Williams (chair), Charlie McCarthy, Trevor Radke, Nelson Cockburn, Harold Kowitz, Neil Williams (deceased), and Barry Tindale (deceased)

Low security prison work crew

In 1999, NED Landcare was successful in obtaining funding to employ a supervisor and buy a work vehicle, so groups would have access to the services of a low security prison work crew from the Westbrook Correctional Centre. This work crew has been extremely popular with landholders, and many projects such as environmental weed control, fencing and tree planting have been carried out over a period of 10 years.

The work crew is now administered by South Myall Creek Catchment Landcare Group, and the work crew continues to work with landholders in several NED Landcare member group areas.

The process for developing this NRM plan

This process for the development of this plan consisted of two broad objectives:

- The evaluation and review of existing sub-catchment plans; and
- The development of a list of priorities that will direct NED Landcare activities for the next five years.

The activities implemented to develop this plan included:

1. Information workshops to prepare landholders on the emerging threats of climate change to sustainable agricultural production in this region.
2. Landholder surveys on current and potential natural resource management issues.
3. Sub-catchment maps developed and printed for sub-groups.
4. Workshops held with sub-groups to review existing planning documents, and new priorities for Caring for Our Country and Condamine Alliance relevant to the NED Landcare area discussed.
5. Summaries of outcomes of first phase workshops developed and circulated to groups for comment and feedback from their membership.
6. Survey data collated and mapped.
7. Draft NRM plan based on workshop proceedings, and circulated to groups for comment and feedback.
8. The NED Landcare NRM plan finalised and printed, to be circulated to member groups and other interested parties.



Figure 4: Managing for climate change workshop presented by Dr. Jeff Clewett at Cooyar, March 2009

Involvement of NED Landcare member groups in this NRM plan

NED Landcare currently has a membership consisting of 13 member groups. These groups are more or less located on a catchment basis, with two urban Landcare groups based in Oakey and Dalby.

The NED Landcare sub-groups and their membership is shown in Table 1.

Group	Members
Aubigny Landcare Group	52 ✓
Crows Nest Creek Landcare Group <i>SEQ</i>	15
Emu Creek Catchment Landcare Group <i>SEQ</i>	90 ✓
Friends of Myall Creek	20 ✓
Gomaren and Doctors Creek Landcare Group <i>Inc</i>	50 ✓
Kumbarilla Landcare Group	5 ✓
Lagoon Creek Landcare Group <i>Inc</i>	20 ✓
Moola Creek Landcare Group <i>Inc</i>	9 ✓
Oakey Urban Landcare Group	13 ✓
Rosalie North Landcare Group <i>SEQ</i>	35
South Myall Creek Catchment Landcare Group <i>Inc</i>	85
Squaretop Action Group	8
Yamsion-Rangemore Landcare Group	30
<i>NED</i> <i>Bunya Mts Care Group</i> Total membership	432

Table 1: NED Landcare member groups and their membership (at 30th June 2009)

All of the NED Landcare member groups were contacted and engaged for input into this NRM plan, and their responses in terms of priority natural resource issues are outlined in a subsequent section. It is apparent that some new and emerging issues have come to the forefront of most member groups thinking, so the need to develop objectives to address these new issues is the main aim of this NRM plan.

With the increasing risks of climate change and the potential for substantial costs to landholders through a future emissions trading scheme, landholders now recognise the importance of developing strategies for action to mitigate these risks, as well as adopting new ways to improve their productive capacity.

A good 'picture' of overall natural resource management issues in the NED Landcare region has been developed by combining the priorities of each of the Landcare groups and by collating and mapping the individual member results from a *Blueprint for the Bush* landholder survey in a GIS-based analysis.

Figure 5 indicates the geographic distribution of the NED Landcare members who responded to the *Blueprint for the Bush* survey. Of the total of 432 members there was a 35% response rate, which NED Landcare considers to be a satisfactory response for the purposes of developing an overall picture.

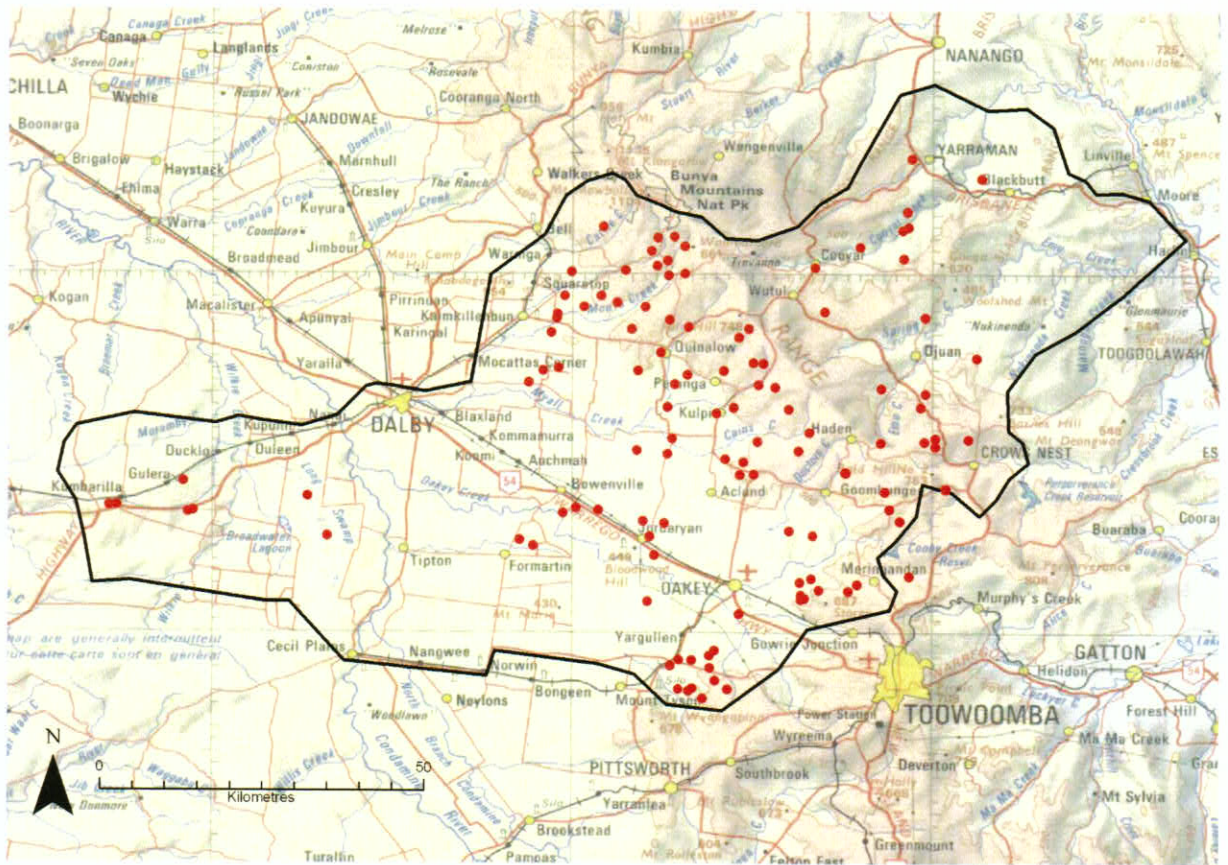


Figure 5: Geographic distribution of NED survey responses to Blueprint for the Bush survey questionnaire

By analysing the responses to various questions in a geographic perspective NED Landcare believes that it will be better positioned to target specific information or on-ground activities to specific Landcare groups.

The individual issue maps produced (Appendices 3 to 5) illustrate the geographic extent of current and new and emerging priority natural resource management issues.

The issue of mining of prime agricultural land

NED Landcare does not object to mining activities, provided that they are carried out in a sustainable and environmentally friendly manner, with the land returned to agricultural production using best practice rehabilitation techniques. However, the loss of prime agricultural land to mining activities has been raised by all member groups, and is a high priority issue with most NED Landcare landholders. This has already occurred in the case of the New Acland coal mine to the north of Oakey, with a large area of high quality agricultural land being resumed for an open cut coal mine.

Much of the NED Landcare area has land identified as Class A land (see appendix 1 for details), which is land suitable for high quality continuous cropping activities. It is a concern that at the time of development of this plan that there are few or ineffective guidelines in place to protect land that is considered to be suitable for high value cropping and horticultural activities. However, it should be noted that at the time of writing that the Queensland Government has initiated a public consultation process to assist in the development of guidelines for the restriction of mining activities on prime agricultural land, and NED Landcare supports this process.

Appendix 2 includes a series of maps showing where mining exploration permits and mineral development licence applications have been applied for. The maps show that large areas of the NED Landcare region are under some type of mining exploration permit application, whether granted or still undergoing assessment. It should be noted that an exploration permit does not necessarily mean that area will eventually be mined, but the uncertainty of this is leading to stress on landholders affected by exploration permits.

The potential impacts of climate change

Facts and theories

There is much on-going debate about the realities or otherwise of climate change (or global warming), and whether human activities are to blame for increases in CO₂ in the atmosphere. It is not the objective of this document to embrace any particular opinion or viewpoint, but simply point out the facts as they stand.

Climate change is not a new phenomenon. Research has shown that the earth has undergone periods of warming and periods of cooling, associated with varying levels of CO₂ in the atmosphere, for many thousands of years. The graph in Figure 6 shows varying levels of CO₂ from 800,000 years ago to the present.

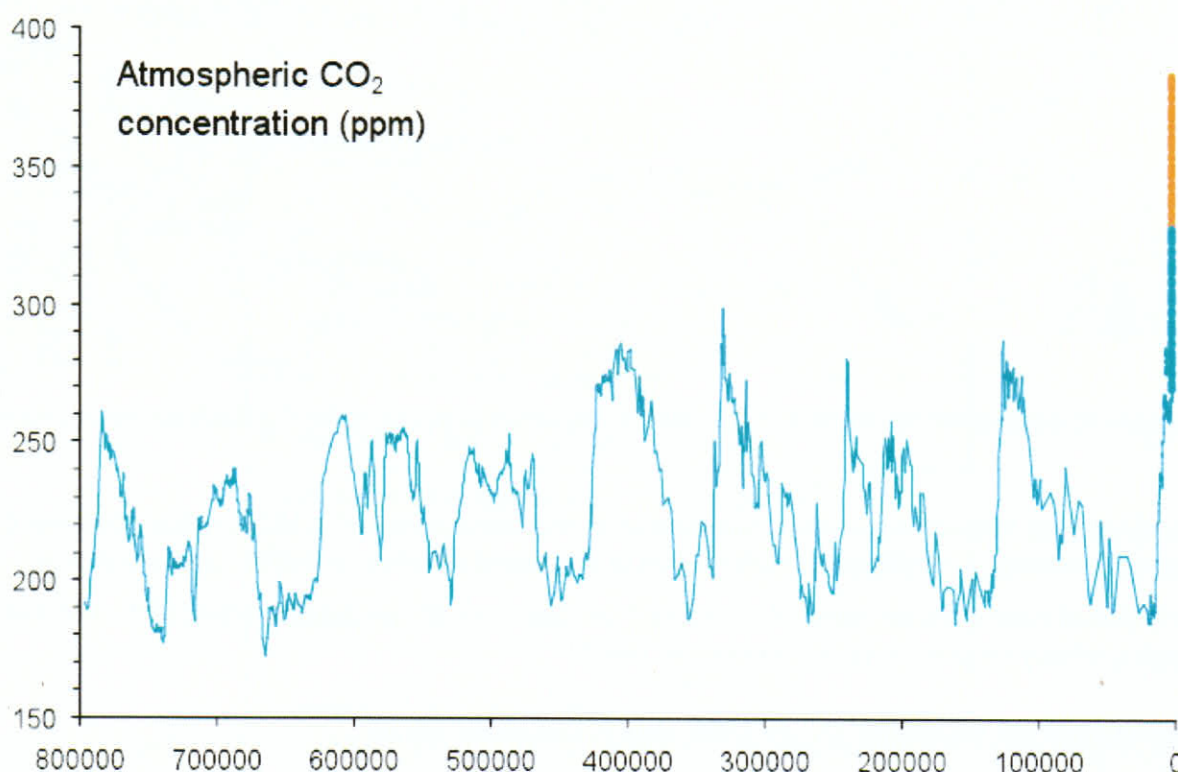


Figure 6: Atmospheric CO₂ levels from 800,000 years ago until the present (source: Australian Government Department of Climate Change)

The lowest levels of atmospheric CO₂ coincide with the periods of ice ages. The main point to note here is that the average highest levels of CO₂ over this period have been less than 300 parts per million (ppm), but the level of atmospheric CO₂ in 2009 has been calculated to be 387 ppm – a level far higher than during any period over the past 800,000 years.

A corresponding increase in temperature of 0.74°C over the past 100 years (source IPCC) reflects the link between atmospheric CO₂ and surface temperature. If the predictions of scientists are correct, the average global surface temperature may rise a further 1.1 to 6.4°C (2.0 to 11.5°F) during the twenty-first century.

What are the potential impacts of global warming for agriculture, and what does this mean locally?

If global warming predictions are correct, the impacts on agriculture could be very significant. Research by Dr. Jeff Clewett has put global predictions into a local perspective, and he has developed scenarios for various locations in the NED Landcare region, based on several key areas relevant to farmers in the region. These are:

- Increased number of hot days
- Decreased rainfall
- Increase in cattle heat stress
- Decrease in the number of frosts

The scenarios are based on global temperature rises in a range between 0 °C (no change) and 3 °C (large change).

Increased number of hot days

The increased number of hot (35°C or higher) days is predicted to increase under all rising temperature scenarios. This is outlined in Table 2, and it can be seen that the number of days with maximum temperatures of 35°C or higher will basically double with even a 1°C rise in global temperature. This will have a significant impact on all spring and summer agricultural activities, as well as an associated significant impact on human health and well being.

Location	0°C rise*	1°C rise	2°C rise	3°C rise
Crows Nest	3	5	8	18
Maclagan	4	8	18	31
Yarraman	7	16	26	42
Oakey	8	16	27	42
Dalby	19	32	48	66
Mean	8	15	25	40

* Median number of days with temperatures of 35°C or higher for the 1980 – 2000 base period

Table 2: Median number of days/year with maximum temperature 35 °C or higher predicted for a range of global warming scenarios (by Dr. Jeff Clewett using data from SILO and Rainman StreamFlow)

Rainfall

In general, rainfall is expected to decline in all locations, in all rising temperature scenarios. It will come as no surprise to local farmers that rainfall has been declining for the past decade. In fact over the period 2004 to 2009, rainfall has declined from the long-term average by 15% at Dalby, 16% at Cooyar, and by 22% at Oakey. This may or may not be due to any influence of climate change, and may simply be part of a 10 to 20 year cycle.

Farmers in the NED Landcare region are becoming very accustomed to working in an environment of lower rainfall, but the figures in Table 3 indicate that this may become more exacerbated with global warming.

Location	Season	0°C rise*	1°C rise	2°C rise	3°C rise
Cooyar	Summer	297 mm	1% drop	3% drop	5% drop
	Autumn	178 mm	3% drop	6% drop	8% drop
	Winter	106 mm	5% drop	10% drop	15% drop
	Spring	173 mm	7% drop	14% drop	19% drop
	Total	754 mm	728 mm (-3%)	700 mm (-7%)	673 mm (-11%)
Oakey	Summer	253 mm	1% drop	3% drop	5% drop
	Autumn	131 mm	3% drop	6% drop	10% drop
	Winter	85 mm	5% drop	10% drop	15% drop
	Spring	152 mm	7% drop	14% drop	19% drop
	Total	621 mm	600 mm (-3%)	576 mm (-7%)	554 mm (-11%)
Dalby	Summer	268 mm	1% drop	3% drop	5% drop
	Autumn	143 mm	3% drop	6% drop	10% drop
	Winter	84 mm	5% drop	10% drop	15% drop
	Spring	156 mm	7% drop	14% drop	19% drop
	Total	651 mm	629 mm (-3%)	604 mm (-7%)	581 mm (-11%)

* Average annual rainfall for the base period Dec 1980 to Nov 2000

Table 3: Predicted decrease in rainfall for various global warming scenarios (by Dr. Jeff Clewett using data from SILO and Rainman StreamFlow)

Increase in cattle stress

Cattle heat stress is measured as a Thermal Heat Index (THI). THI levels are measured in the range from 70 to 100, with THI levels below 70 resulting in no heat stress on cattle. At THI levels between 70 and 80, there is a low risk, levels between 80 and 90 a severe risk, and levels between 90 and 99 an extreme risk to animal health. A level of 100 will cause cattle deaths.

Table 4 outlines the predicted number of days per year with a THI of 85 or higher (severe risk) for several locations under a range of global warming scenarios. For the Dalby area it is apparent that the severe risks to cattle will increase dramatically with even a 1°C rise in global temperature, which will have a significant impact on the management of cattle in this area, especially for cattle in feedlot situations without good shade cover.

The increase in cattle stress is closely linked to the predicted increase in hot days. Heat stress is usually worse in El Nino years, with La Nina years generally cooler with more humidity.

Location	0°C rise*	1°C rise	2°C rise	3°C rise
Crows Nest	0	1	2	5
Maclagan	1	2	4	9
Oakey	2	4	9	13
Yarraman	3	6	12	17
Dalby	6	10	17	26
Mean	2	5	9	14

* Median number of days with a THI greater than 85 for the 1980 – 2000 base period

Table 4: Average number of days/year with a Thermal Heat Index (THI) over 85, predicted for a range of global warming scenarios (by Dr. Jeff Clewett)

Decrease in the number of frosts

Many farmers might welcome a decreased number of frosts, meaning there might be less risk of crop damage, frozen irrigation and domestic water systems and so on. However, many crops, especially horticultural crops and fruit trees, depend on a specific frost regime for maximum production, and a decrease in frost activity may have a significant impact on production. There are also implications for native fauna and flora, pasture management, livestock weight gains and pests and diseases.

Table 5 outlines the predicted number of frosts under a range of global warming scenarios.

Location	0°C rise*	1°C rise	2°C rise	3°C rise
Crows Nest	29	19	12	4
Maclagan	35	27	16	9
Oakey	38	28	20	12
Yarraman	22	13	6	3
Dalby	30	19	14	6
Mean	31	21	14	7
First frost**	3 rd June	11 th June	18 th June	26 th June
Last frost**	9 th Sept	3 rd Sept	22 nd Aug	14 th Aug

* Median number of days with frosts for the 1980 – 2000 base period **Av. dates for the district

Table 5: Average number of days/year with a minimum temperature of 2 °C or less, predicted for a range of global warming scenarios (by Dr. Jeff Clewett)

NED Landcare member groups: a summary of past involvement and new and emerging priorities

NED Landcare member group locations

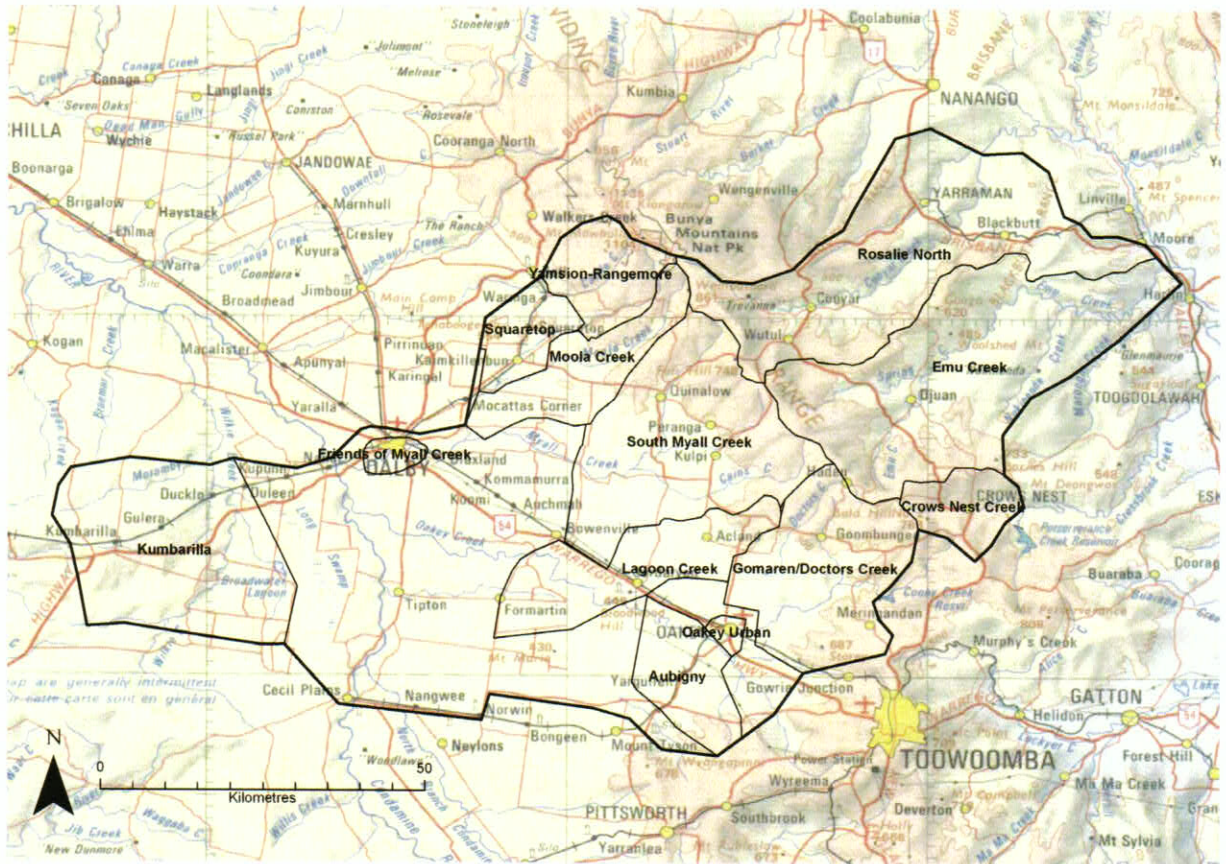


Figure 7: Location of member groups in the NED Landcare area

With the exception of Oakey Urban Landcare, Friends of Myall Creek, and Kumburilla Landcare, NED Landcare member groups have generally been formed in specific sub-catchment areas. Landholders in these sub-catchments realise the benefits of working cooperatively on catchment scale issues, and in most cases the sub-catchment areas are also areas of common social networks.

Three member group areas are located east of the Great Dividing Range in the Brisbane River catchment, part of the SEQ Catchments NRM Region. The remainder of the member groups are located west of the Great Dividing Range, basically the headwaters of the Murray Darling Basin. These groups are all located in the Condamine Alliance NRM region.

The map in Figure 7 shows that the majority of the area represented by NED Landcare member groups is sloping or upland country. The NED Landcare region also includes part of the Upper Condamine floodplain, an area of rich low-slope farming soils and intensive (both irrigated and dryland) cropping activity. Farmers in this region area generally involved with other groups such as Conservation Farmers, but there are some landholders on the floodplain who regularly attend NED Landcare activities.

Aubigny Catchment Landcare Group

The Aubigny catchment is located approximately 20 kms west of Toowoomba on the Cecil Plains Road, and extends to the edge of the Condamine floodplain about 15 kms further west. Although there are no recognised creeks or streams arising in the catchment, the area is an important watershed, releasing large volumes of run-off water onto the floodplains in times of heavy rainfall. This run-off water can sometimes cause severe problems, both in erosion in the uplands and overland flow after dispersal onto the plains.

In recent years the group has extended its area to the north to include interested landholders on Oakey Creek, downstream from the town of Oakey.

Land types vary from steep timbered (mostly Mountain Coolibah woodland) country to the east to deep alluvial black soil plains country to the west. Soils on the slopes vary from red-brown earths on stony ridges, to darker brown and black earths on the lower slopes which are predominately cultivated. Deep gully erosion on the slopes reveals deep sedimentary layers in some areas and gravel sub-soil layers in other areas. With contour banks on the slopes and strip farming on the plains, cultivation is generally productive and sustainable.

The main land uses are beef cattle, grain and lucerne farming, piggeries, dairy farming, goats, olive production and worm farming. The largest industry is Beef City, a feedlot and abattoir owned and operated by Australian Meat Holdings. Beef City occupies about 750 hectares in the lower section of the catchment.

A map showing the general area of interest for the Aubigny Catchment Landcare Group is shown in Figure 8.

The Aubigny Catchment Landcare Group Action Plan (1999) detailed four high priority natural resource management issues:

- Vegetation and Pasture Decline and Management
- Soil Erosion
- Johnson Grass
- Communication and Education

The consultation for this strategy identified environmental weed control (priority weeds considered to be Tree pear and African boxthorn), feral pests (wild dogs and Indian mynah birds), preservation of endangered vegetation communities, and pasture and soil health decline as the groups main priorities.

Table 6 shows the Aubigny Catchment Landcare Group priorities, and these are supported by the individual member responses to the *Blueprint for the Bush* survey.

Priority Weeds	Animal Pests	Priority Vegetation	Other concerns
<ul style="list-style-type: none"> ▪ Tree pear ▪ African boxthorn ▪ Maynes pest ▪ Lantana ▪ Johnson grass ▪ Lippia - some areas ▪ Foxtail grass 	<ul style="list-style-type: none"> ▪ Wild dogs ▪ Indian mynahs 	<ul style="list-style-type: none"> ▪ Qld. blue grass areas ▪ Semi evergreen vine thickets ▪ Mountain coolibah communities ▪ Kurrajong 	<ul style="list-style-type: none"> ▪ Control of roadside weeds in public areas ▪ Control of wild dogs becoming a serious problem – sheep and calf attacks

Table 6: Priority NRM issues for Aubigny Landcare Group



Figure 8: Aubigny Catchment Landcare Group area of interest

Crows Nest Creek Catchment Group

The Crows Nest Creek Catchment has an area of 140 square kilometres. It is based on Crows Nest Creek, from its origins on the eastern escarpment of the Great Dividing Range to its inflow into Cressbrook Dam, which is Toowoomba's main water supply dam (the dam outflow follows Cressbrook Creek to join the Brisbane River east of Toogoolawah, above the Wivenhoe Dam).

Perseverance Creek, Bald Hills Creek, Old Womans Hut Creek, Back Creek and a number of unnamed tributaries join Crows Nest Creek. Rocky Creek flows into Old Womans Hut Creek.



Figure 9: Crows Nest Creek catchment

The catchment is bounded on the west by the Cooby Creek Catchment (part of the Murray Darling Basin), on the south by the rough country of the Perseverance Creek catchment, and to the north by the Upper Emu Creek Catchment.

The town of Crows Nest is in the centre of the catchment. Crows Nest Creek and Bald Hills Creek flow through the town. The catchment is bisected by the New England Highway which connects Toowoomba and the South Burnett.

The priority issues identified in the 1999 catchment action plan are listed in Table 7. The issues are highly interrelated. They reflect the concerns of the wide spectrum of stakeholders: farmers and graziers, small landholders, town residents, and local government.

- **Water Quality:** water from the catchment reaches Cressbrook Dam which supplies Crows Nest and Toowoomba with drinking water, and eventually runs in to the Brisbane River. There is concern about silting, salinity, effluent control, algal blooms, riparian issues, fish and aquatic wildlife populations.
- **Vegetation Management:** concern about management of native and improved pasture for ecological sustainability, particularly weed management. Preservation and restoration of remnant native vegetation and the corridors connecting them.
- **Soil Stability and Fertility:** erosion and areas needing construction or repair of contour banks, soil structure and fertility, high traffic areas.
- **Waste Management:** concern about contamination of drinking water by farm chemicals; leaching from landfill and septic; business and industrial waste; runoff from town streets. Concern about the spreading of weeds from landfill.
- **Wildlife and Nature Conservation:** coordinated approach to threatened flora and fauna; feral animals; degradation of habitats eg. for platypus, Brush-tailed Rock Wallaby.
- **Communication, Education and Awareness:** there is a core of enthusiasts and advisors who are conscious of the goals of Integrated Catchment Management, but there is a pressing need to recruit more landholders and other community members. Methods will include peer contact, workshops and field days, the local press, and involvement of school students.

Table 7: Priorities of the Crows Nest Creek Catchment Group



Figure 10: Crows Nest Creek member Graham Rogers explaining creek restoration work to visitors from India

Emu Creek Catchment Landcare Group

The Upper Emu Creek Catchment Group is located at the headwaters of Emu Creek, which is a major tributary of the Brisbane River. The catchment boundary to the west is the Great Dividing Range, which separates the Murray Darling Basin from the Brisbane River catchment.

The catchment is based on three minor creeks, namely Spring, Gowrie and Pierces, and covers the area from Haden and Coalbank to the west, along the Blackbutt Range to Mt Binga and east to Anduramba.

The Upper Emu Creek Catchment Strategic Plan (1997) lists five priority NRM issues that were of strategic importance to the Emu Creek Catchment Landcare Group. These priorities were:

- Communication, education and awareness
- Water quality and quantity
- Pastures
- Soil stability and fertility
- Nature conservation

In the period 1997 until the current time a number of action plans were developed to deal with the priorities and many of the proposed NRM actions have been implemented.

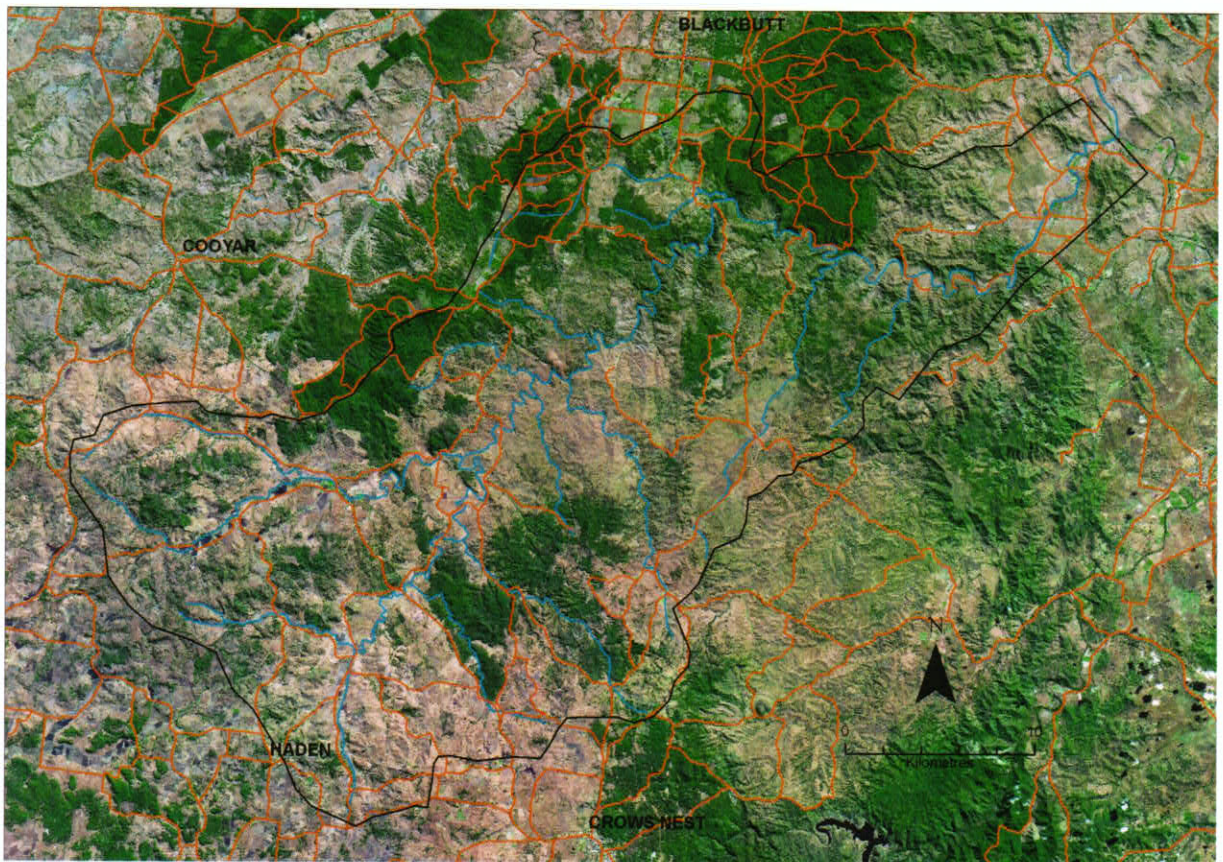


Figure 11: Upper Emu Creek catchment

Consultation with the group identified weed control (main weeds are African lovegrass and lantana) to be a major priority, with feral pests (rabbits, deer and cane toads), and preservation of endangered vegetation communities also being high priority issues in the catchment. Even though catchment priority issues such as

pasture decline and erosion are still important, the considerable work undertaken by Landcare members over the past decade has resulted in the emphasis shifting to other priority issues (particularly weeds and pests).

Table 8 shows the Emu Creek group current priorities, and these are supported by the individual member responses to the *Blueprint for the Bush* survey. In addition there is a large interest from the group members in soil carbon, increasing soil fertility and future issues such as carbon trading.

Priority weeds	Animal pests	Priority vegetation	Other concerns
<ul style="list-style-type: none"> African lovegrass Creeping lantana Lantana Boxthorn Cotton bush Tree pear Mother of millions Giant rats tail grass Cats claw creeper Asparagus fern Mistletoe 	<ul style="list-style-type: none"> Rabbits - light Pigs - urban areas Dogs - light Cane toads Deer 	<ul style="list-style-type: none"> Eucalypt woodland Qld. bluegrass Kangaroo grass 	<ul style="list-style-type: none"> Creek bank erosion Soil health Community awareness Child safety Succession planning Late meetings!!!

Table 8: Priority NRM issues for Emu Creek Catchment Landcare Group



Figure 12: Balancing production with nature conservation is a priority issue with ECCLG: nature conservation field day at Emu Creek 1999

Friends of Myall Creek

The Friends of Myall Creek Landcare Group is essentially an urban Landcare Group that is based in the town of Dalby. Myall Creek is a major tributary of the Condamine River, joining the river a few kilometres south of the town.



Figure 13: Dalby town showing the path of Myall Creek

The group has embarked upon a number of specific natural resource management projects over the past few years. Focusing on the section of Myall Creek that traverses the town of Dalby, the group has undertaken activities such as riparian restoration, weed control, plantings of appropriate native plant species, carp reduction and promotion of bank restoration and provision of off-stream watering points for stock.

Coordination of on-ground works with Greening Australia has resulted in some significant riparian maintenance activities, and this has helped the group to develop a high profile presence in Dalby. Recent works along Myall Creek have included fishway maintenance (Edward Street weir), Myall Creek day, carp fishing competitions and riparian tree planting programs. A recent program (Threatened Species Network funding) involves development of a management plan for a threatened bird species, the Regent honeyeater. Appropriate native flowering plant species will be planted to enhance habitat for this vulnerable species.

Unlike most other NED Landcare groups, Friends of Myall Creek has strongly focused on a critical riverine habitat in an urban environment and it is hoped that this strong focus can continue in the future. The huge expansion of mining and coal seam gas exploration in the area to the west of Dalby is having a big effect on social issues such as housing and industrial expansion, which may lead to further pressures on Myall Creek in the future.

Membership of this group has dwindled in recent years due to an aging membership and movement of members to other areas. There is an urgent need to recruit younger members from the community in order for the group to be at the forefront of environmental management in Dalby in future years.

Gomaren and Doctors Creek Landcare Group

The Gomaren and Doctors Creek Landcare Group is based around an area with the town of Goombungee roughly near the centre of the catchment. The catchment is bounded by the Great Dividing Range in the north, the Cooby Creek catchment to the east, and the Oakey-Cooyar road to the west.

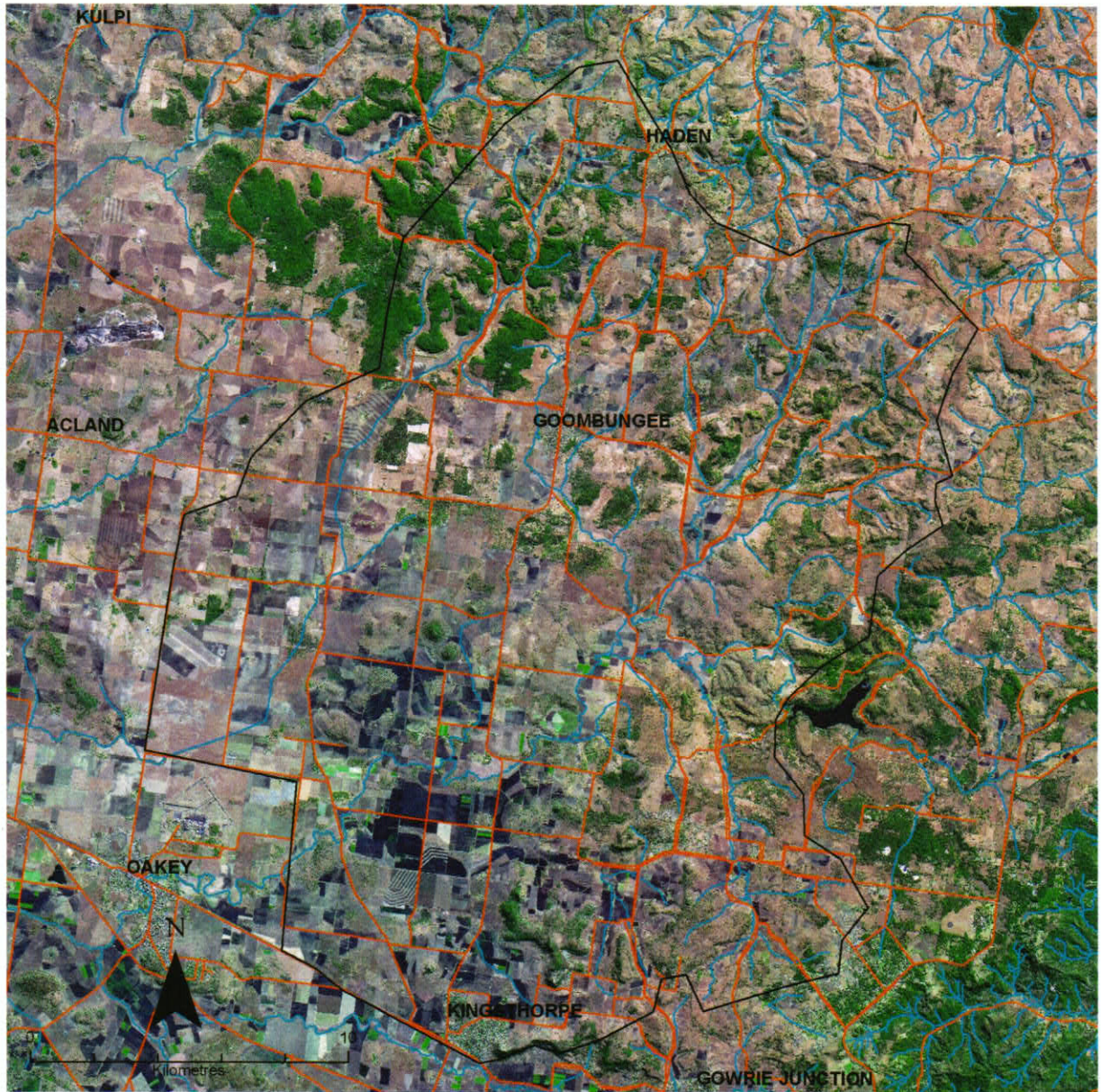


Figure 14: The Gomaren-Doctors Creek catchment

A public meeting was held in February 1998 to ascertain interest in forming a Landcare group in the area. Subsequently the Gomaren and Doctors Creek Landcare Group was formed, and with assistance from NED Landcare an action plan was developed.

The priority issues identified in the 1999 Gomaren/Doctors Creek Landcare Group Catchment Action Plan are shown in Table 9.

<ul style="list-style-type: none"> ▪ Water access, quantity and environmental flows ▪ Water quality ▪ Better water retention, more water conservation ▪ Better water management, more efficient use of water ▪ Weeds ▪ Problem weed control in general, roadside weeds, lack of co-ordination ▪ Farm Viability ▪ Cost price squeeze, lack of profitability ▪ Tax incentives for Landcare activities ▪ Soil fertility ▪ Look at possibility of public purchase of degraded or uneconomic land ▪ Tourism as an alternative ▪ Land use and management ▪ Soil erosion ▪ Water from neighbours, higher country causing problems 	<ul style="list-style-type: none"> ▪ Weeds spread through/by creeks ▪ Decline in quality of underground water ▪ Dams silted up ▪ Chemical run off from irrigation activities ▪ Communication, education and awareness ▪ Lack of participation by farmers in groups ▪ Lack of knowledge in sustainable farming techniques ▪ Pest Animals ▪ Dingoes, feral pigs ▪ Nature conservation ▪ Retention and preservation of native trees and pastures ▪ Need for sensible and practical environmental management ▪ Improve vegetation and soils, wildlife corridors ▪ Riparian zone management ▪ Creeks clogged with logs and debris ▪ Wildlife corridors along creeks ▪ Stabilising of creek banks
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Table 9: Gomaren-Doctors Creek priorities 1999

Table 10 shows the Gomaren and Doctors Creek Landcare Group current priorities as identified by the group in 2009. The group has identified woody weed control (priority weeds considered to be Tree pear and Tiger pear), feral pests (rabbits, wild dogs), and endangered vegetation communities as being the main concerns, as well as concerns about declining soil fertility and soil carbon levels.

Priority Weeds	Animal Pests	Priority Vegetation	Concerns
<ul style="list-style-type: none"> ▪ Tree pear ▪ Tiger pear ▪ Russian knapweed ▪ Fireweed ▪ Foxtail grass ▪ Lantana - scattered 	<ul style="list-style-type: none"> ▪ Wild dogs ▪ Rabbits ▪ Feral cats ▪ Indian mynahs 	<ul style="list-style-type: none"> ▪ Qld bluegrass ▪ Brigalow ▪ Semi-evergreen vine thicket 	<ul style="list-style-type: none"> ▪ Tiger pear ▪ Maynes pest ▪ Asparagus fern ▪ Mining ▪ Drought, climate change and need for change

Table 10: Gomaren-Doctors Creek current and emerging priorities

Kumbarilla Landcare Group

The Kumbarilla Landcare Group was formed by a small group of local farmers in 2004. The groups area of interest is located south-west of Dalby, and is bisected by the Moonie Highway. A large area of forestry country is situated to the south of the group area, and the important wetland site of Lake Broadwater is to the east. The two major watercourses are Wilkie Creek and Moramby Creek, both tributaries to the Condamine River.



Figure 15: The Kumbarilla Landcare Group area of interest, showing the Condamine River floodplain to the east, and the town of Dalby to the north-east

Although Kumbarilla Landcare Group was formed after the completion of the NED Landcare sub-catchment action planning activities, the group has been very involved in community awareness activities since its inception.

Group members have identified weeds (including African lovegrass, Mother of millions and Tree pear), and feral pests (wild dogs, feral cats and Indian mynahs), as major concerns. In particular, wild dog attacks have become more common, and it appears that there has been a build up in the wild dog population in the large state forest to the south of the group area.

Table 11 outlines the Kumbarilla Landcare Group priorities, and these are supported by the individual member responses to the *Blueprint for the Bush* survey.

Priority weeds	Animal pests	Priority vegetation	Concerns
<ul style="list-style-type: none"> ▪ African lovegrass ▪ Mother of millions ▪ Tree pear 	<ul style="list-style-type: none"> ▪ Wild dogs ▪ Feral cats ▪ Indian mynahs 	<ul style="list-style-type: none"> ▪ No endangered regional ecosystems in the group area 	<ul style="list-style-type: none"> ▪ Rabbit fencing should be higher to stop dingoes and the gap of 10 to 15k should be closed ▪ Government regulations over much on their land ▪ The 135,000 ha of state forest harbours feral animals which come out at night to attack stock ▪ Concerns about pasture and soil fertility decline ▪ Large interest in building soil carbon

Table 11: Kumbarilla Landcare Group priorities and issues



Figure 16: Lake Broadwater Conservation Park protects the only lake on the Darling Downs, and is a significantly important wetland area in the Kumbarilla district

Lagoon Creek Landcare Group

The Lagoon Creek is a non-permanent drainage system, rising in the hills about 25 kilometres north of Oakey. The creek runs south west towards Jondaryan, where after crossing the Warrego Highway in the township the water flows west to the floodplain and spreads out, eventually ending in Oakey Creek south of Bowenville.

The group has been constantly expanding its area to include other interested landholders, and it now has members to the area south of Bowenville, and the area between Formartin and Jondaryan.

Land types vary from scrubby ridges to undulating country mostly comprised of rich scrub soil. There are some pockets of lower quality loamy areas throughout the area.

The land is primarily used for agricultural purposes. Rural industries include:

- Grain growing
- Dairying
- Beef cattle grazing
- Beef cattle feedlots
- Piggeries
- Alpaca breeding
- Eucalypts for cut-flower and bud production

A large part of the northern section of the Lagoon Creek catchment is now included in the New Hope Acland coal mine area, and some group members properties have been resumed by the mine. As a consequence the group is fairly involved in consultations with New Hope on new and emerging environmental issues associated with coal mining in the catchment.

A considerable number of group members have been through an intensive property planning workshop process with NED Landcare, and the value of this process is becoming evident in more strategic on-ground actions.



Figure 17: Lagoon Creek sub-catchment (note New Hope Stage 1 coal mine top-right)

The priority issues of the catchment identified in the 1999 sub-catchment Action Plan for Lagoon Creek Landcare Group are shown in Table 12.

- Soil erosion - erosion of cultivated land, eroded waterways and eroding creek banks
- Weeds - a comprehensive list of weeds was developed, with the main priorities being:
 - African boxthorn
 - Tree pear
 - Mother of millions
 - Johnson grass on roadsides
 - Other weeds include Lippia, Rubber vine, Maynes pest, Foxtail grass, and burrs
- Dryland salinity - there are two known sites in the upper catchment area, and one site further down below Jondaryan. The potential risk of salinity is also recognised
- Fertility decline - run down in productive capacity of cultivation country
- Farm viability - lack of viability is restricting on-ground Landcare works. A very real lack of funds exists generally, with the result of little being spent on soil erosion control, woody weeds etc
- Remnant vegetation and tree decline - the catchment has been extensively cleared, and the concern is for protecting existing remnants and re-planting strategic areas

Table 12: Priority issues identified in the 1999 Lagoon Creek catchment action plan

The group member survey showed woody weed control (priority weeds are Tree pear, Lippia and Mother of millions), feral pests (wild dogs, rabbits and foxes), preservation of endangered vegetation communities and concerns of weed spread and feral animal control, as the highest priorities. Earlier priority issues such as pasture decline and erosion are still prevalent, however new and emerging issues such as soil carbon decline and mining are now at the forefront of members thinking.

Table 13 shows the Lagoon Creek Landcare Group current and emerging priorities, and these are supported by the individual member responses to the *Blueprint for the Bush* survey.

Priority weeds	Animal pests	Priority vegetation	Concerns
<ul style="list-style-type: none"> ▪ Tree pear ▪ Lippia ▪ Mother of millions ▪ Boxthorn ▪ Lantana - currently restricted ▪ African lovegrass-spreading by council ▪ Russian knapweed ▪ Nutgrass ▪ Tiger pear 	<ul style="list-style-type: none"> ▪ Wild dogs ▪ Rabbits ▪ Foxes ▪ Cats ▪ Pigeons ▪ Pigs in black soil country 	<ul style="list-style-type: none"> ▪ Bluegrass ▪ Austral cornflower in waterways ▪ Brigalow/yarran ▪ Belah scattered patches ▪ Ironbark/eucalypts ▪ Weeping myall communities 	<ul style="list-style-type: none"> ▪ Transport infrastructure ▪ Mining ▪ Absent foreign neighbours ▪ Diversity in cropping ▪ Group trialling of new crops ▪ Bureaucracy ▪ Getting good info ▪ Declining rail availability to move produce

Table 13: Current and emerging issues of the Lagoon Creek Landcare Group

Moola Creek Landcare Group

The Moola Creek Landcare Group was formed in 2001 in response to concerns by several landholders about a range of natural resource management issues. The Moola Creek arises in the foothills of the Bunya Mountains, and winds it's way south-west where it joins Myall Creek north-east of Dalby. The Moola Creek sub-catchment is located in prime (mainly brigalow) mixed farming country to the east and north-east of Kaimkillenbun.



Figure 18: The Moola Creek sub-catchment

Soils vary from grey-brown cracking clays to reddish-brown clay and clay loams on brigalow country, to alluvial black and grey cracking clays, to small areas of bleached sandy soil on sandstone slopes and ridges. Landuse ranges from mainly mixed farming with beef cattle and small areas of cash cropping in the top two-thirds of the catchment, to intensive dryland grain production in the lower one-third.

Moola Creek Landcare members have been involved in activities aimed at more sustainable farming systems for several years, firstly through an intensive property planning and property mapping programme, and more recently with innovative activities such as pasture cropping.

Table 14 shows the Moola Creek Group current and emerging priorities, and these are supported by the individual member responses to the *Blueprint for the Bush* survey. The main priorities are woody and environmental weed control (priority weeds African boxthorn and Tree pear), pasture decline, and declining soil carbon and soil fertility.

The group is also concerned at the difficulty in obtaining funding to assist with on-ground works, and the lack of cooperation between adjoining catchment landholders in projects such as weed and feral animal control.

Priority weeds	Animal pests	Priority vegetation	Concerns
<ul style="list-style-type: none"> Boxthorn Tree pear Fleabane Black wattle African lovegrass Mother of millions Lippia Lantana 	<ul style="list-style-type: none"> Pigs - dogs-rabbits Foxes Indian mynahs Homing pigeons 	<ul style="list-style-type: none"> SEVT thickets Brigalow Blue grass Rain forests 	<ul style="list-style-type: none"> Mining Profitability Underground water table Council spreading weeds such as African lovegrass Declining services in rural areas from government agencies such as DNR and DPI Poor appreciation by the mainstream green movement of ecological processes: only concerned with vegetation, when in fact much of the area now has more trees than at white settlement

Table 14: Moola Creek Landcare Group current and emerging priorities

Group members are also concerned at the apathy around new and emerging weeds. Historically, a new weed has been ignored until the stage where it has become relatively widespread. This means that in most cases it is too late to eradicate the weed, so landholders are left with a large and on-going task of trying to keep it under control.

If everyone made the effort to be vigilant regarding new weed threats, and eradicated infestations whilst they were still manageable, then weeds would not be the problem that they are today.



Figure 19: Members of Moola Creek Landcare Group at a property planning workshop (2006)

Oakey Urban Landcare Group

The Greening Oakey committee formed in 1995, and developed a plan for improved natural resource management and town beautification. The Greening Oakey Plan mission statement is:

The objective of the Greening Oakey committee is to provide help support and resources to beautify the township of Oakey, encourage the local native fauna and flora, preserve naturally occurring habitat, respond to community needs and promote environmental awareness throughout the community of Oakey.



Figure 20: The town of Oakey showing the path of Oakey Creek through the town. The Army helicopter training base can be seen at the top of the map.

Following the establishment of NED Landcare in 1996, the Greening Oakey Committee formerly became the Oakey Urban Landcare Group. The group began to implement the Greening Oakey Plan, and this work has been continuing up until the present time.

The group concentrates activities in the urban area of Oakey, and in particular the riparian zone of Oakey Creek which flows through the town. The group is also focused on native fauna and flora conservation, pest plants and animals in an urban environment, and community education and awareness.

Activities of the group include tree planting, riparian restoration and enhancement, various 'clean up' days and general natural resource and awareness raising activities within Oakey (including work with schools and other community organisations). Weed control has been a major priority in coordination with the Jondaryan Shire Council (now part of the recently formed Toowoomba Regional Council).

The biggest challenge for the group at present is membership, with numbers dwindling.



Figure 21: Tree planting along Oakey Creek

Rosalie North Landcare Group

The Rosalie North Landcare Group was formed during the early 1990s by a group of landholders interested in the concepts and successes of Landcare. The group has been affiliated with both NED Landcare and South Burnett Landcare. The groups area of interest is predominantly the upper catchment areas of Cooyar and Yarraman Creeks.

The Yarraman and Cooyar Creeks are located in the north-western headwaters of the Brisbane River, and contribute significantly to the water supply and water quality of Wivenhoe Dam. The Cooyar Creek arises in the Bunya Mountains to the west of Cooyar, and has a large number of tributaries. Yarraman Creek is the major tributary of Cooyar Creek, with other major tributaries including Boyne Creek, Back Creek, Granite Creek, Rocky Creek, Sandy Creek and Oaky Creek.

The total catchment area of Cooyar Creek is about 540 square kilometres. Yarraman Creek starts about 20 kilometres west of the town of Yarraman at the top of the Cooyar Range, and joins Cooyar Creek about 10 kilometres north-east of Yarraman.

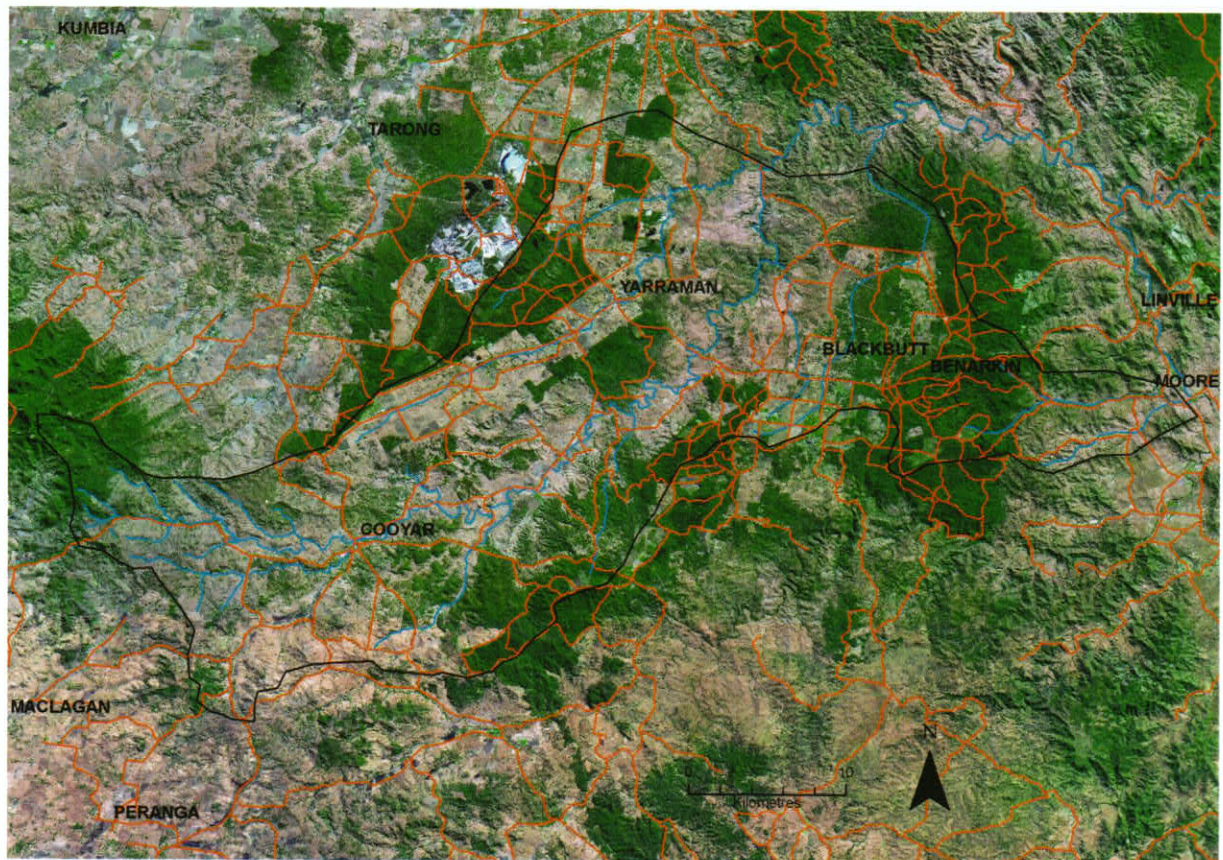


Figure 22: The Rosalie North Landcare Group area of interest. The Tarong power station and coal mine can be seen just outside the catchment in the north

Yarraman is the major centre in the catchment area, with a population of around 600. The only other town is Cooyar with a population of approximately 60. The total population of the catchment area is about 1,500.

Cropping is generally restricted to the alluvium and the laterite land zones, with the major cropping lands found in the laterites around Upper Yarraman. Portions of the laterite zones have been cleared for the establishment of pine trees for forestry. Small areas of the basalt land zone have been used for cropping, and there has been some associated erosion due to steep slopes of this zone.

The predominant landuse is extensive beef cattle grazing on native pastures (60% of the area), with some dairying, and mixed grazing and cash cropping or fodder production on small areas of better soils. There are also areas of intensive horticulture such as orchards and vegetable growing.

Several State Forests are located in the area, which are planted to native species (Hoop pine), with some Radiata pine plantations.

The Palms National Park is located about 10 kilometres to the east of Cooyar, and although small in area (11 ha), it is a significant reserve of a unique ecosystem, with few remnants remaining. There are also several recreation areas located within State Forests around Yarraman.

The Cooyar and Yarraman Creeks Catchment Action Plan (2000) listed a number of natural resource management priorities for the Rosalie North Landcare region. The 10 key issues that have been identified were:

- Environmental weeds
- Creeks and riparian zone erosion and degradation
- Soil erosion on cultivated and grazing land
- Salinity
- Cattle ticks
- Pasture fertility and desirable species decline
- Feral and pest animals
- Poor quality and quantity of underground water
- Farm viability
- Education and awareness

Table 15 shows the Rosalie North Landcare Group current and emerging priorities, and these are supported by the individual member responses to the *Blueprint for the Bush* survey.

Priority Weeds	Animal Pests	Priority Vegetation	Concerns
<ul style="list-style-type: none"> ▪ Lantana ▪ Mother of Millions ▪ Tree Pear ▪ Blue Heliotrope ▪ Cockspur ▪ Cestrum/privet ▪ African Lovegrass 	<ul style="list-style-type: none"> ▪ Feral pigs ▪ Wild dogs ▪ Deer ▪ Rabbits ▪ Indian mynahs 	<ul style="list-style-type: none"> ▪ Semi-evergreen vine thickets, rainforest 	<ul style="list-style-type: none"> ▪ Lack of knowledge of the farming community ▪ Govt. restrictions on farming communities ▪ Impact of emissions trading scheme on farming viability ▪ High fuel pricing ▪ Confusion re global warming ▪ Lack of public transport ▪ No services ▪ City/country divide

Table 15: Rosalie North Landcare Group current and emerging priorities

South Myall Creek Catchment Landcare Group

The South Myall Creek catchment is situated to the north of Jondaryan. The centre of the catchment is about 60 kilometres north-west of Toowoomba, and about 40 kilometres north-east of Dalby, and the eastern and northern catchment boundaries are formed by the Great Dividing Range. The area of the catchment is approximately 80,000 hectares.

The population of the catchment area is approximately 840 people, with about 312 living in the small towns of Quinalow, MacLagan, Kulpi, Peranga, Malling and Brymaroo.



Figure 23: South Myall Catchment Landcare Group area of interest

Because of the wide range of soil types, farming pursuits vary. Rural industries include:

- Dairying
- Mixed beef cattle and grain
- Intensive piggeries
- Grape growing and winemaking
- Olives
- Beef cattle feedlots

South Myall Creek is a major tributary of Myall Creek, which after flowing through the town of Dalby joins the Condamine River five kilometres south of the town. Although the South Myall Creek is normally a non-flowing creek, it can carry considerable volumes of water after periods of heavy rainfall.

The catchment landscape, ranges from the steep slopes of the Great Dividing Range, to undulating hills and broad alluvial flats. Soil types include fine, rich scrub soils, with basalt and sandstone-derived clays and grey to black loams on the lower creek flats.

The vegetation is typical of the eastern Darling Downs, and includes substantial areas of remnant forests and woodlands. The range slopes support ironbark, Blue gum and Spotted gum forests, with semi-evergreen vine thicket (softwood scrub) and dry rainforest in more elevated and sheltered places. Brigalow communities occur on the undulating to flat country, with Mountain coolibah on basalt ridges, and Poplar box grassy woodlands and Queensland bluegrass grasslands on the flats.



Figure 24: Zero tillage was the subject of a field day at Quinalow in 1999

The 1999 catchment action plan developed for the South Myall Landcare Group identified priorities such as woody weed control, erosion, water conservation and general farm viability issues. Even though these priorities are still relevant, consultation with the group have identified new and emerging issues such as feral pests (wild dogs, pigs and rabbits), preservation of endangered vegetation communities and a multitude of social and economic drivers that are impacting upon rural viability. The action plan was revised and updated in 2002.

Table 16 shows the South Myall Creek Catchment Landcare Group priorities, and these are supported by the individual member responses to the *Blueprint for the Bush* survey.

Priority Weeds	Animal Pests	Priority Vegetation	Concerns
<ul style="list-style-type: none"> ▪ African boxthorn ▪ Tree pear ▪ Mother of millions ▪ African lovegrass ▪ Lantana ▪ Maynes pest ▪ Blue heliotrope – starting to be a problem ▪ Fleabane ▪ Moth vine ▪ Corn gromwell ▪ Lippia – on the flood plains ▪ Bull rushes 	<ul style="list-style-type: none"> ▪ Pigs ▪ Wild dogs ▪ Rabbits ▪ Feral cats ▪ Cane toads increasing ▪ Foxes increasing 	<ul style="list-style-type: none"> ▪ Box gum communities ▪ Vine scrubs ▪ Small patches of brigalow ▪ Weeping myall ▪ Poplar box ▪ Qld. bluegrass ▪ Untouched riparian areas 	<ul style="list-style-type: none"> ▪ Not enough return for input (farm viability) ▪ Coal trucks ▪ Lack of services ▪ Lack of local government representation ▪ Aging farming population ▪ Lack of adequate telecommunication ▪ Balance between income-needs vs ground cover ▪ Transitional funding to help farmers reduce stocking rates to increase soil carbon ▪ Mining impacts direct and indirect ▪ Impact on groundwater from intensive animal industries ▪ Carbon levels pollution from coal mining ▪ Inaccuracy of monitoring mapping ▪ Mining of prime agricultural land ▪ Tree changers and peri-urban people

Table 16: South Myall current and emerging priorities and issues

A low-security prisoner work crew was established by NED Landcare in 1999. This work crew has carried out a large amount of environmental throughout the NED Landcare region, and is considered to be a fundamental factor for engaging landholders in specific activities such as weed control and fencing.

The work crew has been administered and managed by South Myall Catchment Landcare since 2002, but the work crew continues to assist landholders in other areas of the NED Landcare region. A high priority for the group is continuation of funding to support this valuable service.

Squaretop Action Group

The Squaretop Action Group represents the interests of a small group of landholders in an area just to the north of the village Kaimkillenbun. Although not based on any particular sub-catchment, the area has several small creeks that contribute to Myall Creek which passes through Kaimkillenbun.

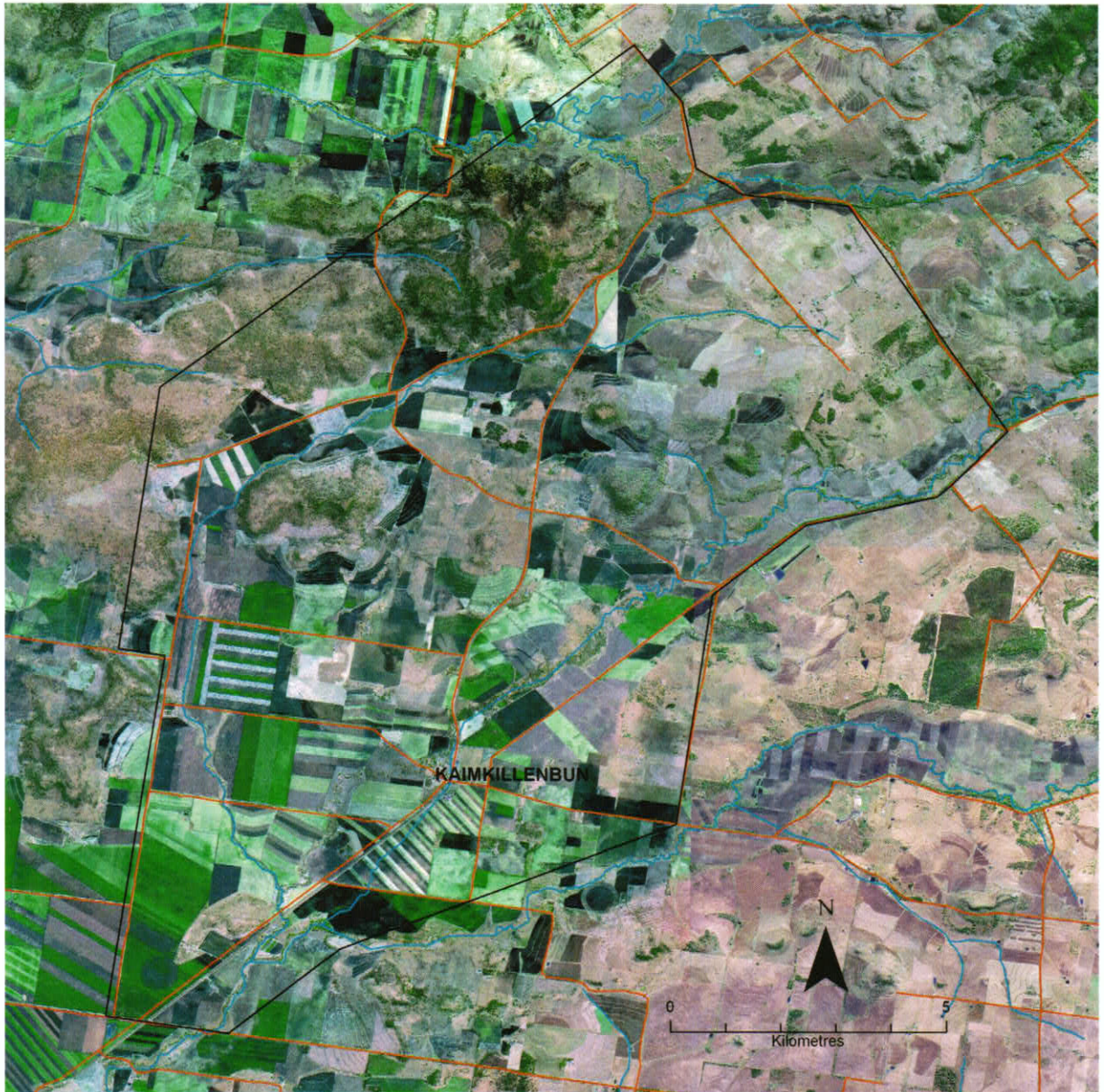


Figure 25: The Squaretop Action Group area of interest

The majority of group members are involved in mixed farming and grazing enterprises, but recently the area has been extended south to include some intensive cropping enterprises on the upper reaches of the floodplain adjacent to Kaimkillenbun.

Woody weeds, preservation of biodiversity and soil erosion are of high priority issues with Squaretop Action Group members. The major weed pest in the area is African boxthorn, and group members have been involved in group projects over several years aimed at bring this weed under control. However a run of very dry seasons has not helped with boxthorn control.



Figure 26: An African boxthorn field day was held in the Squaretop area in 2000, with technical advice on best practice control provided by Kevin Melmeth (Dow Agriculture)

The Squaretop Action Group was chosen to be involved in a project implemented by the Qld. Department of Natural Resources in 1999 to investigate the economic constraints for farmers being involved in natural resource management activities. This project involved farm visits and interviews, and a survey.

The findings of the survey are outlined in Table 17. However, the main finding was that landholders are very limited, financially and physically, to tackle many natural resource issues on their own. The landholders on the whole indicated that on-going support from agencies and funding bodies is critical for long-term success.

- Sediment in runoff water contributing to silting up of water holes of Myall Creek
- Creek bank erosion severe in some areas
- All the sloping cultivation is contour farmed, some of it is also minimum or zero tilled, strips are used on the most of the lower slopes, but around 20 km of contour banks and waterways require maintenance
- Strong interest in returning old degraded cultivation to permanent pasture
- Several small localised salinity areas
- Underground water supplies generally good, and the quality generally good
- African boxthorn is the major weed pest, with landholder resources stretched to control it
- Significant areas of timbered country that landholders are happy to leave for wildlife conservation, but there is an issue of kangaroos and wallabies coming into cropping areas causing severe damage in some cases

Table 17: Main findings of QDNR project with Squaretop Action Group members

Yamsion-Rangemore Landcare Group

The Yamsion-Rangemore Landcare Group was formed in 1997 by several landholders in the western foothills of the Bunya Mountains, to the east of the town of Bell. The area ranges from very steep mountainous country adjoining the Bunya Mountains National park, to undulating mixed farming brigalow country, and fertile creek flats. Beef cattle breeding and fattening, small areas of cash cropping, and intensive livestock production are the main agricultural activities carried out in the area.

The only major creek is the upper reach of Myall creek, also locally referred to as the Bunya Creek. Cattle Creek is the only other significant watercourse in the area, but there are numerous smaller creeks and gullies feeding into both creeks.



Figure 27: The Yamsion-Rangemore Landcare Group area of interest

The original Wambo Catchment Action Plan, developed in 1999, includes the geographic area of the Yamsion-Rangemore Landcare Group. A wide range of issues was raised by the landholders during consultation for this

plan, including soil erosion, woody and environmental weeds, economic sustainability, salinity, landuse and management, community education and awareness, water access, water quality, and vegetation management.

Like other Landcare groups from the northern sector of the NED region, the Yamsion-Rangemore Group has indicated priorities that match the broader NED Landcare regional priorities. Natural resource management issues such as weed and pest animal control, pastures and cropping and general biodiversity issues ranked highly with this group.

The majority of members were particularly interested in the emerging issue of carbon trading and methods to improve soil fertility. African boxthorn, tree ear and lantana are priority weeds for on-ground action, and wild dogs are high priority.

Group landholders have indicated that rabbit populations have doubled in the area – a matter of concern and a potential need for Local Government, Darling Downs Moreton Rabbit Board (DDMRB) and landholders to take a coordinated and proactive approach to this challenge. Table 18 shows the current group priorities.

In addition there is a large interest from the group members in increasing soil fertility and soil carbon.

Priority Weeds	Animal Pests	Priority Vegetation	Concerns
<ul style="list-style-type: none"> ▪ African boxthorn ▪ Lantana ▪ Tree pear ▪ Mother of millions ▪ African lovegrass – spreading on roadsides by council ▪ Tiger pear ▪ Lippia ▪ Galvanised burr 	<ul style="list-style-type: none"> ▪ Rabbits – a huge problem ▪ Wild dogs ▪ Pigs ▪ Indian mynahs 	<ul style="list-style-type: none"> ▪ Brigalow ▪ Small patches of SEVT ▪ Small areas of bluegrass – significant patches ▪ Areas of pitted bluegrass 	<ul style="list-style-type: none"> ▪ Carbon trading what is it? How to tap in to it ▪ Pasture cropping ▪ Poor soil: how to fix fertility

Table 18: Current and emerging issues of the Yamsion-Rangemore Landcare Group

Challenges for NED Landcare and the Landcare network over the next five years

Social and economic

The viability of agricultural activities in the NED Landcare region is a serious and on-going issue. The decline in the viability of many landholders has been impacted by a range of factors, including:

1. Escalating property values in all areas, due mainly to the impact of urban expansion and the increase in lifestyle purchases of rural land by 'tree-changers' (urban or city people). Land within commuting distance from major centres such as Toowoomba, Dalby, Oakey and Yarraman is now valued as real estate, rather than on a productive basis. This has made it almost impossible for landowners to expand, with many now operating on less than viable living areas.
2. Twelve years of below average rainfall and a series of severe droughts has reduced the capacity of many landholders to invest in natural resource management activities, as well as investment in improved and more efficient farming practices.
3. The average age of landholders in the NED Landcare region is continuing to increase, and in some areas the average age would be close to or exceeding 60. Because of decreasing viability and poor returns, very few younger family members are returning to the farm, which will have serious implications for a prosperous and viable agricultural sector in this region in the future.

Maintaining and increasing Landcare group membership in the face of declining farm viability will be an important challenge for all Landcare groups in the region over the coming years.

On the positive side, there is a potential for the new arrivals, especially small-holders, to be involved in Landcare activities, and as many of these people have a poor knowledge of good land management there is potential for NED Landcare to be more involved in promoting and assisting the implementation of good land management practices with peri-urban and small-holders.

Changed NRM funding regime

It is apparent that it will become more difficult over the next few years to attract funding assistance for many of the on-ground activities that were funded through previous funding programs. Landcare groups will need to become more innovative, and will need to look for other sources of funding assistance besides traditional government funding programs. Alternative sources of funding in the future could possibly include:

- Forming relationships and partnerships with suppliers and purchasers: relationships with organisations such as Woolworths, Elders, and so on will become more important, especially as many organisations are becoming more aware of the need to be involved in environmental activities to verify their place in the market, and back up claims for 'clean and green' produce and activities
- Forming relationships with mining and energy companies: the increase in mining and energy exploration in the Surat Basin could have some positive flow-on effects in the provision of funds for environmental activities, as many mining companies are becoming more aware of their responsibility to the community in which they operate.
- Landcare business activities: with the withdrawal of many traditional government agency services, such as soil conservation and agricultural research, Landcare groups are well placed to take over some of this work. This could involve fee for service for technical services, or possibly sub-contracting on some on-farm research activities on behalf of rural research and development organisations

Alignment of the NED Landcare NRM plan with other regional plans and planning mechanisms

It is critical that the North East Downs NRM Plan align with other regional natural resource management plans and integrate with planning instruments, within a regional and State context. Without such plan alignment there would be minimal inter-agency coordination and cooperation, leading to a lack of defined vision and uncoordinated on-ground activities within the region – and a lack of regional and community focus for NRM issues (and funding opportunities).

Alignment and linkage of the NED Landcare NRM Plan with both regional, State and Federal Plans and mechanisms must be a critical focus once this plan is adopted. Effort and resources must be provided to develop this latter stage of the plan and to enhance its strategic value.

Although there is no recent regional landuse plan (EDROC produced a regional landuse strategy in 1996), it would be useful to align the NED NRM Plan with any future regional landuse strategies/documents as they are developed by regional and state Agencies.

Regional natural resource management (NRM) plans

The NED Landcare area is included in the regions of two natural resource management (NRM) organisations: The Condamine Alliance, and South East Queensland (SEQ) Catchments. Both of these organisations have developed and released NRM plans for future community engagement and investment in NRM related activities.

The *Condamine Catchment Natural Resource Management Plan: 2008 – 2011* (Condamine Alliance, 2009) details the land, water and nature targets required to maintain and improve regional landscape sustainability. All NRM issues detailed for the NED Landcare groups from the *Blueprint for the Bush* survey are fully within the Condamine Catchment short term (1 – 5 year) targets.

The *South East Queensland Natural Resource Management Plan: 2009 – 2031* (SEQ Catchments, 2009) outlines measurable regional targets established under the themes of air and atmosphere, coastal and marine, community engagement, land, nature conservation, regional landscape areas, traditional owner engagement and water. Many of the priority issues identified in the NED Landcare NRM Plan closely align with targets in the community engagement, land, nature conservation and regional landscape themes of this plan.

NED Landcare will continue to work closely with both regional NRM organisations to ensure common goals and objectives are worked on cooperatively.

Regional Council planning schemes

The Toowoomba Regional Council and Western Downs Regional Council are currently revising their planning schemes (post amalgamation) and it would be expected that NRM visions and specific targets of the Condamine Catchment NRM Regional Plan, in addition to these NED Landcare NRM priorities, should be reflected in the new planning schemes. In the past local government planning schemes were content-poor with respect to NRM components but it is critical that contemporary rural planning instruments reflect regional land, water and nature components. The NED Landcare NRM Plan should be made available and explained to both of these regional councils in the near future.

Australian Government Caring for our Country program

It would be valuable to align any NED priorities with matching priorities/targets in the Federal Governments *Caring for our Country* natural resource funding program.

The *Caring for our Country Business Plan 2010-11* has three national priority areas that are very relevant to the NED Landcare region: Biodiversity and natural icons, Sustainable farm practices, and Community skills, knowledge and engagement.

The sustainable farm practices national priority is particularly relevant to landholders in this region. The priority to improve soil organic matter levels is identified to have a moderate to high impact in the area covered by NED Landcare. In addition, this region also has been identified as an important region to address hillslope erosion, which has been a priority of NED Landcare for many years.

The NED Landcare region contains several threatened ecological communities identified under the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999, namely brigalow, white box-yellow box grassy woodland, semi-evergreen vine thicket, Queensland bluegrass, and weeping myall woodlands.



Figure 28: Small patches of semi-evergreen vine thickets such as this one are quite common across the NED Landcare region, and landholders are keen to protect them

Looking to the future: NED Landcare activities 2010 – 2015

The information from the *Blueprint for the Bush* survey and Landcare group planning workshops showed that priority issues had changed, even though the issues such as overall farm viability, soil erosion and pasture degradation were still critical. New priority issues identified included soil fertility improvement and soil carbon, climate change, and loss of agricultural land to mining activities. Table 19 outlines historical, current and new and emerging issues with NED Landcare member groups.

Main priorities in original action plans:	Issues identified in original action plans that are still current priorities:	New and emerging issues:
<ul style="list-style-type: none"> ▪ Environmental and noxious weeds ▪ Soil erosion control ▪ Creek and watercourse degradation ▪ Farm viability 	<ul style="list-style-type: none"> ▪ Woody and environmental weed control, particularly African boxthorn, lantana, mother of millions, African lovegrass, and lippia ▪ Farm viability 	<ul style="list-style-type: none"> ▪ Competing landuse from urban encroachment and mining ▪ Soil carbon and general soil fertility decline ▪ Greenhouse gas emissions and climate change

Table 19: NED Landcare member groups priority issues: historical, current, and emerging (2009)

NED Landcare priority activities 2010 – 2015

A summary of NED Landcare priority activities has been compiled from the results of group consultation meetings, landholder surveys, and a NED Landcare general meeting held to discuss the future needs of member groups.

It has become very clear that NED Landcare member groups have become largely self-sufficient, and in most cases relatively independent. However all member groups have indicated to the NED Landcare management committee that they would like to continue to have the support of a NED Landcare Coordinator (at least on a part-time basis) into the future. They see the role of a coordinator to include:

- Accessing and distributing all the latest information on new and developing farming practices, trends and developments
- Sourcing and engaging expert speakers for meetings, workshops and field days
- Researching and distributing information on all funding opportunities if and when they arise
- Assisting member groups with writing funding applications where relevant
- Provide coordination of activities between the member groups, to avoid duplication and value add to all planned activities
- Assist with promotion and communication of Landcare activities in the NED Landcare region
- Engaging the wider population, to increase membership and involvement in Landcare activities
- To assist where possible with technical support and information
- To maintain an office and availability of access by members and the general public for Landcare related enquiries

A number of priorities have specific issues that will require actions in a five year framework, in terms of funding, resourcing and on-ground implementation. These include:

- Continued on-ground works and minimisation of grazing pressure to reduce soil erosion and increase pasture development and condition enhancement
- Raising awareness and technical aspects of increasing soil carbon and contribution to increasing overall soil health and fertility
- Continued emphasis on best practice farming and grazing practices and the use of innovative technology to minimize environmental and climate change impacts, and enhance catchment sustainability
- Conservation and condition enhancement of high value biodiversity communities (continued conservation and enhancement of condition/extent of white box-yellow box, Qld. Bluegrass, brigalow and semi-evergreen vine thicket communities)
- Further intensive control of African boxthorn, lantana, tree pear, African lovegrass and mother of millions
- Coordinated action with Local Government to minimise the spread of weeds through public areas and roadside corridors
- Coordinated action with Local Government and National Parks to control the increasing population of wild dogs and feral pigs
- Urgent need for coordinated action on the control of rabbits with Condamine Alliance, Darling Downs Moreton Rabbit Board (DDMRB) and Toowoomba and Western Downs Regional Councils to reduce expanding rabbit populations and to monitor population trends
- Coordinated action to monitor expanding populations of cane toads in the northeast of the NED Landcare region. Partnership with other agencies to extend research into the geographic spread of cane toads in the NED Landcare area
- Other feral pests (foxes, feral cats and Indian mynahs) to be monitored and isolated populations contained
- North East Downs Landcare to further invest effort, resources and communications to enhance overall landscape change and to enhance catchment sustainability

Summary of NED Landcare priority activities 2010 - 2015

- **Continue to support member Landcare groups with project establishment, project management and project coordinator assistance**
- **Act as a conduit for information, technical assistance, and liaison with federal, state and regional agencies and personnel**
- **Research, investigate and implement applications for all funding programmes relevant to meeting NED Landcare and member group objectives and priorities**
- **Enter into short and long term partnerships with organisations and individuals to achieve mutual goals and objectives, wherever possible**
- **Continue to promote and implement activities pertinent to sustainable landuse in the NED Landcare region, as outlined in the constitution**
- **Liaise and engage with all the relevant stakeholders on issues of conflicting landuse, such as mining and urban expansion**

Appendix 1: Good quality agricultural land in the NED Landcare region

According to the document *Planning guidelines: the identification of good quality agricultural land* (Qld. Dept. of Primary Industries and Qld. Dept. of Housing, Local Government and Planning, 1993), good quality agricultural land is land which is capable of sustainable use for agriculture, with a reasonable level of inputs, without causing degradation to the land or other natural resources.

Four classes of agricultural land have been defined for Queensland. These are:

Class A: crop land - land that is suitable for current and potential crops with limitations to production which range from none to moderate levels.

Class B: limited crop land - land that is marginal for current and potential crops due to severe limitations; and suitable for pastures. Engineering and/or agronomic improvements may be required before the land is considered suitable for cropping.

Class C: pasture land - land that is suitable only for improved or native pastures due to limitations which preclude continuous cultivation for crop production; but some areas may tolerate a short period of ground disturbance for pasture establishment.

Class D: non-agricultural land - land not suitable for agricultural uses due to extreme limitations. This may be undisturbed land with significant habitat, conservation and/or catchment values or land that may be unsuitable because of very steep slopes, shallow soils, rock outcrop or poor drainage.

Class A land in all areas is considered to be good quality agricultural land. Class A1 land is considered to be absolute prime agricultural land, and Figure 29 shows the location of the identified Class A1 land in the NED Landcare region.

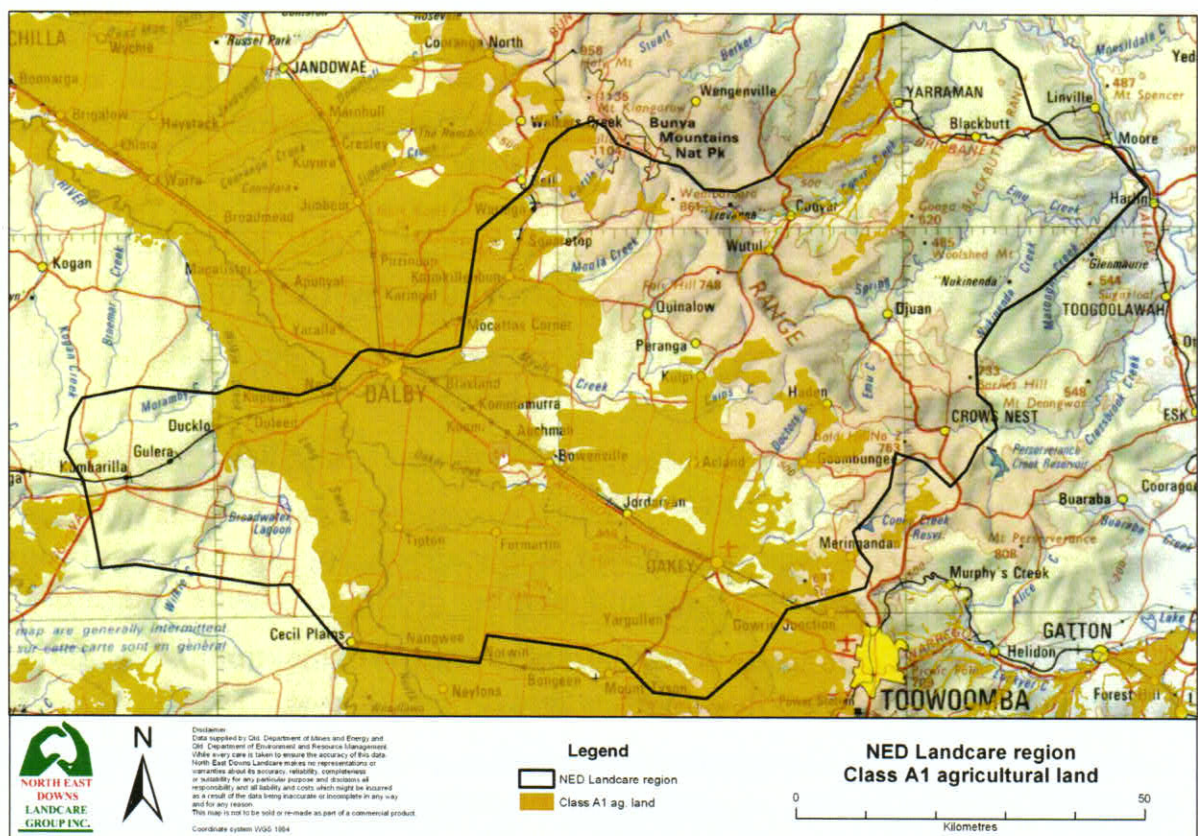


Figure 29: Class A1 agricultural land in the NED Landcare region

Appendix 2: mining and petroleum exploration and development in the NED Landcare region

Coal exploration permit applications

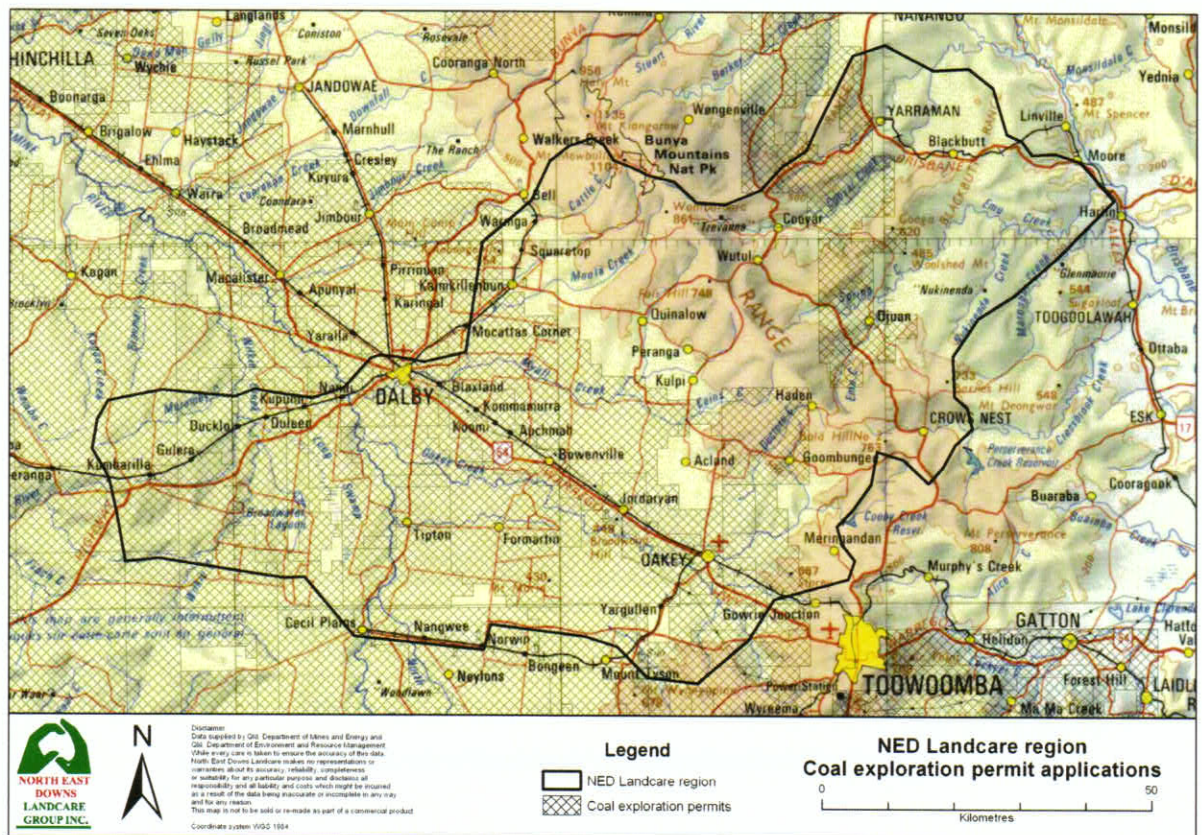


Figure 30: Exploration permit applications for coal

The hatched areas on the map indicate areas where applications for coal exploration permits have been lodged. These applications are in various stages of completion, from preliminary application, completed application, application granted, and in some cases renewal of the application being granted.

Almost all of the Condamine river floodplain, south to Millmerran and east to Warwick, is affected by coal exploration permits in various stages of application. This corresponds to almost all of the identified Class A1 agricultural land in the region (see the map in Figure 29).

There are exploration permits for coal from 16 mining companies, in various stages of the application process, in the NED Landcare area.

Petroleum and gas exploration permit applications

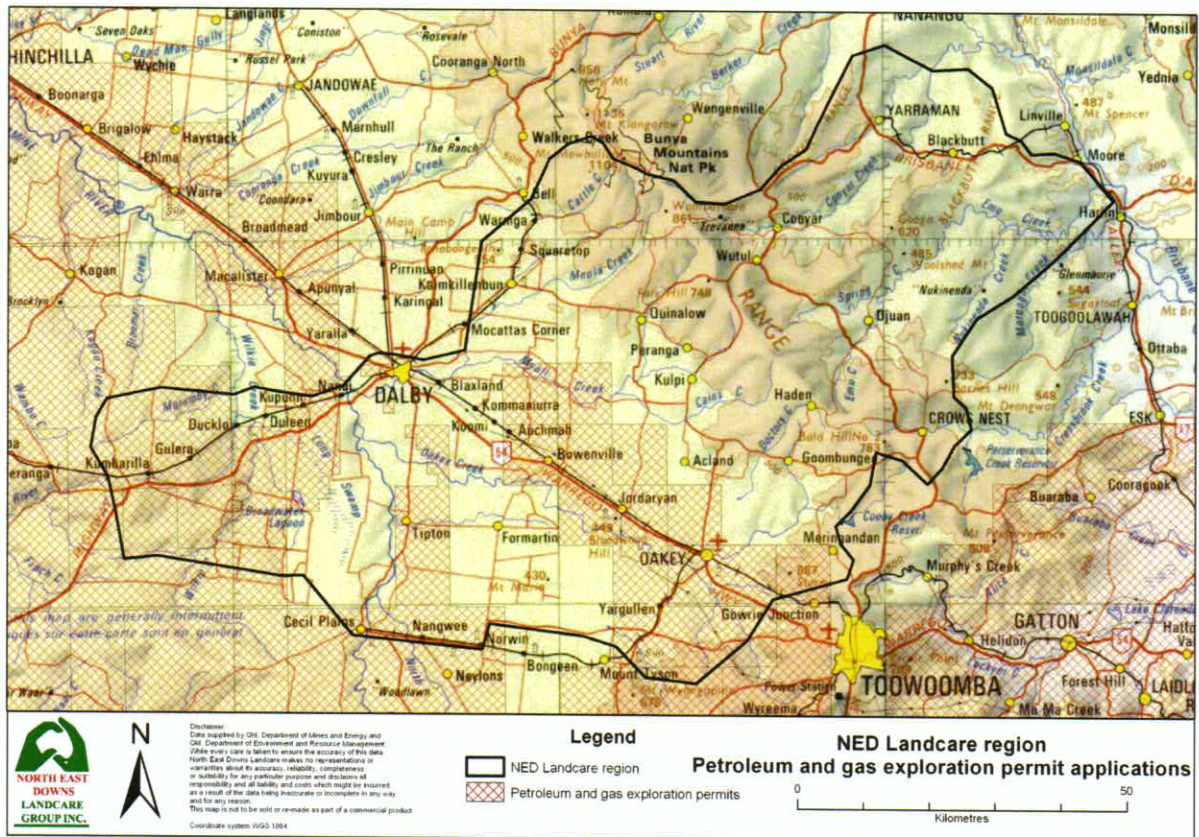


Figure 31: Exploration permit applications for petroleum and gas

The hatched areas on the map indicate areas where applications for petroleum and gas exploration permits have been lodged. These applications are in various stages of completion, from preliminary application, completed application, application granted, and in some cases renewal of the application being granted.

There are exploration permits for petroleum and gas from 6 companies, in various stages of the application process, in the NED Landcare area.

Mineral exploration permit applications

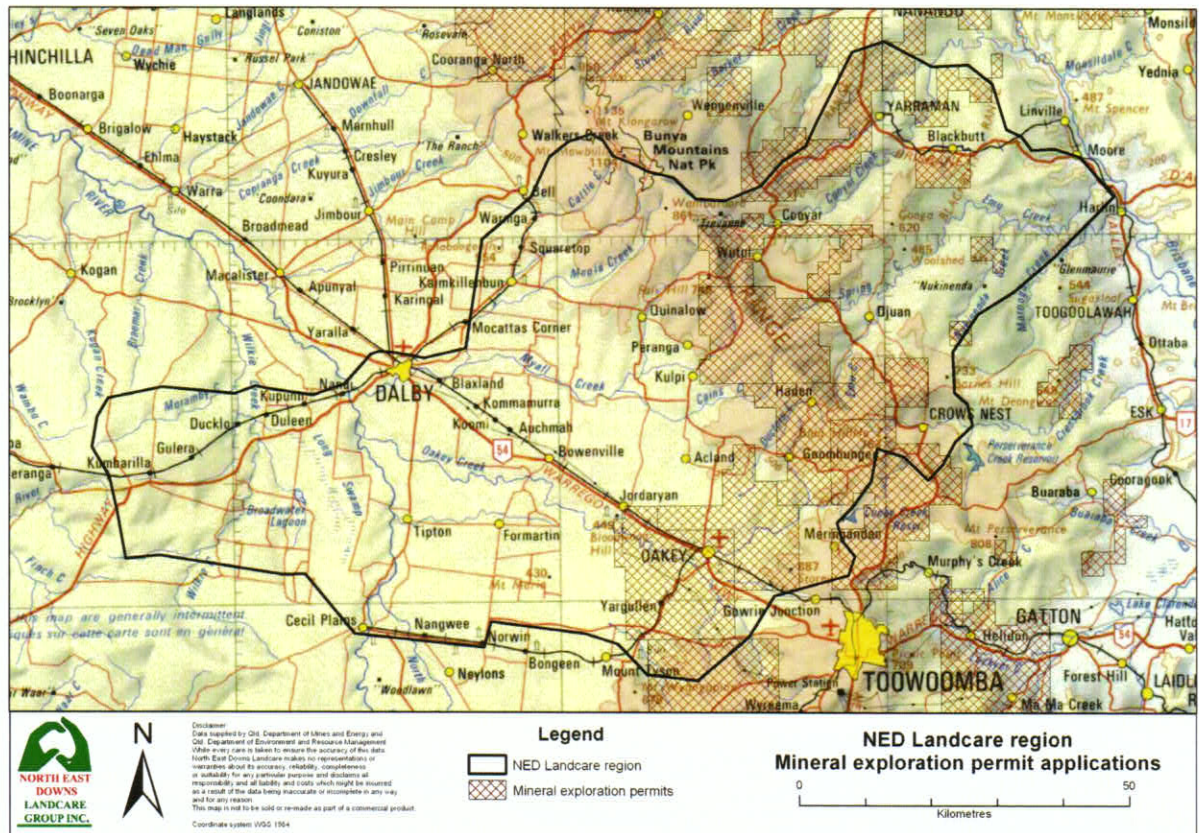


Figure 32: Exploration permit applications for minerals

The hatched areas on the map indicate areas where applications for mineral exploration permits have been lodged. These applications are in various stages of completion, from preliminary application, completed application, application granted, and in some cases renewal of the application being granted.

There are exploration permits for minerals from 6 companies, in various stages of the application process, in the NED Landcare area.

Mineral development licences

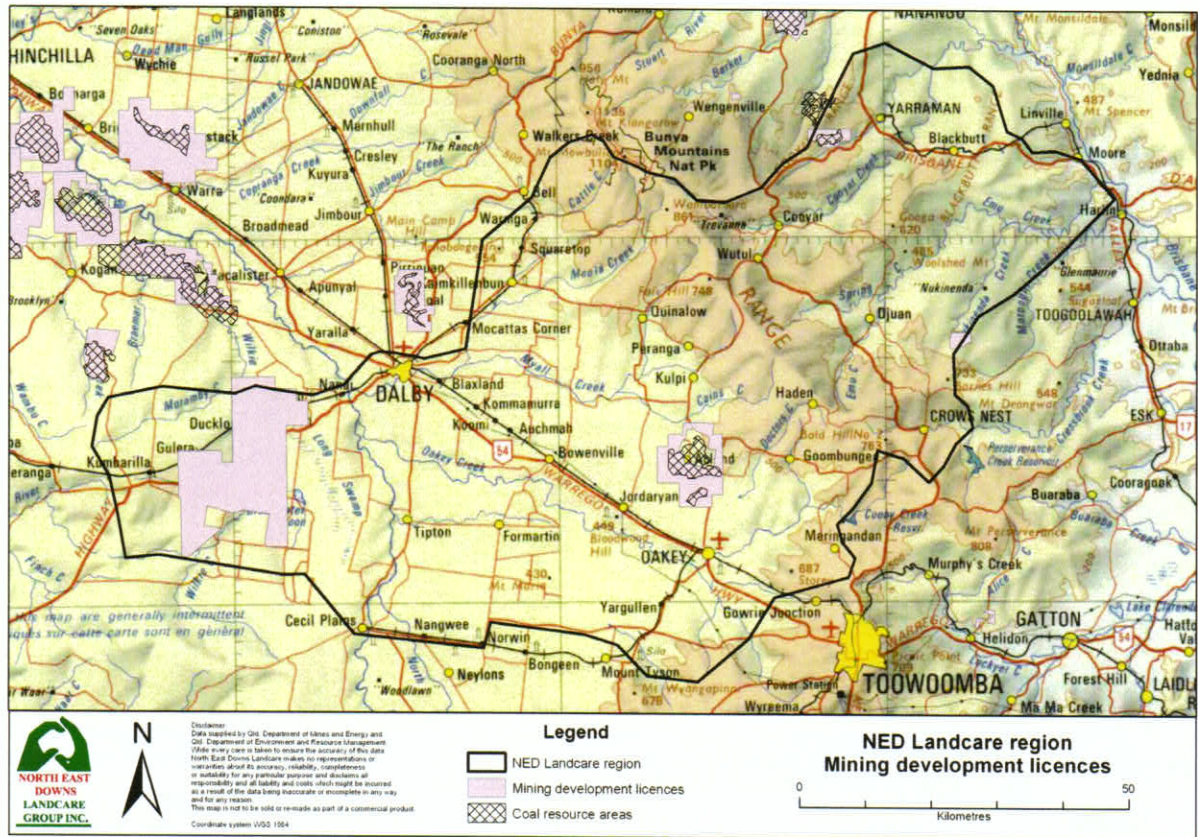


Figure 33: Mineral development licence applications

The shaded areas on the map indicate areas for which there has been an application for a mineral development licence. The black-hatched areas on the map indicate identified coal resource areas, several of which are currently being mined.

The large area to the south-west of Dalby is under an application for a mineral development licence for coal-seam gas, and the small shaded area north of Crows Nest is a mineral development licence granted for the mining of molybdenum.

Appendix 3: Priority land resource issues in the NED Landcare region

Soil erosion

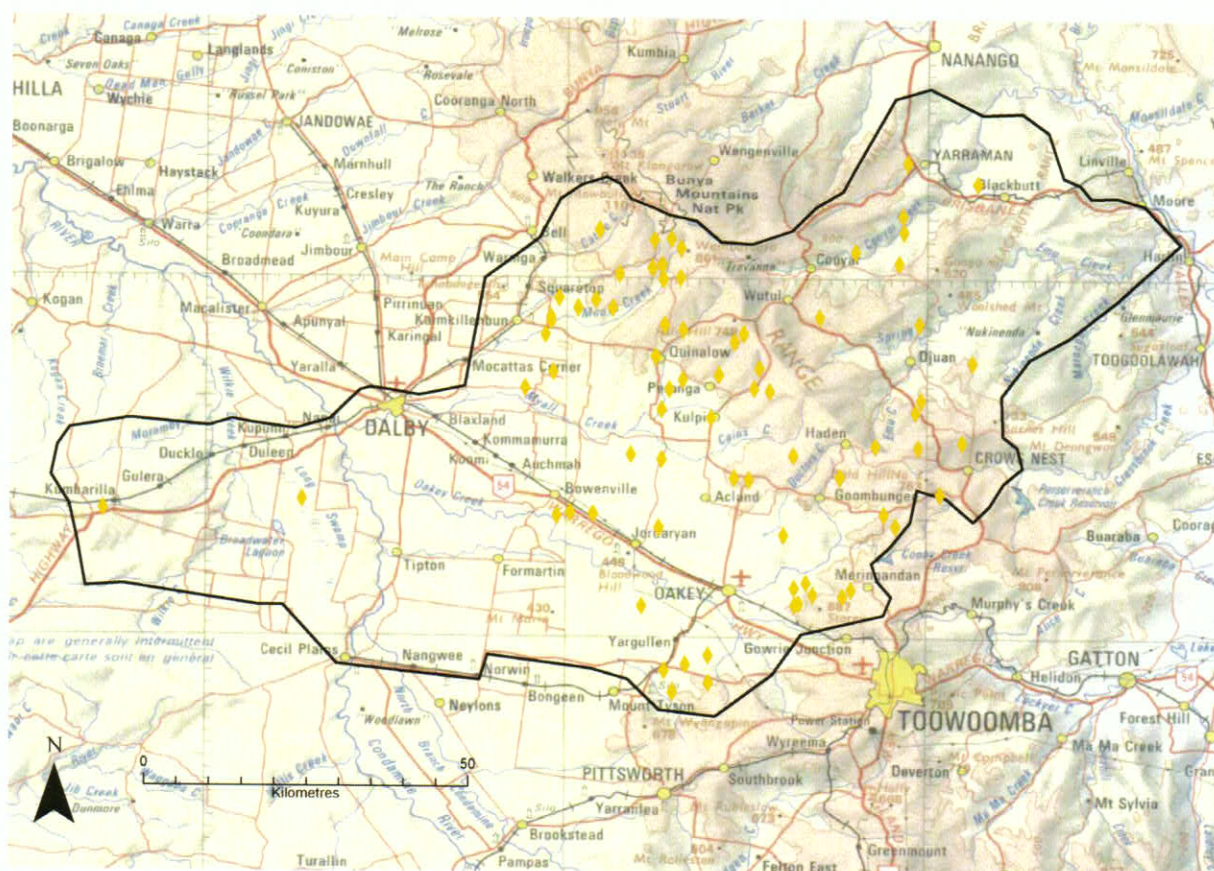


Figure 34: Areas of soil erosion in the NED Landcare region

Soil erosion on cropping country has been a major issue in the NED Landcare since the groups inception. Despite 30 years of research, innovation and advances in cropping technologies, many uplands farmers in the NED Landcare region are still using traditional tillage ground preparation practices. Farmers are still losing topsoil at an alarming rate in certain instances, especially from bare paddocks over the summer.

NED Landcare will continue to promote and implement projects wherever possible to assist farmers to adopt zero tillage practices. Soil erosion will continue to be a high priority in this region.

Because of the total withdrawal of government agency soil conservation officers, who traditionally assisted landholders to design and layout soil conservation works, NED Landcare is called upon from time to time to do this work.

Creek bank erosion and creek environmental weed infestations

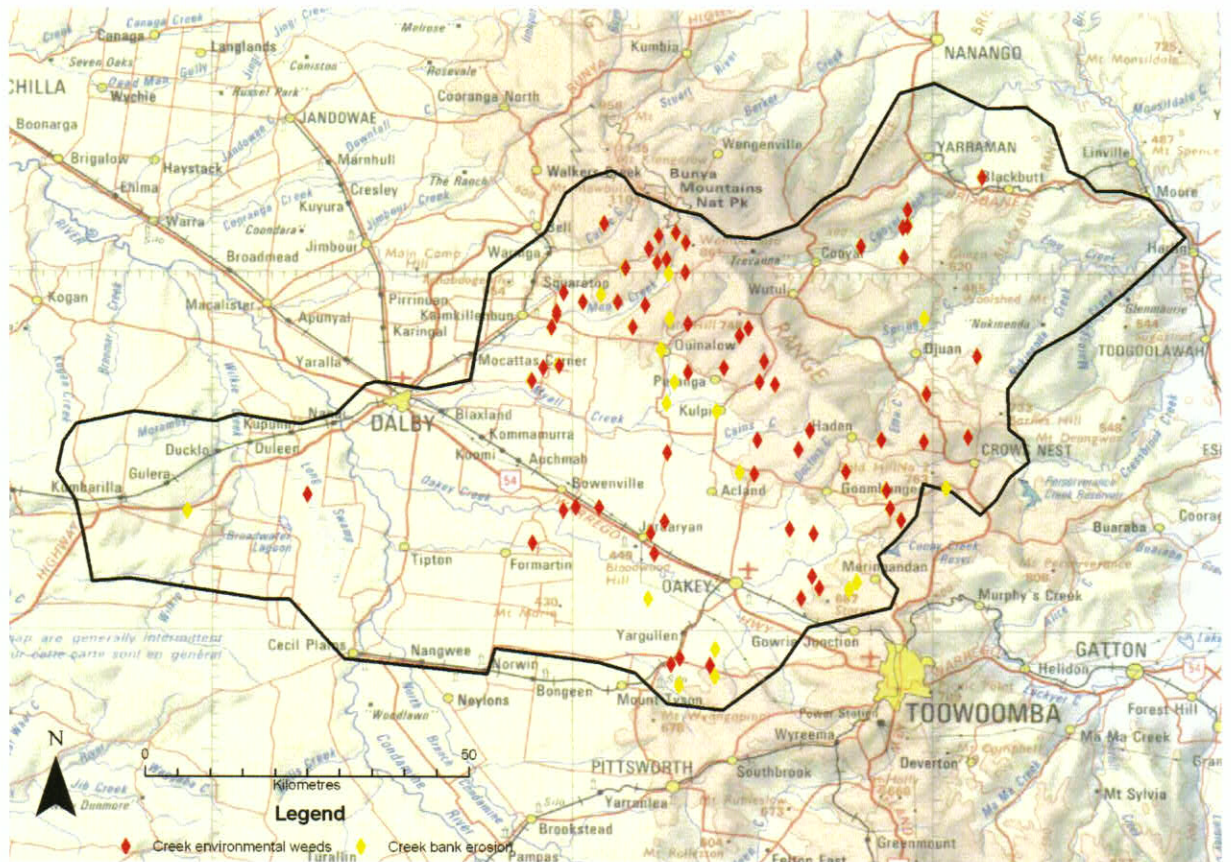


Figure 35: Areas of creek bank erosion and creek environmental weeds in the NED Landcare region

Creek bank erosion is caused primarily by livestock grazing. On many properties the best feed is in the riparian area, so livestock tend to concentrate in these areas, especially during dry periods. Overgrazed riparian areas and creek banks also lead to environmental weeds becoming established much easier in bare areas.

Riparian management has been a high priority with several NED Landcare member groups over the past five years. Fencing of creek banks has been achieved through several on-ground projects, but if the rate of creek bank erosion is to be reduced significantly, these projects need to continue into the future.

Bore water quantity and quality

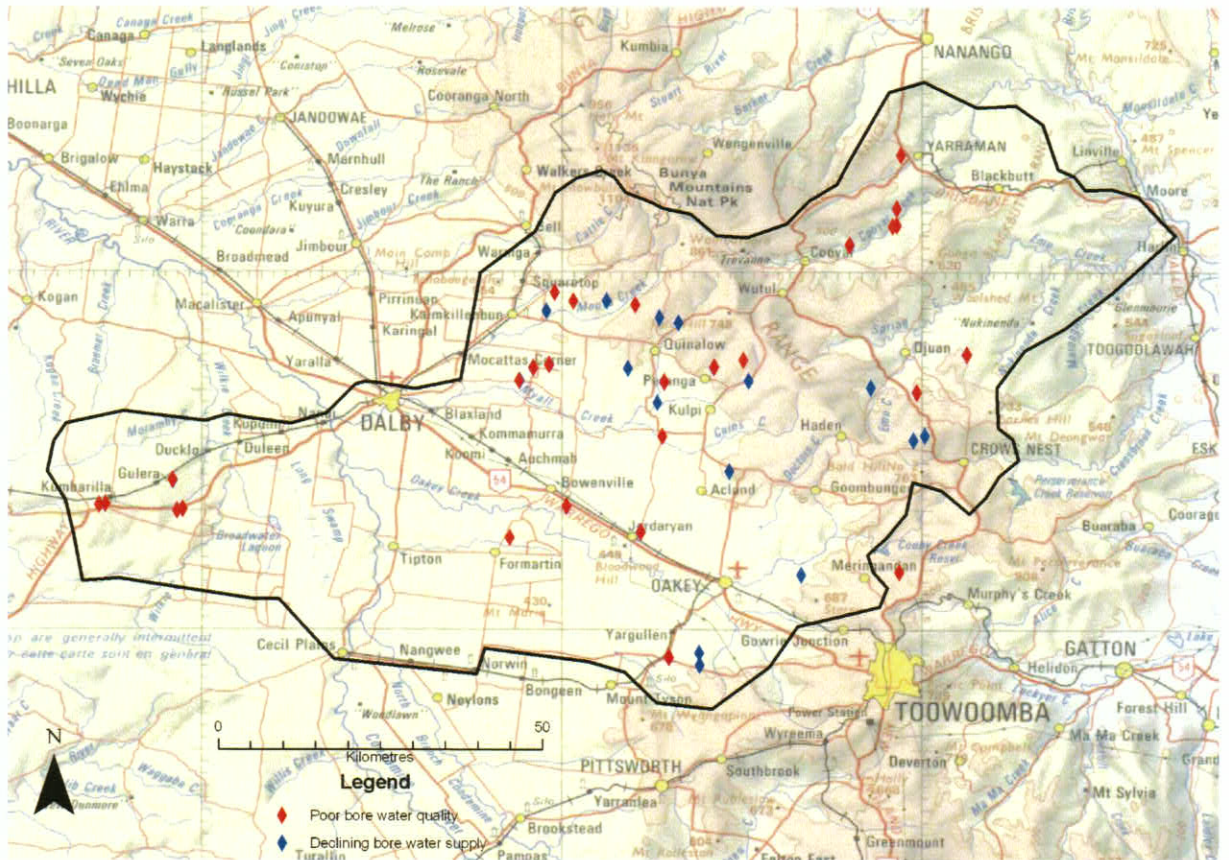


Figure 36: Declining bore water quantity and poor quality in the NED Landcare region

Anecdotal evidence suggests that bore levels in all areas of the Darling Downs have been declining for the past decade. It is likely that this is due to the combined effect of many years of below average rainfall and increased allocation and consumption. Some suggest that the increase in mining activities and feedlots is also having an effect, but this has yet to be substantiated.

Many bores are also showing signs of reduced quality, with iron and salt levels increasing in some bores.

Dryland salinity

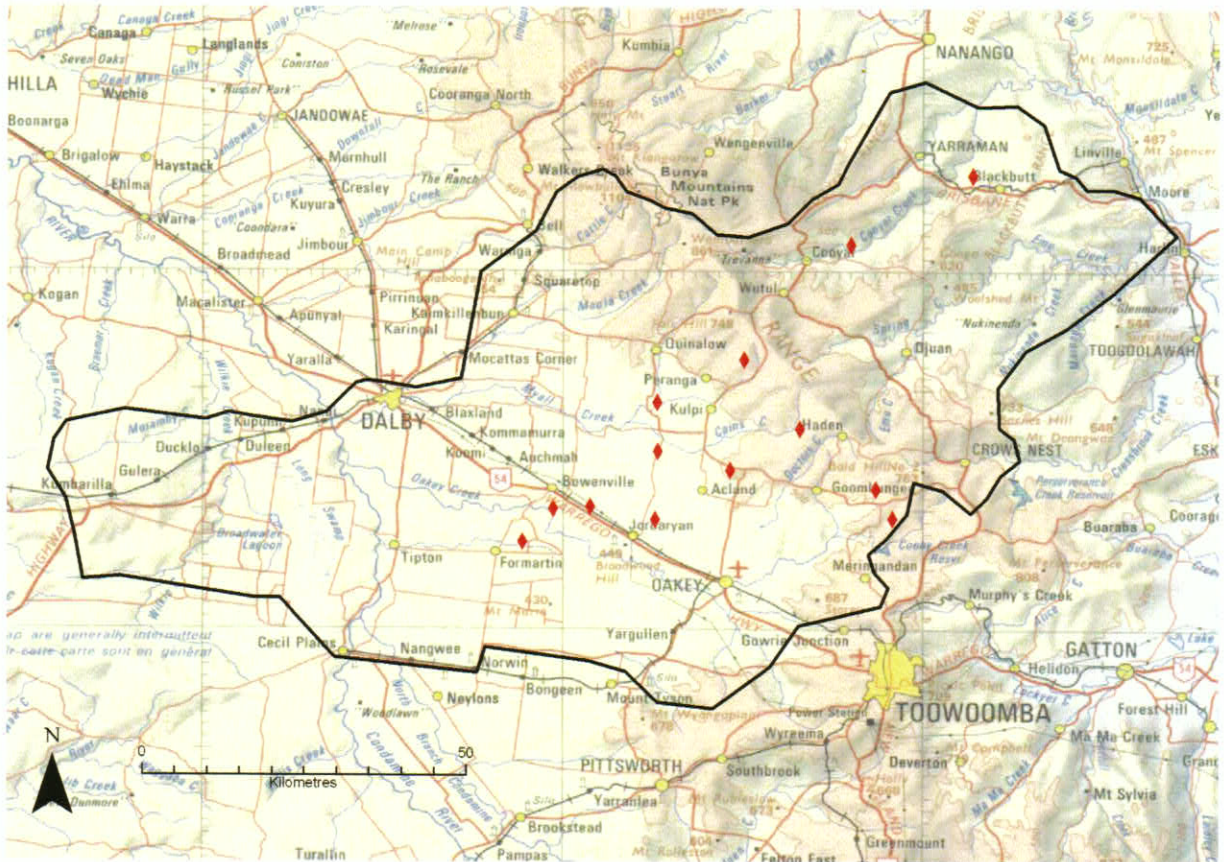


Figure 37: Areas of dryland salinity in the NED Landcare region

There are many dryland salinity sites across the Darling Downs, as outlined in the *Central Downs Land Management Manual* (1999). The salinity sites in the NED Landcare region tend to be small localised patches, with reduced or zero ground cover and some surface water appearing.

Because the last decade has been significantly dry, dryland salinity has not presented as a large problem. With a return to wetter seasons likely over the next decade, there is a possibility that the number of salinity sites will increase. In the meantime landholders will be encouraged to closely monitor all known dryland salinity sites.

Native vegetation decline or dieback

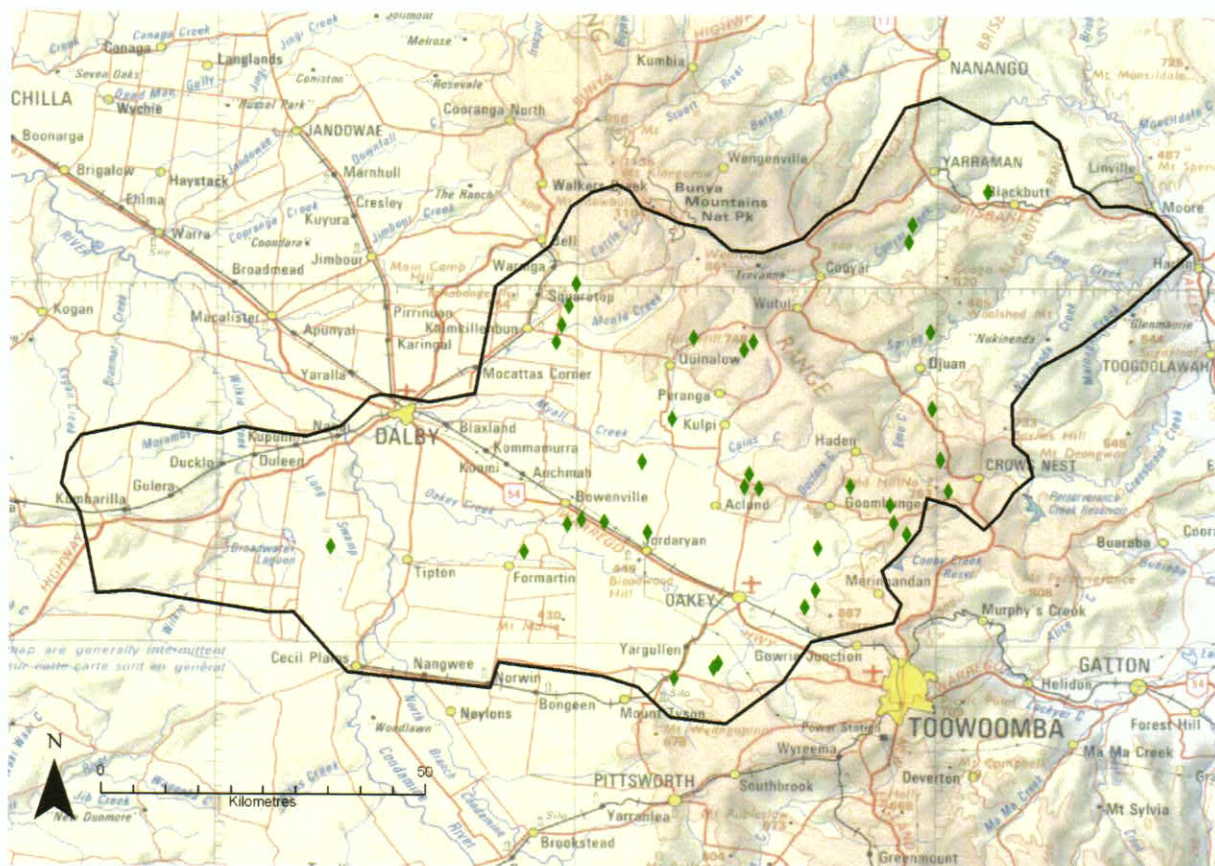


Figure 38: Areas of declining native vegetation quality in the NED Landcare region

The run of dry seasons has resulted in tree deaths in many areas for the first time that landholders can remember. There is little that landholders can do about this, apart from maintaining maximum groundcover at all times to ensure whatever rain does fall goes into the soil.

In some areas in the southern part of the NED Landcare region there is an issue with declining understory, especially in Mountain coolibah woodlands. Continuous grazing is resulting in shrub removal and a lack of recruitment of both tree and shrub seedlings. The impact of this could be no trees left in some cases, after all the old trees die out and no young trees to replace them.

Appendix 4: Priority weeds in the NED Landcare region

Lantana

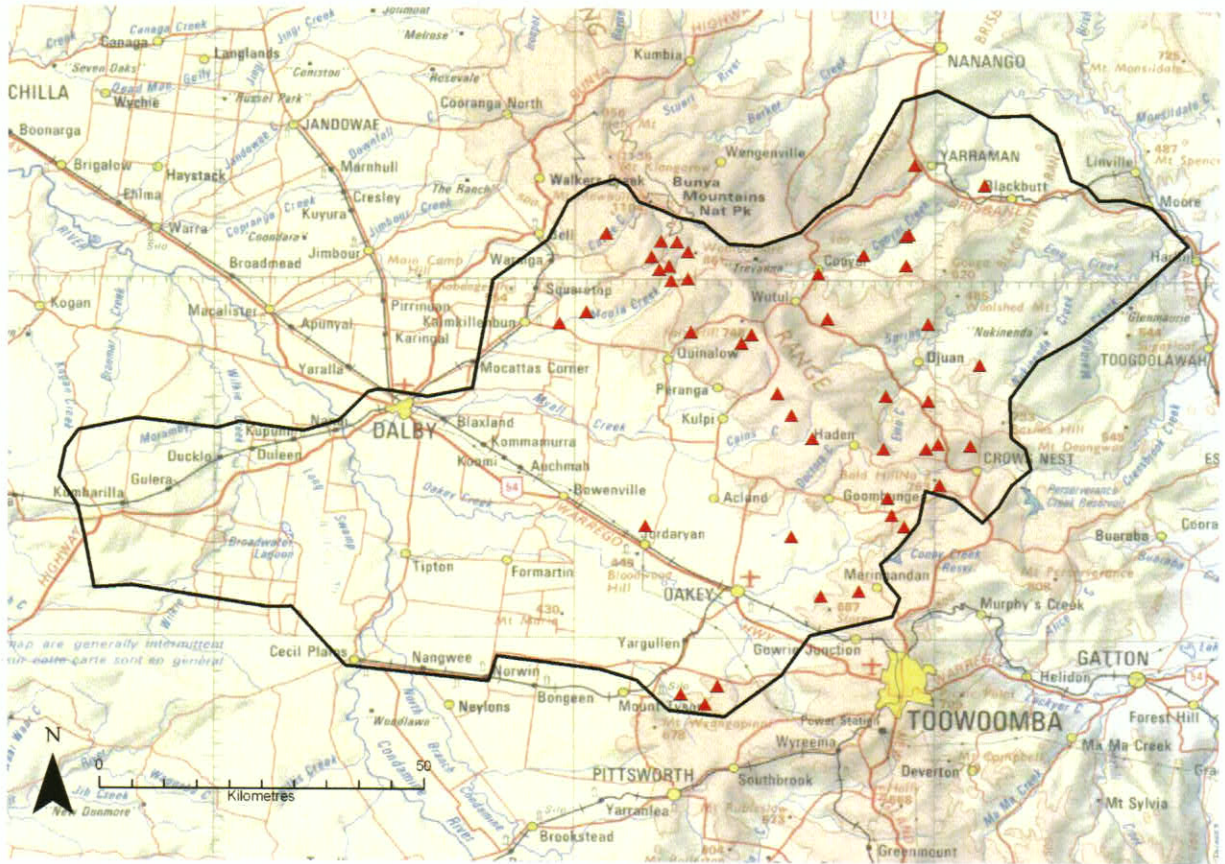


Figure 39: *Lantana* infestation in the NED Landcare region

A native from the tropical and sub-tropical regions of Central and South America, lantana (*Lantana camara*) is a heavily branched shrub that can grow as compact clumps, dense thickets and as scrambling and climbing vines. Lantana is a significant problem weed because:

- It forms dense thickets that smothers native vegetation
- Thickets are impenetrable to animals, people and vehicles
- It is spread mostly by people and fruit eating birds
- It is poisonous to livestock

Lantana is the major environmental weed issue with landholders on or near the ranges and slopes. Lantana is included on the list of Weeds of National Significance (WONS), and much effort has been applied to control the weed over the past decade.

Much research has been carried out on development of biological controls for lantana, but due to there being several sub-species of lantana biological controls have so far had a limited success rate.

African boxthorn

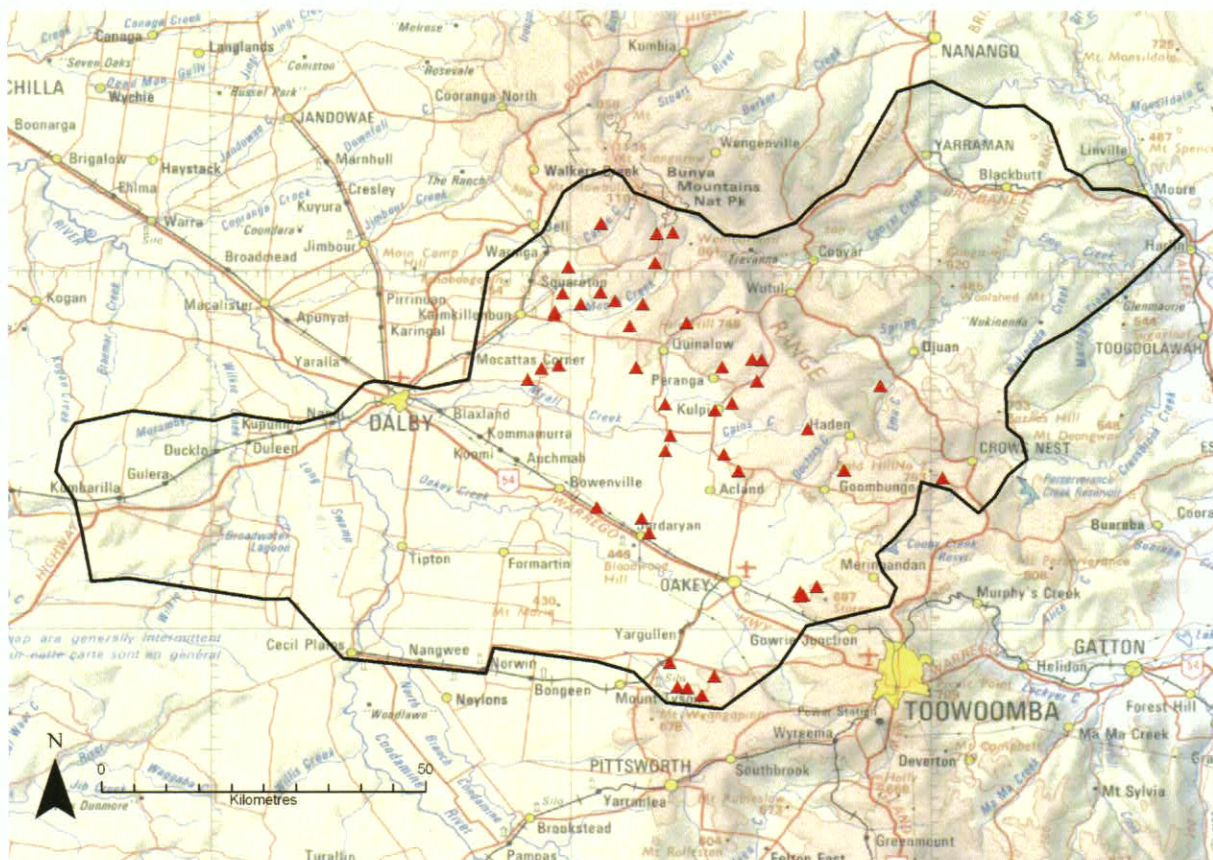


Figure 40: African boxthorn infestation in the NED Landcare region

African boxthorn (*Lycium ferocissimum*) is a spiny shrub from South Africa. Introduced to Australia in the mid 1800s as a hedge plant, it has since spread into pastures, neglected areas, roadsides, railways and waterways. It produces a dense thicket armed with spines that can form an impenetrable barrier to domestic stock. African boxthorn is a problem weed because:

- It aggressively invades pastures, roadsides and reserves
- It forms impenetrable, sharp-spined thickets, which can inhibit the movement of stock
- It reduces the usability of pasture land, hinders mustering and provides a haven for rabbits
- It attracts insects including fruit fly, dried fruit beetles and the tomato fly that breed in the fruit

African boxthorn is generally found in the mid to lower slopes west of the Great Divide in the NED Landcare Region. It can be very difficult to control using chemicals, as there is a very narrow timeframe for control following rainfall. If it is treated when conditions have dried out somewhat, chemical application can result in defoliation, but not plant death, leaving the plant to reshoot after the next rain.

There is no biological control for African boxthorn.

Lippia

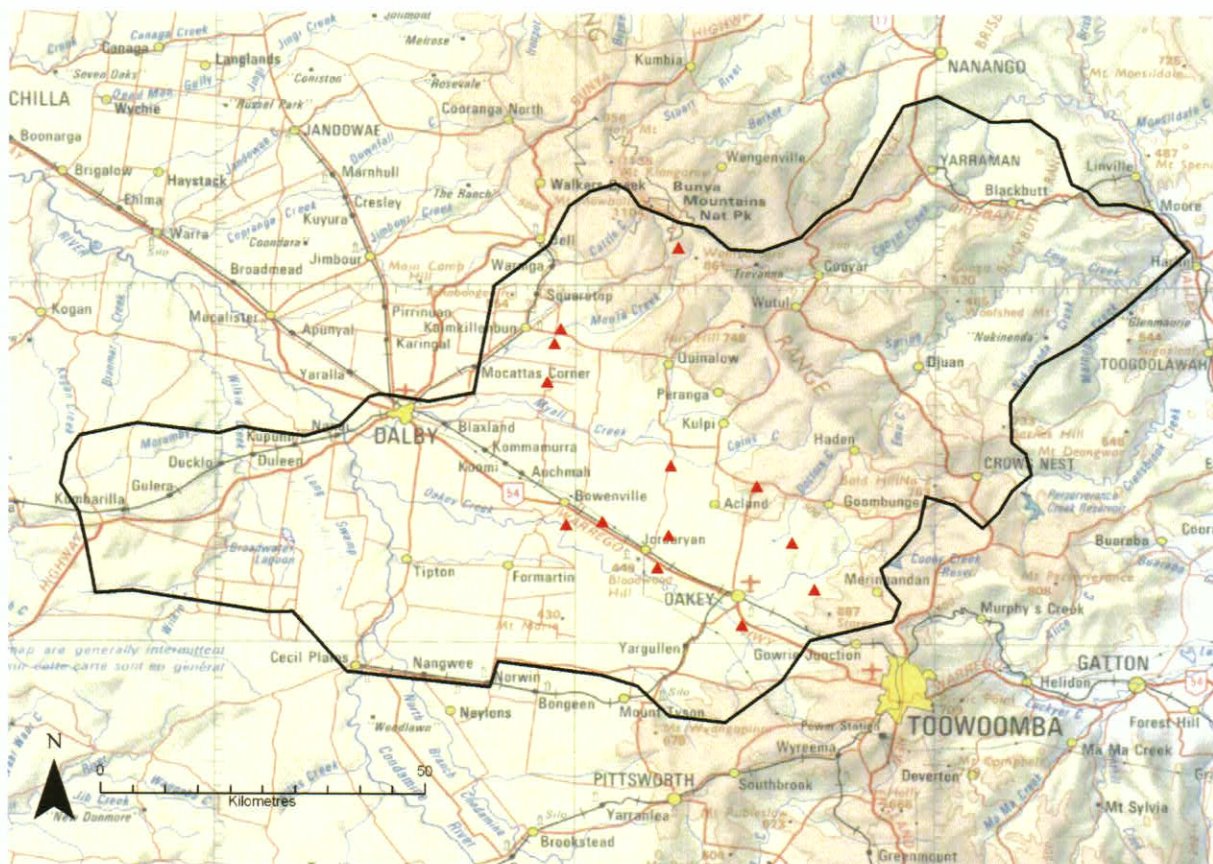


Figure 42: *Lippia* infestation in the NED Landcare region

Lippia (*Phyla canescens*) is a summer-growing, broadleaf perennial herb. This plant forms a solid mat-like ground cover with runners that take root at nodes. *Lippia* is a serious environmental and pastoral weed in the Murray-Darling basin, and some people state that lippia is possibly the worst weed in the basin.

Lippia creates a dense carpet-like spread prevents growth of other vegetation, including native grasses and riparian vegetation. It is a very aggressive weed, particularly in bare or overgrazed areas, and when established it can reduce stocking rates by up to 90%. Because of its dense root system, lippia can cause massive streambank collapse and resultant soil erosion.

Lippia infestations in the NED Landcare area are generally confined to the lower slopes and floodplains. It is also an important urban weed, because lippia was introduced primarily as a low maintenance lawn species early in the 20th century, and most towns in the Condamine region have lippia infestations along street borders and creeks.

Lippia

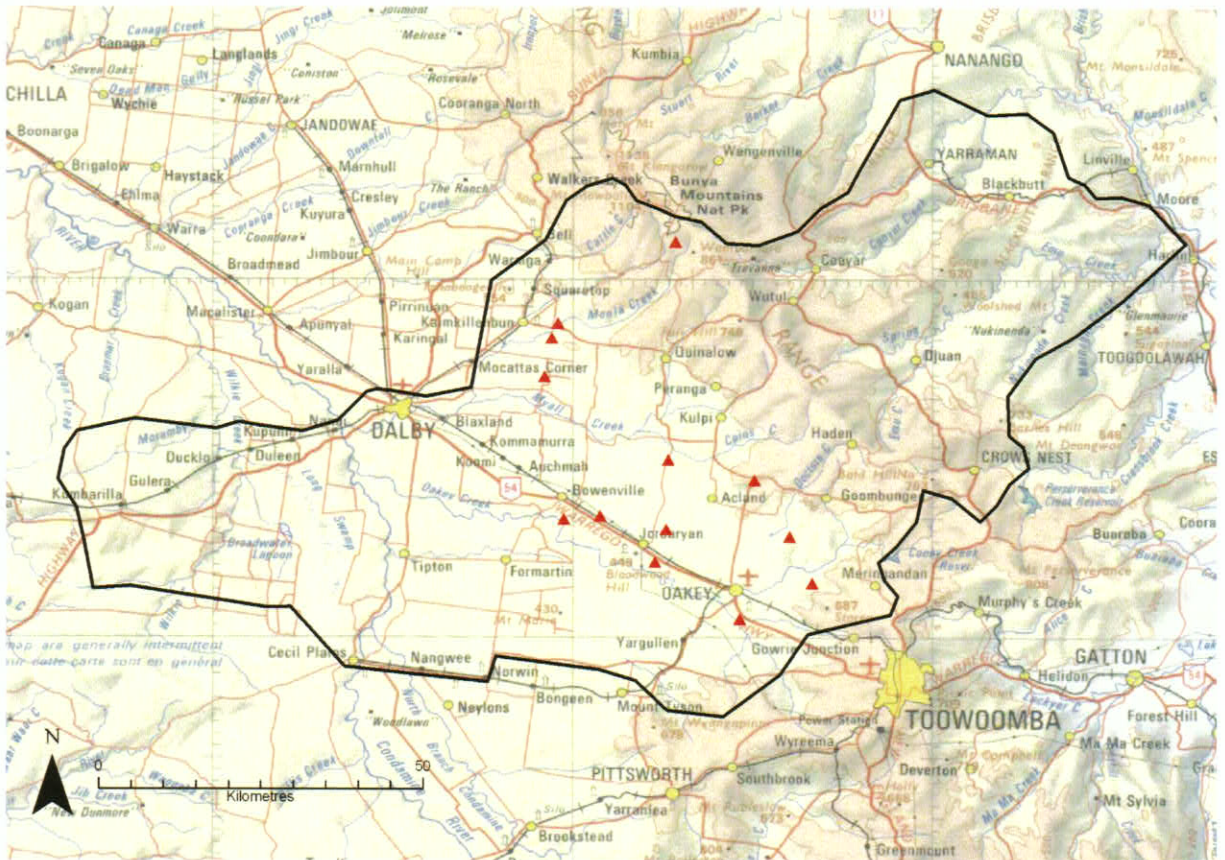


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African lovegrass

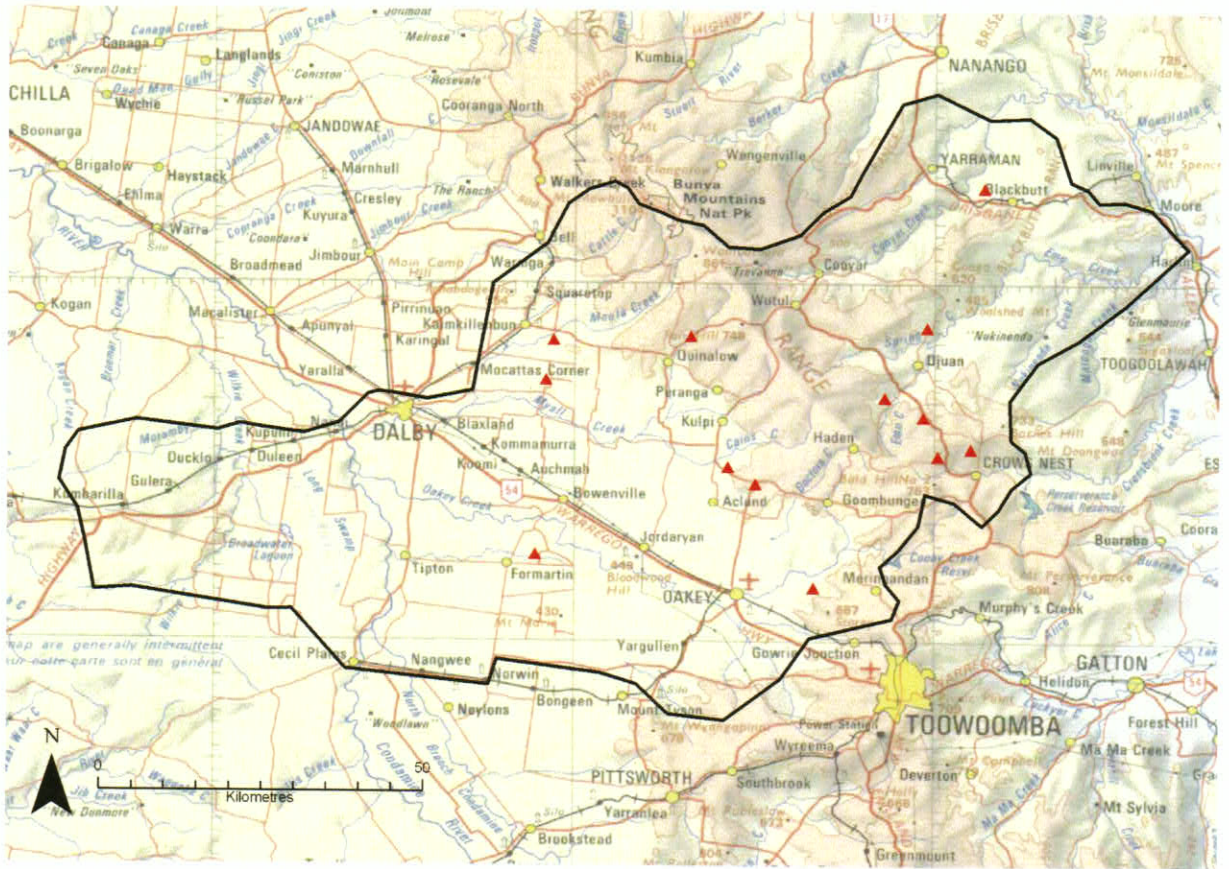


Figure 43: African lovegrass infestation in the NED Landcare region

A native of southern Africa, African lovegrass (*Eragrostis curvula*) was probably first introduced to Australia by accident as a contaminant of pasture seed. Different cultivars of this grass have also been used as a soil stabiliser in erosion control situations. African lovegrass is a weed of importance because:

- It is extremely competitive with other pasture species
- It is unpalatable to stock as grass ages
- It may contain very low (3%) levels of protein causing stock that graze on it to do poorly
- It forms dense monocultures up to 1.2 metres high, creating large fuel loads and posing a fire hazard
- It competes with native species regeneration after fire
- Cattle can excrete viable seed up to 10 days after consumption

African lovegrass thrives along roadsides and other neglected areas, often spreading into adjacent pastures. Slashing of roadsides is a common method of dispersal for this plant, as the seed is easily transported by machinery and motor vehicles. Other dispersal methods are attachment on the fur and hooves of animals, and as a soil and grain contaminant.

African lovegrass is now found in all parts of the NED Landcare area, except on the heavier black soils of the floodplains.

Mother of millions

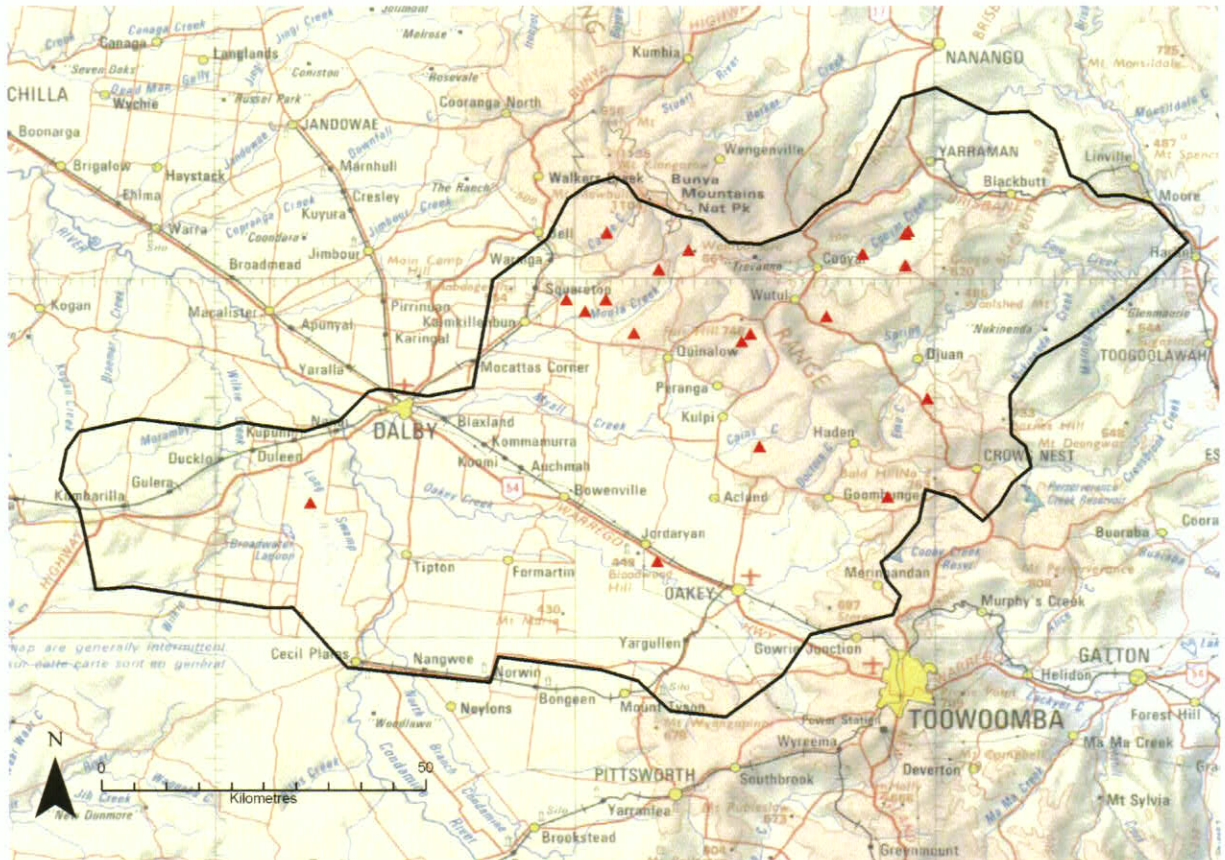


Figure 44: Mother of millions infestation in the NED Landcare region

Mother of millions are escaped ornamental plants belonging to the *Bryophyllum* group of plants, originating from Madagascar. Five species are commonly naturalised in Queensland. Mother of millions is an erect, smooth, fleshy, succulent plant growing to 1 metre or more in height. It has tall flower spikes with clusters of bell-shaped flowers, and produces small plantlets along the edges of leaves. Flowers are orange-red in a cluster at the top of the stem.

Mother of millions is highly toxic to stock, and is difficult to eradicate. It is not restricted to any particular area of the NED Landcare region, but it does tend to be confined to the slopes and ranges.

Appendix 5: Feral and pest animals and birds in the NED Landcare region

Rabbits

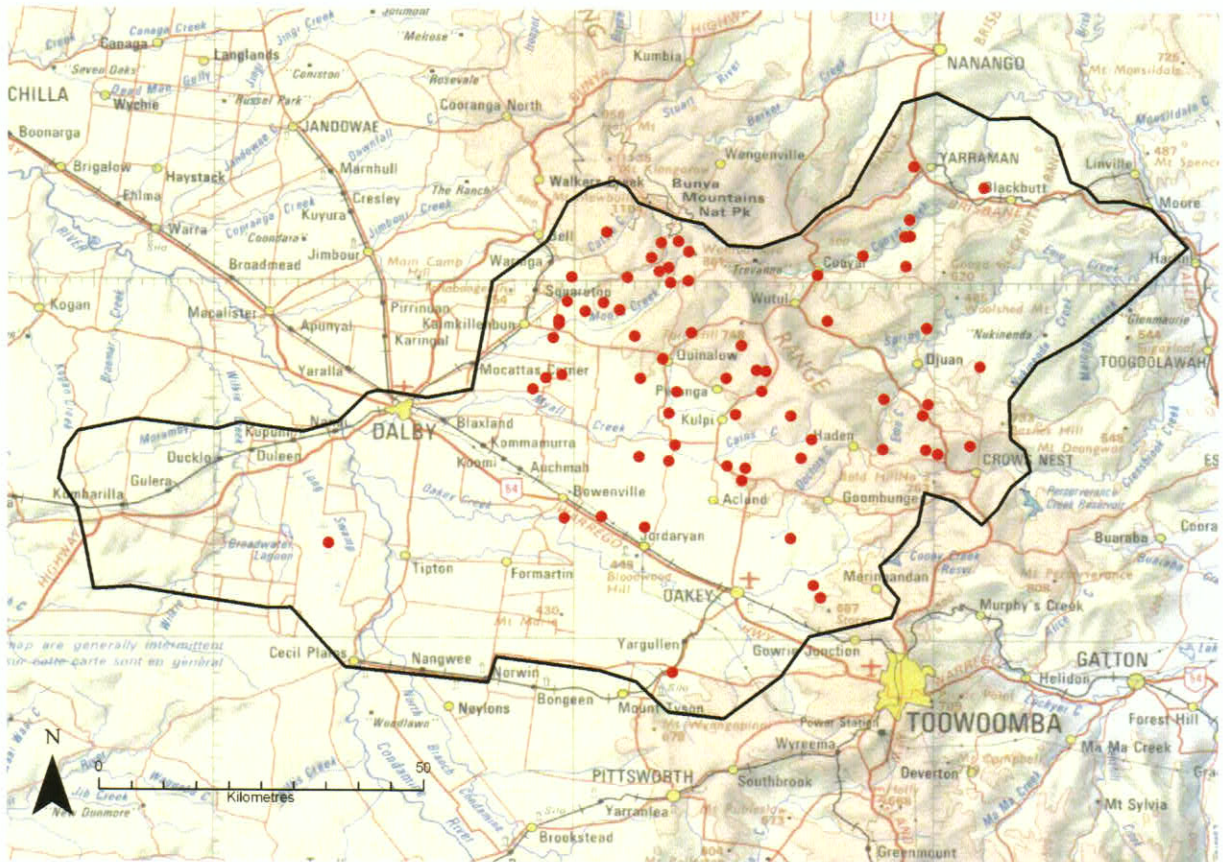


Figure 45: Rabbit infestation in the NED Landcare region

The rabbit has become widespread across most areas of the NED Landcare region over the past five years. It appears that the animal has developed some resistance to the rabbit calicivirus disease, and because of the propensity for a rapid population increase over a short time, the increase in numbers has caught many landholders by surprise.

Wild dogs

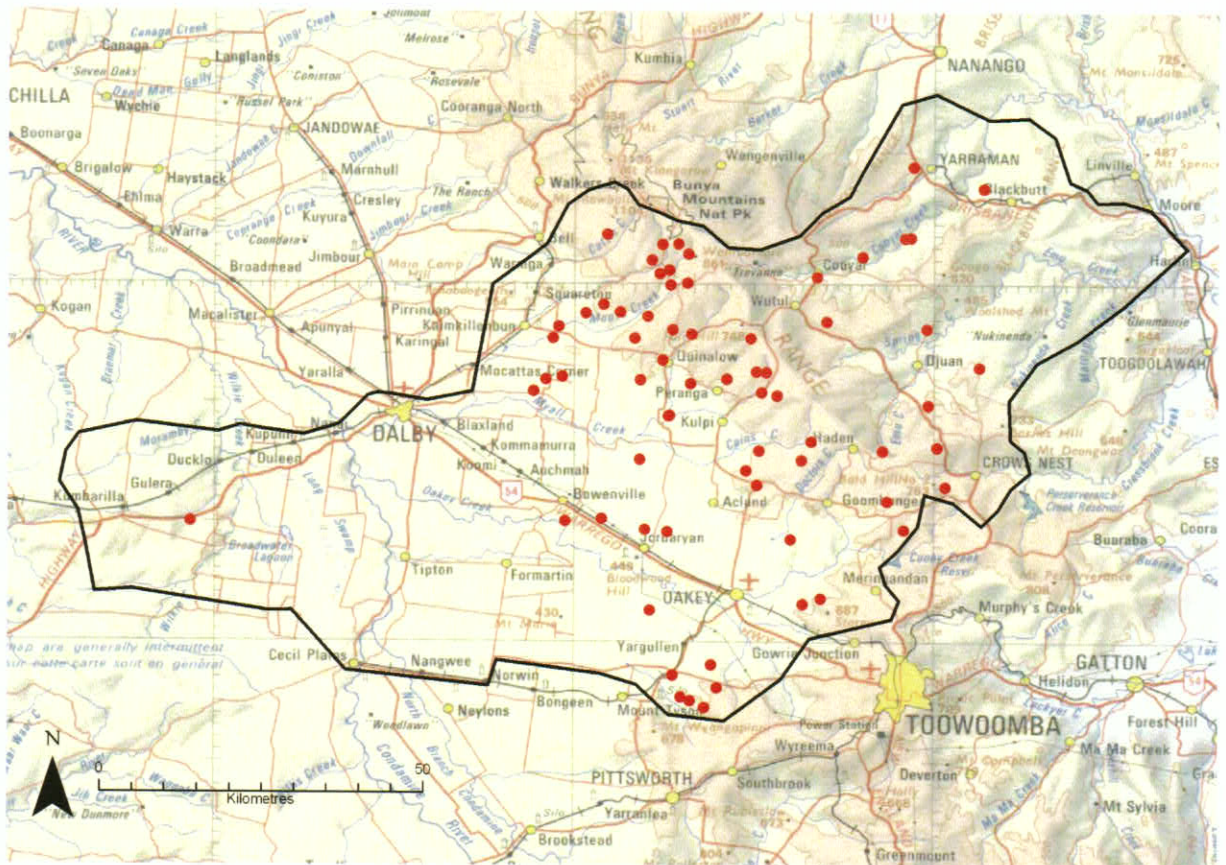


Figure 46: Wild dog sightings in the NED Landcare region

The term 'wild dog' (*Canis familiaris*) refers collectively to purebred dingoes, dingo hybrids, and domestic dogs that have escaped or been deliberately released. In the NED Landcare region it would appear that most wild sightings are of the crossbred varieties, especially in areas closer to urban centres.

Wild dogs have become an increasing problem in all areas of the NED Landcare region, but especially in timbered areas along the ranges and foothills.

An AgForce report into the major economic impacts associated with wild dogs in the Queensland grazing industry reveals a staggering cost of more than \$67 million in 2008/09. Whilst historically wild dogs have been a problem confined to the sheep industry, wild dogs now account for significant economic damage in the cattle and goat industries.

Many landholders in most areas of the NED Landcare region are now involved in coordinated dog baiting campaigns conducted by Regional Councils. However, these campaigns still tend to be fairly localised, and much more work needs to be done to really have an impact on the increasing population of wild dogs.

Feral pigs

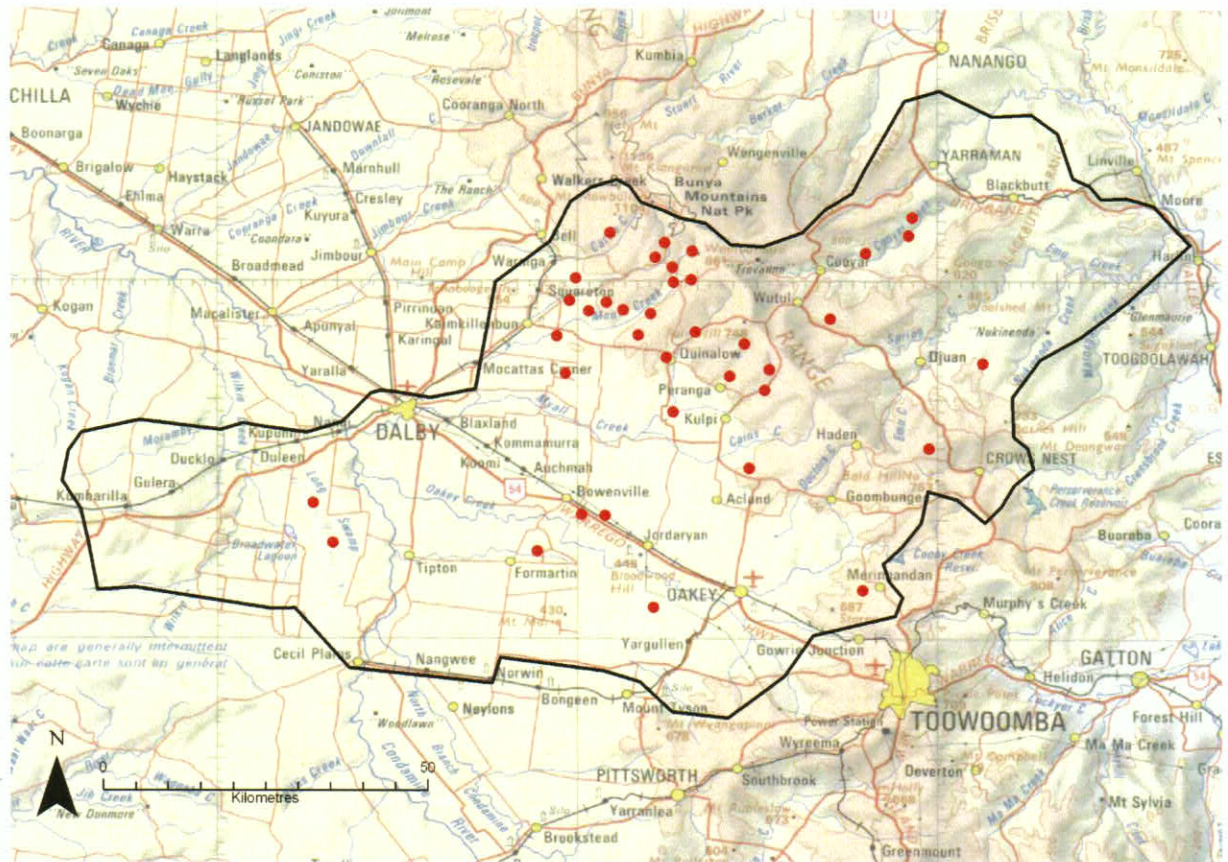


Figure 47: Feral pig sightings in the NED Landcare region

The feral pig (*Sus scrofa*) is one of the most widespread and damaging pest animals in Queensland. Feral pigs in Australia are descendants of various subspecies of the domestic pig. Accidental and deliberate releases of domestic and semi-feral pigs have resulted in a large feral pig population.

Feral pigs are prevalent in most areas of the NED Landcare region. Many landholders regularly trap or shoot pigs on their properties, and there are a significant number of private operators trapping pigs on private properties for sale to export works.

Indian mynahs

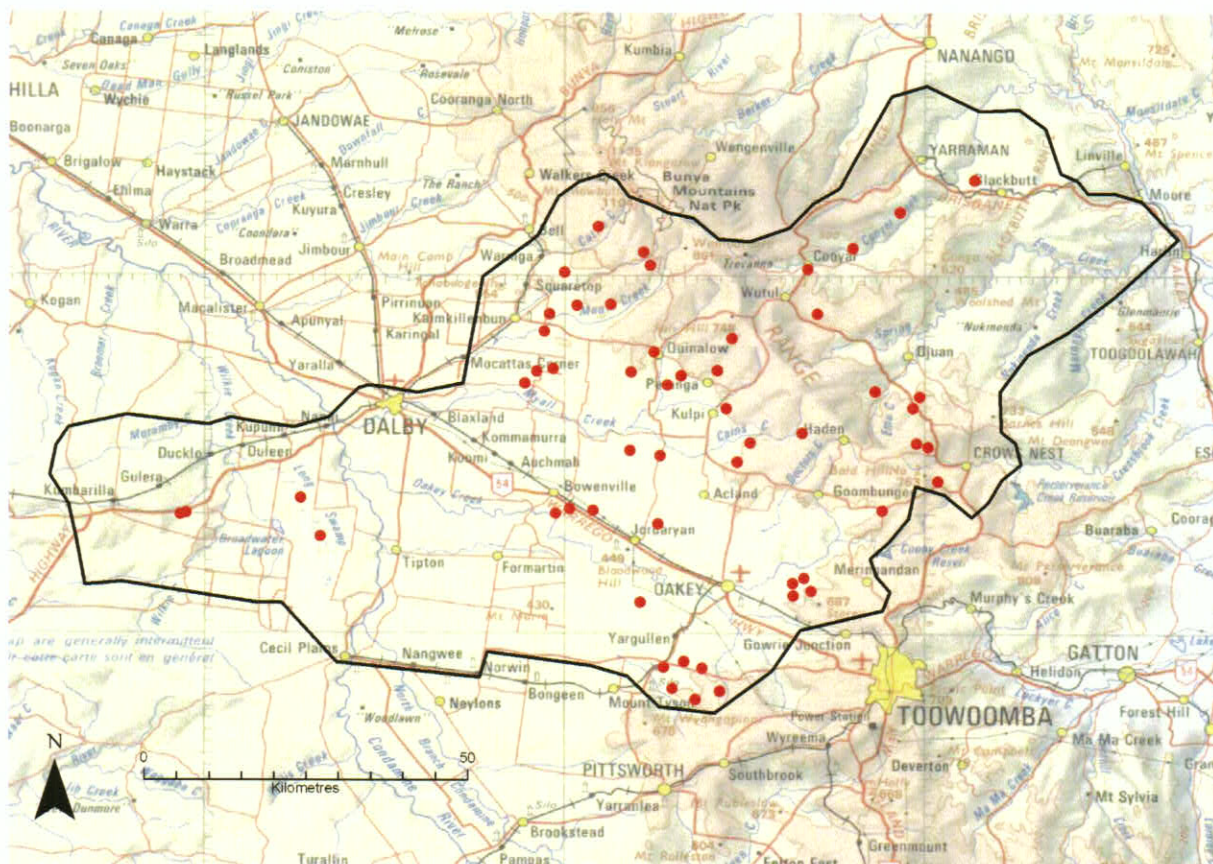


Figure 48: Indian mynah sightings in the NED Landcare region

The Indian mynah (*Acridotheres tristis* Syn. *Acridotheres tristis*) has become widespread across most of the NED Landcare region. This bird is now acknowledged as one of the world's worst pest species for a number of reasons, but mainly through competing for habitat with local native species.

In our region, the impact of the Indian mynah is most severe on native parrot species, as it will aggressively compete for nesting hollows. They can also kill small mammals such as sugar gliders when evicting them from tree hollows. Indian mynahs can also be responsible for spreading weeds such as lantana and fireweed by feeding on the seeds of these plants.

Until such time as this bird is widely recognised as a serious pest species, in particular by Regional Councils, it is likely that the population will continue to increase, at the expense of native species such as Rosellas, Lorikeets and other hollow-nesting species.

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