EVALUATION OF RESPONSES TO THREATS TO AUSTRALIA'S BIODIVERSITY

Final Report

KIR8178

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The National Land & Water Resources Audit provides data, information and nationwide assessments of Australia's land, water and biological resources to support sustainable development.

ABOUT KIRI-GANAI RESEARCH

Kiri-ganai Research Pty Ltd is a Canberra based consultancy company that undertakes consultancy and analytical studies concerned with environmental policy, industry performance, natural resource management and sustainable agriculture. Our strength is in turning knowledge gained from public policy, markets, business operations, science, and research into ideas, options, strategies and response plans for industries, governments, communities and businesses.

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Project team

The project was managed by Kiri-ganai Research Pty Ltd. The project team comprised Professor Jann Williams and Dr Richard Price. Jann Williams of NRM Insights is the principal author of this report.

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Disclaimer

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(Front cover photograph: Kakadu, Northern Territory, courtesy of Richard Price)

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Australian governments, industries and citizens invest in highly diverse ways in response to the threats to biodiversity. Each response analysed in this report has provided some level of beneficial outcome, although in most cases this can only be quantified at a broad level because of the lack of effective and systematic monitoring systems. This highlights a significant issue for evaluation of program effectiveness, for planning and for adaptive management. Even when the benefits realised from these investments are accounted for, the level of threat to biodiversity has not been abated overall and the loss of assets continues at the continental scale. This is a consequence of the limited resources invested in responses to threats to biodiversity, and the relatively small scale of initiatives, compared to the scale and nature of the threats.

In some cases, the main drivers of institutional responses were threatening processes such as land clearing. . In others, the goal of an institution was to maintain and enhance biodiversity with threats being a driver at a secondary level. Altered fire regimes were identified as a major threat to biodiversity across the majority of the case studies and requires greater information and institutional support to address. Most institutional responses assessed did not identify climate change as a major threat to biodiversity, even though it has been known as an issue for at least 20 years. The recent political support given to this issue is already leading to increasing attention being paid to this threat.

The majority of the responses examined focused on private land (which accounts for around 70% of the continent), as this is where many recent programs are targeted. The biodiversity assets associated with private land are considerable and their management is a complimentary (and necessary) adjunct to public land management. The pluralistic nature of society and its institutions, the diversity of biodiversity assets and the range of threats to these assets demand a multi-pronged investment approach to addressing threats that cover all land tenures. The current investment mix, while diverse, appears to have come about by default rather than as a part of a concerted strategy or tactical combination of responses. A more integrated approach is needed that covers all land tenures rather than focusing exclusively on private land or public land, which is currently a widespread institutional response.

Current and emerging threats to biodiversity are beyond the capacity for voluntary and uncoordinated approaches to address. A mix of responses will be required, the make-up of which will vary from region to region and issue to issue. Ultimately however, the long-term future of biodiversity on private land will rely on land managers seeing the value of maintaining biodiversity. Markets that pay for biodiversity outcomes, such as land acquisition programs and carbon trading, are likely to be strong drivers of change. Best practice regulations are an important part of the mix of responses, as are targeted incentives that promote and support long-term outcomes. Programs that are only in place for short periods are not conducive to good biodiversity outcomes, unless they promote long-term behavioural change or permanently add areas to the conservation estate with ongoing management in place.

Getting the mix of responses right will require levels of cooperation hitherto not fully demonstrated. Some promising directions in this regard are the growing number of landscape-scale 'biolink' projects, which cover multiple land tenures and involve multiple partners such as government agencies, non-government organisations, private landholders and industry. These programs recognise the need to deal with biodiversity threats at the landscape-scale and that effective biodiversity conservation requires long-term responses. Lessons from the National Water Initiative and the growing cooperative approach (including inter-governmental arrangements) to the management of Australia's water resources are also relevant here.

For investments to be effective, adequate monitoring, assessment and adaptation processes are required. Numerous response initiatives have been established without due investment in good process. This is as much a governance issue as it is a financial one. Allocation of resources to good monitoring can often offset the allocation of resources to reporting. Clarity of purpose and understanding of progress reduce inefficiency of effort.

Institutional responses require people to develop, implement and respond to them. Ultimately therefore, it is the human dimension of biodiversity management that will strongly influence the outcomes. As a consequence, the need for effective partnerships, communication and extension programs are highlighted in this report. Indigenous people bring a very different perspective on biodiversity and what threatens it. Within Aboriginal worldviews the natural and cultural environments are cosmologically intertwined. When Aboriginal people talk of 'country', therefore, they refer not just to an area of land or body of water but to a mythical-religious landscape of places, values, resources, stories and cultural obligations. Institutional responses overall need to more seriously address and engage with indigenous knowledge and values.

All ten case studies identified the limited people available with the skills and capacity to implement programs as a significant institutional issue. This has reduced the ability for responses to attain their full potential benefit. This longer-term capacity issue cannot be readily resolved and adds support to the need for a more concerted mix of responses that makes best use of limited capacity. The Caring for our Country initiative provides an opportunity to strategically set out this concerted effort.

Overall, Australia maintains an iconological approach to biodiversity assets, which is not consistent with the imperatives associated with long-term biodiversity conservation or the vast landmass under private ownership or management. Biodiversity does not start and end in national parks or patches of remnant vegetation, or with the management of threatened species. The recent move towards large-scale, multi-partner responses that take a systems approach and focus on ecological processes is an encouraging development. Evidence is also growing that maintaining biodiversity is an essential part of a healthy production system and can, in some cases, reduce costs of production considerably. In this respect industry has a significant role to play in addressing threats to biodiversity.

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In our judgement

What to sow and what to grow

⇒ Establish criteria of success on outcomes rather than processes, unless certain processes have detrimental and unintended consequences (in which case, don't advocate the process to use but rather the ones not to use).

⇒ Develop and implement monitoring and reporting systems appropriate to the objectives and targets that have been set.

⇒ Enforce legislation where legislation exists. Avoid sending mixed signals by not underpinning value systems written into legislation with appropriate monitoring and, where necessary, sanctions and punishment where the values are not heeded.

⇒ Include climate change as a major threat to biodiversity in current and new institutional responses and provide more information and support on fire management for ecological outcomes.

⇒ Invest in appropriately skilled staff to monitor, manage, communicate and facilitate, and continue to invest in their professional development.

⇒ Implement systems that enable effective delivery, monitoring and reporting and minimise high overheads or transaction costs where possible. In some cases however, such as interacting closely with farm families, high transaction costs can be unavoidable.

⇒ Delegate the right initiatives to the right organisations (ie to those in the best place to deliver them from the perspective of credibility, influence and capacity). Use existing group structures wherever possible.

⇒ Use efficient contracting systems that balance risk management and accountability with trust and delegation of authority. Simplify contracts not in terms of legal language, but in terms of delegation.

⇒ Use participatory models of extension that invest separately in awareness, participation and reinforcement activities. These are separate sociological phenomena that need to be dealt with by distinct but linked learning processes.

⇒ Support ongoing communication, preferably along with the empowerment of the communicators so that they are seen to have credibility. Constant provision of tips and tools rather than propaganda and dogma is valued highly by recipients of communication messages.

⇒ Communicate biodiversity in terms relevant to the target audiences, so that it makes sense from a social, cultural and, in some cases, economic perspective. The first two apply particularly, but not exclusively, to indigenous audiences.

⇒ Facilitate greater industry and non-government sector involvement and partnerships, particularly where they have credible communicators and facilitators who are attuned to public as well as private benefits

⇒ Connect biodiversity programs to growing areas of environmental investment such as carbon sequestration programs.

⇒ Facilitate collaborations of small but potential investors in carbon-based biodiversity programs so that they cumulatively reach critical mass.

⇒ Encourage projects and programs to systematically document their decisions and processes, particularly when major changes are made.

What to throw

⇒ Eliminate reporting arrangements that are not essential and which act to draw attention away from getting the job done.

⇒ Eliminate naïve notions that actions which provide private benefits can't also provide public benefits.

The preconditioning factors for success

⇒ Good science to underpin appropriate plans to ensure outcomes are beneficial as well as feasible rather than aspirational.

⇒ Clarity about geographic applicability of different initiatives ie rural vs. urban requirements can be different.

⇒ Clarity about what is meant by biodiversity, and how the objectives and activities of an initiative relate to it.

⇒ Consultation using the language and processes of those consulted, not of those doing the consulting.

⇒ Effective partnerships based on mutual objectives and willingness to share expertise, frameworks and frank, honest and respectful advice.

⇒ Efficient logistical and support systems, including quick and efficient payments associated with incentive schemes.

⇒ Planning that includes an outline of implementation, monitoring and evaluation processes.

⇒ Critical mass of enthusiasm among those expected to implement programs is essential and must equal or exceed the enthusiasm of those who conceive and establish biodiversity initiatives. A good partnership approach from the outset will assist in the transition of responsibility.

⇒ Adequate resources to meet the objectives of an initiative, or if not, then the objectives must be tailored to available resources.

⇒ Facilitators who can motivate, not just communicate.

⇒ Programs that are personally stimulating and rewarding to participate in.

⇒ Continuity of staff, at least for the life of the program, that is supported by an investment in incentives.

Recommendation 1

The Australian Government, its State counterparts and regional organisations need to work collaboratively through the Caring for Our Country initiative to develop and implement a more concerted and integrated national strategy for responding to the threats to biodiversity.

The strategy should take into account the key success factors identified in this report as well as focus on monitoring key indicators across regions and across different response mechanisms. Industry and non-government organisations should be integral partners in this approach at both national and regional levels.

Recommendation 2

Biodiversity conservation is a crowded playing field, especially in the area of nature conservation on private land. The pressures on biodiversity are themselves diverse as are the triggers for action. The concerted strategy suggested in Recommendation 1 therefore needs to take heed of identifying and maintaining an appropriate mix of responses. Landscape-scale initiatives and large-scale commercial ventures should have significant prominence, but regional processes should be supported to ensure an effective mix of responses is in place at local levels.

Recommendation 3

Programs should incorporate into their budgets adequate resources to purchase the skills required to adequately implement, monitor and evaluate program activities and to train and provide an ongoing legacy of skilled people. Evidence for this needs to be shown in program proposals, and should be part of mandatory guidelines for Caring for Our Country funding.

Programs should involve good partnerships that make best use of limited resources. They should also be planned on sound program logic frameworks that tailor resources to clear targets and activities, and make clear how monitoring will be undertaken, reported and used.

Recommendation 4

Future partnership programs between government and industries should demonstrate a balance of duty of care with market failure objectives to increase private sector investment in biodiversity outcomes. In recognizing that the market drivers for maintaining biodiversity are weak, government and industry should take example of the water and carbon markets that are rapidly developing. This matter should be brought before COAG for consideration.

Government needs to work with value chains of industry and not just the production sector to pursue the development of policies that will help internalise the cost of biodiversity protection in food prices.

Recommendation 5

The Australian Government and its State counterparts need to identify and promote programs where successful biodiversity outcomes have been achieved, particularly where they demonstrate positive 'returns on

investment'. Promotion, however, will not be enough without further investment in those programs demonstrating cost-effective returns. These matters should be considered in the context of the Caring for Our Country initiative.

Introduction, observations and key points

About the project

The National Land and Water Resources Audit (NLWRA) initiated this project as part of the 2008 NLWRA National Biodiversity Assessment. The overall objective of the project was to:

> *Assess the biodiversity outcomes of selected institutional responses to the threats to Australia's terrestrial biodiversity.*

In this context, the aim was to examine a range of institutional measures that are implemented nationally and in various states, territories and regions to combat key threats. The report of the evaluation will be used by the NLWRA to inform an overall assessment of trends in biodiversity and the effectiveness of various institutional responses to threats. It will complement a set of case studies being conducted by the states and territories to examine biodiversity outcomes of their key mechanisms for biodiversity management.

In conjunction with the project Steering Committee, the following ten case studies were selected to represent a range of institutions and responses to threats to biodiversity.

- The *Queensland Vegetation Management Act* 1999

- The Tasmanian Midlands component of the Biodiversity Hotspots Program

- Land for Wildlife, Victoria

- Bush Heritage Australia

- Living Landscapes, Western Australia

- The Cotton industry

- Breathe Easy, Greening Australia

- The NT NRM region

- The Kuka Kanyini Watarru project, South Australia

- Brisbane City Council

As nearly 70% of Australia is in private hands, and many of the current institutional responses are targeted at private land managers, the majority of case studies focus on achieving biodiversity outcomes on private land. The material informing the case studies was based on desk-top research and interviews with four main 'stakeholder' groups associated with each case study: those responsible for developing the response; those responsible for implementing the response; those affected by the response and those observing/assessing the response. Several challenges arose in the identification and coordination of stakeholder interviews, largely associated with the timing of the project over the summer holidays.

Methodology

In essence the project involved interviews with key stakeholder groups associated with each of the ten case studies identified above. The interviews were used as the basis for identifying the key factors for enhancing or inhibiting the success of responses to the threats to biodiversity. Comparative analyses were then made, with iterative feedback from Steering Committee members, to derive the observations, findings and recommendations.

The project methodology is outlined in detail in Appendix 1.

Observations, findings and key points

Definitions and meaning

The case studies demonstrated that biodiversity has many meanings, depending on the perspective and values of the person being interviewed. While formal definitions of biodiversity (such as those developed in the National Strategy for Biodiversity Conservation) were used in written documents, operationally, less formal definitions were used. For some, biodiversity meant the health of vegetation. For others, it meant abundance or richness of flora and or fauna. The association with native vegetation or animals was strong, but not universal.

Indigenous people bring a very different perspective on biodiversity. Within Aboriginal worldviews the natural and cultural environments are cosmologically intertwined. When Aboriginal people talk of 'country', therefore, they refer not just to an area of land or body of water but to a mythical-religious landscape of places, values, resources, stories and cultural obligations. Most institutional responses to threats to biodiversity do not seriously address or engage with indigenous value systems. This is something that needs further attention. Lessons can be learnt from projects such as Kuka Kanyini in South Australia, which has identified and put programs in place that aim to work closely with indigenous communities.

It is the diversity of definition and meaning that has no doubt contributed, in part if not substantially, to the range of responses in place.

Threats as a driver

Each case study identified its own particular set of threats, depending not simply on objective criteria about what was under threat and how, but on subjective measures about what matters to what individuals, groups of individuals or institutions. In some case studies threatening processes such as land clearing were the main driver of an institutional response. In others, the goal of an institution was to maintain and enhance biodiversity with threats being a driver at a secondary level. The majority of institutional responses assessed did not deal with climate change as a major threat to biodiversity. This was identified as a gap by some, but in other cases was not yet part of their thinking even though it has been known as an issue for at least 20 years. The recent political support given to this issue is already leading to increasing attention being paid to this threat.

In northern Australia, fire, weeds and feral animals were identified as the main threats by most stakeholders. In southern Australia, a wide range of threats was identified, including grazing, land clearing, land-use change, weeds and changes to water courses/dams. Altered fire regimes were widely identified as a threat to biodiversity, and is one of the most difficult threats to address. There are many reasons for this, including the complexity of the systems being managed, the loss of traditional and local knowledge (more prevalent in southern Australia), the tension between managing fire for ecological purposes and for protecting life and property and more pragmatically the narrow windows of opportunity for burning and the safety and other regulations that surround the use of fire. More information and support on managing fire for ecological outcomes was commonly requested and requires further attention at the institutional level.

For some interviewees, threats meant the kind of physical phenomena outlined above. For others, institutional and resource-related issues were also identified as threats to programs, not least the limited people available with the skills and capacity to implement programs.

> **Key point:** Threats to biodiversity can be both direct, such as altered fire regimes and weeds, or indirect such as institutional failure. Consideration of both direct and indirect threats is essential in the development of responses.

Targets

The type of targets and objectives identified for biodiversity outcomes were diverse, ranging from fairly broad (such as the vision identified for *Land for Wildlife*) to quite specific (such as the 40% target for natural habitat identified by the Brisbane City Council). Interviewees considered most targets associated with their case study would have been realistic if adequate resources were available. This suggests that while the targets were not conjectural, nor were they in fact realistic. If targets cannot be made realistic for the resources available, it is difficult to make strategic judgements across initiatives as to whether the total investment or the mix of the investment is appropriate, other than in hindsight.

The following section on monitoring demonstrates the difficulties associated with determining if targets and objectives had been met (except at a broad level), due to the overall lack of effective and systematic systems in place.

> **Key point:** Institutions need to define clear goals for the policies and programs they put in place to address biodiversity outcomes. What can be learnt from the case studies in respect to targets is the need to take a program logic approach to matching goals, target, activities, resources and monitoring mechanisms. Whilst this may appear a managerialist and reductionist view of orchestrating responses to the complex ecological and social factors associated with biodiversity threats, there are frameworks that adequately cater for such complexity.

Monitoring

Overall there were very few systematic monitoring programs in place across institutions, apart from broad-scale monitoring of attributes such as vegetation extent and type, which are used as surrogates for biodiversity. For example, the Queensland government uses satellite imagery to monitor vegetation change at the broad-scale under the *Queensland Vegetation Management Act* 1999. Programs such as *Land for Wildlife* were able to report on the amount of different habitats retained on properties and how these changed over time, as well as numbers of threatened and other species. These broad-level reporting and monitoring mechanisms are being increasingly developed and used as the technologies are refined.

Broad-scale monitoring mechanisms can only go so far. Detailed on-ground, site-based monitoring programs were found to be non-existent, patchy or still to be implemented. This is the case within institutions, let alone monitoring that ties together the impacts of many different responses across institutions. Much has been written about monitoring systems for biodiversity (e.g. Smyth *et al.* 2004, Field *et al.* 2007), so lack of information about the most effective approaches should not be a major issue. A recent evaluation of the NHT and NAP by the Australian National Audit Office also identified some of the areas where the quality and measurability of targets and their link to program outcomes could be improved (ANAO Audit Report 2008).

The case studies that were working in a commercial environment (e.g. Bush Heritage Australia and the Breathe Easy program of Greening Australia) tended to have more detailed site-based monitoring mechanisms either in place or well advanced in their development. These programs have the potential to monitor outcomes against objectives at a finer-scale. The commercial driver behind these programs suggests that accountability for outcomes rather than accountability for process is a significant motivator behind putting adequate monitoring systems in place. While both of these organisations are non-profit, they need to take a business approach to secure continued investment in their programs.

Effective partnerships within and across institutions can help overcome some of the issues associated with monitoring. The need to build more effective partnerships is not limited to government. For example, it was noted that the cotton industry could identify how many people had participated in its Land &Water Management module but could not identify how many kilometres of fencing of remnants had been put in place as a result, while the catchment management authorities in the area could identify how many kilometres of fencing had been erected but not by which industry.

Having links with research groups to assist with project design, implementation and develop monitoring protocols was considered important in many of the case studies, as was having evidence-based policy and programs. These links were formal in some cases, such as the Biodiversity Research Partnership initiated by the Brisbane City Council or could be informal. Having expertise in-house was another approach taken, such as with Bush Heritage Australia and the *Land for Wildlife* Program.

Both of these groups however also recognised the value of external expertise to complement their own skills.

A number of case studies, including industry initiatives, focused on monitoring inputs and throughputs (ie participation) rather than on outcomes. Indeed, all case studies could identify formal or informal mechanisms for receiving feedback and changing programs accordingly. The feedback mechanisms were primarily related to human systems, including regular meetings, workshops and surveys, rather than direct monitoring of biodiversity outcomes. The three case studies that identified a formal adaptive management framework was one of the Brisbane City Council programs, Greening Australia and Bush Heritage Australia. Industry programs such as cotton however may put outcomes-based monitoring systems in place if consumer demand in the future requires this sort of information.

> **Key points:** Partnerships are critical to ensure that monitoring is undertaken by the right people, with the right expertise, the right frameworks and the right technologies.
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> Auditing how reporting is undertaken within an organisation can help to identify where improvements can be made. Some regional-based organisations have found that resources allocated to monitoring can significantly reduce resources required for reporting as the latter becomes easier when there is a good information base upon which to report.

Consultation

Across the case studies, consultation processes were considered reasonably comprehensive, although timelines and some cultural aspects could have been improved. Consultation can take many forms, from brief and superficial to meaningful and long-term. Effective consultation is more likely to engage stakeholders in implementing programs, but it can take time to build trust and develop relationships. In the case of regulatory approaches such as the *Queensland Vegetation Management Act*, consultation and building trust can be problematic - no longer are 'responses' by institutions perceived by stakeholders to be about biodiversity threats, but about their personal behaviour.

The time available to build trust prior to implementation of activities varied amongst case studies. Some had to rely on initial goodwill, with the development of trust and cooperation being forged over time. Others, such as the Kuka Kanyini project in north-western SA involved extensive consultation. In the case of the Living Landscapes program, where existing Landcare groups were used, the ability to work with existing groups rather than starting from scratch was seen to be an advantage. Developing effective relationships takes time, and needs to be factored into institutional responses.

Some interviewees suggested that governments hindered more than they helped. In their view, politics rather than good policy was felt to be getting in the way of biodiversity outcomes. Whether or not this sentiment is

justified, it is certainly one that needs to be acknowledged and addressed. It was felt by some that certain programs could be more effectively run outside of government by regional or local organisations as these are closer to the community and have a better understanding of what they are thinking and how they can be best motivated to act.

> **Key points:** Developing relationships and trust between the people implementing/developing institutional responses and those affected by it is critical. This means that greater thought needs to be put into the cultural context and communication preferences of the target audiences for the programs being developed. Engagement with indigenous stakeholders needs particular attention, but better communication with non-indigenous land managers is also critical. Some form of cultural training may be warranted, where facilitators, agency staff and others who interact with land managers (both indigenous and non-indigenous) are exposed to the different values, experiences and world views that people bring to the table.
>
> Lack of capacity has been identified throughout the case studies as an area of concern. Using existing groups, NGOs and other locally-based organisations doesn't simply make better use of the wider network of resources available; it also keeps up motivation through reward and recognition and assists in the process of adaptive management through utilising corporate memory. Consultation with such groups should include questions that value what they have done in the past, learning what worked and what didn't, and not simply including only those questions relating to the specific issue at hand.

Diversity of responses and impact

The evaluation of the ten case studies demonstrates that each has had some form of beneficial impact, although in most cases this cannot be quantified except at a broad level. This highlights a significant issue for evaluation of program effectiveness, for planning and for adaptive management. Identifying the relative importance and amount of investment (both human and financial) required across each of the responses to meet biodiversity outcomes will vary from region to region and issue to issue. There is not likely to be a single correct mix, and so the matter of relative balance will require ongoing consideration at regional and national scales.

Ultimately, the long-term future of biodiversity on private land will rely on land managers seeing the value of maintaining biodiversity. Markets that pay for biodiversity outcomes, such as land acquisition programs and carbon trading, are likely to be strong drivers of change and thus an important part of the mix of responses. Most case studies identified the growing carbon market (which aims to mitigate climate change) as an opportunity to attract funds that could be used to manage for biodiversity outcomes. Some work will need to be done to connect biodiversity programs to growing areas of environmental investment such as carbon sequestration programs. Collaborations of groups working in this area could be facilitated with potential investors in carbon-based biodiversity programs so that they cumulatively reach critical mass.

The immediate impact of the Queensland regulatory approach in terms of reducing broad-scale clearing of remnant vegetation suggests that within a mix of mechanisms, regulatory approaches can be powerful. It can also be socially divisive if best practice is not adhered to (Productivity Commission 2004). If implemented effectively, regulations are an important part of the mix of responses, as are targeted incentives that promote and support long-term outcomes. Programs that are only in place for short periods are not conducive to good biodiversity outcomes, unless they promote long-term behavioural change or permanently add areas to the conservation estate with ongoing management in place.

With 70 percent of land under private management, and the need to deal with biodiversity threats at the landscape dimension, large-scale responses show encouraging signs of restoring ecological systems and processes to support and enhance biodiversity. These place large packages of land under conservation management, help connect patches of conservation areas or otherwise allow landscapes to be permeable Such responses are being implemented by organisations such as Bush Heritage Australia, who are buying land as part of larger landscape-scale initiatives such as Gondwana-link in south-west WA and the NSW component of the Alps to Atherton project. The National Reserve System has played an important role in contributing to the purchase of some of these properties, and will continue to do so with the increased investment in this area. Other partners in responses such as these can include industry, private landholders and indigenous land managers.

The spectrum of responses, from voluntary schemes such as *Land for Wildlife*, through to acquisition of land by the private sector, through to legislation, can all contribute to significant biodiversity outcomes if adequate resources, skills and a long-term commitment to implementation are in place. Integrated approaches that include individual action, community groups that work within a good social process (ie those that promote a sense of ownership and continuous learning, and provide affirmation and a sense of recognition and trust), incentives for action and market drivers for change all need to be supported by policy and legislative programs. The Brisbane City Council provides an example of how one institution can implement a broad range of responses to threats to biodiversity, recognising the importance of this diversity to meet its objectives.

> **Key points:** The case studies do not make a primary case for one form of response being more effective than another, particularly because monitoring and evaluation was relatively weak across the board. Markets that pay for biodiversity outcomes, such as land acquisition programs or carbon trading companies, are likely however to be strong drivers on private land. Best practice regulations are an important part of the mix of responses, as are targeted incentives if they promote long-term outcomes.
> Joint investment and ownership in regional processes is vital to ensuring local and national scale objectives can be met, and so programs such as Caring for Our Country can play a pivotal role in setting out clear objectives and aligning these with locally appropriate actions. This will help ensure that the mix or responses to threats is appropriate to the regional and national context.

Long-term commitment and timing

The need to make a long-term commitment with adequate resources to support the institutional response was raised in all case studies and considered essential to success. For example, programs such as Living Landscapes were unable to meet their full potential because the funding formula was changed by the Australian Government and the project was ineligible for continued funding. This meant that it was unable to undertake follow-up surveys of attitudinal and behavioural change or follow up the impact of on-ground actions on biodiversity outcomes. Every stake-holder interviewed about the *Land for Wildlife* Program in Victoria identified that the diminishing resources available for the Program over recent years had limited its effectiveness to achieve biodiversity outcomes. An important dimension of providing adequate resources and a long-term commitment was creating continuity for both staff working on programs and the people they are working with (principally landholders) who are implementing the on-ground actions.

The issue of timeliness in the development and implementation of programs was also identified as a concern across the case studies. For example, many stakeholders affected by government programs felt that unrealistic (e.g. short) time-frames led to less than optimal outcomes. At the other extreme, programs that were delivering incentives to landholders to manage for biodiversity outcomes could take up to a year to make payments. This was considered unacceptable. There also needs to be follow-up in programs, particularly where management agreements with landholders are involved. This would involve visits over the life of the agreement to review/discuss biodiversity outcomes and management actions, as well as provide information towards the end of an agreement on what happens next. Currently it is uncertain what will happen to the increasing number of properties receiving stewardship payments/incentives that may last for periods up to 15 years.

> **Key points:** Resourcing is an inevitable issue in respect to fields where there is limited throughput of trained labour, and this must be taken into account in program design.
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> Issues about the timing of responses are enduring, particularly in community projects. . While this may never be completely overcome because political and societal preferences do and must inevitably change, investment in the mix of responses can be better coordinated through more concerted and collaborative strategies. Environmental programs in recent years, such as the Decade of Landcare, NHT and Caring for our Country, have shown that they can adopt funding horizons beyond three years. It is within the context of these programs that the collaborative processes must be formed at both national and regional levels.

Partnerships and governance

Developing partnerships across different stakeholders, particularly increasing the involvement of industry was a reasonably consistent theme across the case studies. This was seen as one way of decreasing the

dependence on government funding, particularly where a duty of care or private benefit could be identified and increasing access to limited resources, including human, management systems and financial.

Because of the need to take a landscape-scale approach to biodiversity conservation, partnerships are needed across land tenures. The 'Beyond the Boundaries' program run by Bush Heritage Australia (BHA) is one example where an institution which buys land for conservation outcomes are working with neighbours such as private land holders. BHA also work closely with the National Reserve System in purchasing properties, a partnership that adds value to both organisations.

Case studies where skills-based boards or committees were involved tended to be able to more readily draw upon research, policy and communication expertise. While such committees can be seen to be bureaucratic at very local levels, they can be effective in broadening networks into which additional skill capacity can be tapped. Such committees also provide an opportunity to reflect upon progress and institutionalise the systematic documentation of decisions that can help evaluation and adaptive learning.

> **Key point:** Case studies where skills-based boards or committees were involved tended to be able to more readily draw upon research, policy and communication expertise and provide an opportunity to reflect upon progress and institutionalise the systematic documentation of decisions that can help evaluation and adaptive learning.
>
> The increasing number of large-scale projects that involve multiple partners and cover multiple tenures is an encouraging development in large-scale, long-term responses to threats to biodiversity. The emerging approach to national water management, while not perfect, can also provide lessons for national approaches to other environmental issues, including biodiversity protection.

Factors that support successful responses

Based on the case studies evaluated in this project, a number of 'success' factors emerged that need to be in place in order to achieve significant biodiversity outcomes. Ideally these would be in place at the start of a program.

⇒ Ensure rigorous and effective governance structures are in place;

⇒ Have a clear statement of what the program/project is meant to achieve (e.g. identify measurable goals and objectives);

⇒ Use an understanding of the social, cultural and economic setting when developing and implementing programs;

⇒ Identify how project/program goals are going to be met;

⇒ Develop access to scientific expertise, either in-house or through research institutions, to support evidence-based policies and programs and develop effective approaches to monitoring;

⇒ Engage people with the right skills and make sure they are supported and valued; and

⇒ Put a long-term commitment to implement programs in place, including sustained investment and sufficient resources.

⇒ Forge effective partnerships based on mutual objectives and willingness to share expertise, frameworks and frank, honest and respectful advice.

References and sources of information:

A number of sources of information are listed at the end of each case study.

ANAO Audit Report (2008) *Regional delivery model for the Natural Heritage Trust and the National Action Plan for Salinity and Water Quality.* Audit Report No. 21 2007-2008, Canberra.

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Productivity Commission (2004) *Impacts of native vegetation and biodiversity regulations.* Report no. 29, Melbourne.

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Summary of Case Studies

The following is a summary of the ten case studies including a brief description of the case study and its impacts, together with observations about what worked and what needs improvement. A table on page 22 (check page number *) outlines the characteristics of each of the case studies.

Case study 1: The Queensland Vegetation Management Act 1999 (Queensland)

Description:

The Queensland Vegetation Management Act (1999) regulates vegetation clearing across Queensland. It does this by requiring a permit for clearing purposes listed in the Integrated Planning Act to be undertaken lawfully.

Impact:

Short term: Largely stopped broad-scale clearing of remnant woody vegetation in rural Queensland.

Medium to long-term: Complimentary policies and programs are required for mid/long term benefits.

What worked:

⇒ 2004 amendment passed

⇒ Payments to landholders when a moratorium on broad-scale clearing was introduced in 2004

What needs work:

⇒ Exemptions in the Planning Act need to be tightened, particularly on urban land

⇒ Issues currently not handled well in the Act e.g. regrowth management and climate change

⇒ Voluntary mechanisms to support landholders

⇒ Overcoming belief the act is not designed specifically to protect biodiversity

⇒ Potential loopholes in the offsets policy

⇒ Overall enforcement of the Act

⇒ Communication about what the Act means for landholders

⇒ More time/resources/staff

What didn't work:

⇒ Handling of the Regional Vegetation Management Plan process (axed in 2004)

⇒ The initial implementation of the Act.

Case study 2: Midlands Biodiversity Hotspot (Tasmania)

Description:

The Midlands Biodiversity Hotspot was one of 15 national Hotspots identified by the Threatened Species Scientific Committee in 2003. Projects in the Midlands Hotspot involved working with land owners to help them protect the long-term future of threatened species and other special values.

Impact:

Short-term: raising awareness in the Midlands community; providing resources for management actions; increasing the number of threatened species and high conservation vegetation communities in the private reserve system.

Medium to long-term: Magnitude of the benefits will depend on the level of ongoing support.

What worked:

⇒   Delivery of the program through a local Council

⇒   The process of identifying and negotiating conservation agreements

⇒   The assessment of the natural values of participating properties

What needs work:

⇒   Training in the art of talking to/understanding landholders

⇒   Time taken to make payments against the agreements

⇒   Maintaining on-going relationships with landholders through visits to the property, regular newsletters etc

⇒   Information on and support for fire management

⇒   Rate relief for parts of the property managed for conservation

⇒   Potential certification for environmentally friendly management

⇒   Flexibility of management systems

⇒   Adequate communication resources

⇒   Social research into drivers for wider participation

Case study 3: Land for Wildlife (Victoria)

Description:

Land for Wildlife is a voluntary program supporting landholders or managers who provide habitat for native wildlife on their land and the promotion of others to do so. It is run through the Department of Sustainability and Environment.

Impact:

Short term: Increased awareness of biodiversity amongst landholders.
Risks to biodiversity reduced through education, extension and empowerment.

Medium to long-term: Requires sustained investment and support of the program.

What worked:

⇒ The overall program design

⇒ The initial property visit by extension officers

⇒ The newsletters and field days

What needs work:

⇒ Endurance: effectiveness diminished over time because of decreasing human and financial resources

⇒ Landholders would like at least two gatherings per year run by the extension officer to exchange experiences

⇒ Increase the number of newsletters from 2 to 4 a year

⇒ Sharing workload to draw on landholder interest in supporting the program, running field days etc

⇒ Fire management for ecological outcomes

⇒ Developing a 'one stop shop' for information on available wildlife/habitat programs and support material

⇒ Developing an advocates 'union' to champion the program

What didn't work:

⇒ Adequate ongoing budget support

⇒ Drawing on the complimentary work in the Department where synergies could have occurred

⇒ Using people without the necessary skills to undertake property assessments

Case study 4: Bush Heritage Australia (National)

Description;

Bush Heritage Australia is a national, non-profit organization that aims to protect Australia's unique and abundant diversity of life through the creation of reserves on private land.

Impact:

Short-term benefits: It can have positive and immediate impact on biodiversity by purchasing properties under immediate threat.

Medium to long-term: Potential for substantial, positive long-term impact on the properties that BHA has purchased, as they will be able to monitor the effect its management has on biodiversity.

What worked:

⇒ Staff and property numbers grew quickly and new and innovative programs were put in place when required

⇒ Permanent managers living on the larger properties

⇒ Ability to develop partnerships across a diverse range of groups

⇒ Indicating that biodiversity had a value because people were prepared to pay for it by buying land.

What needs work:

⇒ Stronger presence in areas where permanent staff aren't located

⇒ Support to staff who live on remote properties

⇒ Demonstration and promotion that BHA is reliable, scientifically credible, effective and here for the long term

⇒ Having regional hubs as part of a national database that allows access to regionally specific material

⇒ Building on access to knowledge and expertise by providing PhD scholarships etc.

⇒ Developing a better understanding of how to manage for biodiversity outcomes in a changing climate

⇒ Managing the rapid growth of the organization

⇒ Building on indigenous relationships

Case study 5: Living Landscapes (Western Australia)

Description:

Living Landscapes was a community engagement and landscape planning process that ran between 2000 to 2006 across the agricultural landscape of South-western Western Australia. Its goal was to increase farmer participation in nature conservation activities by linking science and community through a simple framework for learning, planning, doing and reviewing.

Impact:

Short-term benefits: Increased community capacity and understanding of biodiversity in agricultural landscapes, significant areas of native vegetation protected and planted.

Medium to long-term benefits: The ongoing benefit of having areas of vegetation protected and revegetated. Elements of the approach are being taken up by the Ecoscapes project.

What worked:

⇒ Staff presence throughout the life of the project

⇒ The 'Learning by Doing' approach

⇒ Engagement of the whole family in project activities

⇒ Building on the existing Alcoa Landcare program

What needs work:

⇒ Extension support for the farmers involved in the project after the project finished

$\Rightarrow$ Understanding of the demographics of farmers

$\Rightarrow$ Farmers felt that the project was too intense and would have benefited from being spread over 10-15 years

$\Rightarrow$ Financial equity – getting the balance right between farmer/public investment

$\Rightarrow$ Sustained investment

$\Rightarrow$ Integrated approaches to determine the relative importance of the different parts of the mix needed (e.g. voluntary, social process, regulatory, incentives based)

Case study 6: Cotton Industry BMP Land & Water Management Module (New South Wales / Queensland)

Description:

The Cotton Industry BMP Land and Water Management Module deals with resource assessment, soil management and efficient irrigation through an extension cycle of adaptive management. Objectives 7 & 8 of the module deal specifically with native vegetation and riparian management. These last two objectives respond most directly to biodiversity threats.

Impact:

Short-term benefits: Improved awareness of the role of vegetation in productive landscapes. Reminds growers of their duty of care and responsibilities under various land and water management legislation.

Medium to long-term benefits: A landscape approach to undertaking agricultural activities, including matching land use to land capability, with maintenance of natural landscapes seen as part of a productive system.

What worked:

$\Rightarrow$ Building on a successful BMP process

$\Rightarrow$ Alignment of the components of the module and the targets set out in relevant catchment management plans

What needs work:

$\Rightarrow$ The pursuit of market based approaches to environmental outcomes

$\Rightarrow$ Linking actions on farm to landscape scale monitoring programs

What didn't work:

$\Rightarrow$ The voluntary basis in the face of the lack of market incentives

Case study 7: Breathe Easy (National)

Description:

The Breathe Easy Program is a new program of Greening Australia which focuses on mass planting of a mix of species to offer a combination of carbon offsets, landscape recovery and nurturing biodiversity.

Impact:

Short-term: Increasing awareness about links between carbon offsets and biodiversity outcomes. Income from carbon offsets has the potential to change the nature and scale of restoration works.

Medium to long-term: The price that is paid for carbon will influence how much effort can be put into the biodiversity component of plantings. Plantings done by *Breathe Easy* are guaranteed for 100 years.

What worked:

$\Rightarrow$ Focus on larger customers e.g. Mirabella Lights, Tasmanian Government

$\Rightarrow$ Linking biodiversity and carbon sequestration

What needs work:

$\Rightarrow$ A commitment to a carbon market at the national level

$\Rightarrow$ Opportunity for Australia to change the carbon market dynamics in the post-Kyoto Protocol negotiations

$\Rightarrow$ Standards for biodiversity-related carbon initiatives

$\Rightarrow$ Diversifying funding sources

$\Rightarrow$ Potential to target households and smaller businesses

$\Rightarrow$ Educating the market, both nationally and internationally in terms of carbon offsets and biodiversity relationships

$\Rightarrow$ Need for more information on carbon sequestration potential of native species

$\Rightarrow$ A mechanism to share the growth data and bring it into the public arena

$\Rightarrow$ More research on mechanised techniques for large-scale restoration

$\Rightarrow$ Finding appropriately skilled staff to provide advice, undertake audits and build the partnerships

$\Rightarrow$ Lowering transaction costs associated with obtaining household-level and small to medium sized enterprise participation

Case study 8: Northern Territory Integrated Natural Resource Management Plan (Northern Territory)

Description:

The Northern Territory Integrated Natural Resource Management Plan is coordinated by the NT NRM Board and acts as an over-arching strategy for natural resource management, guiding the investment of on-ground activities in the Northern Territory.

Impact:

Short-term: Has provided an overarching plan for natural resources in the NT. Encouraged a more collaborative approach to project development and implementation.

Medium to long-term: Could be significant with a greater focus on investment from industry.

What worked:

$\Rightarrow$ INRM Plan represented the first framework for natural resource management in the NT

$\Rightarrow$ In-roads has been made on gaining collaborative support

$\Rightarrow$ What needs work:

$\Rightarrow$ More investment from and partnerships with industry

$\Rightarrow$ Location of the facilitator network and clarity on who facilitators report to and their responsibilities

$\Rightarrow$ Prioritisation of the most important biodiversity assets to target and identification of the facilitator groups targeted around these areas

$\Rightarrow$ Building time, resources and skills needed for effective engagement with the indigenous population

What didn't work:

$\Rightarrow$ The current plan could be a more a workable document for indigenous people

Case study 9: Kuka Kanyini Watarru (South Australia)

Description:

Kuka Kanyini is a project in the Watarru region of the Anangu Pitjantjatjara Yankunyatjara (APY) lands in North-western South Australia. The project aims to manage country, conserve biodiversity, maintain culture and improve the social, economic and emotional well-being of indigenous peoples in the APY lands.

Impact:

Short-term benefits: Improved health and wellbeing, increased involvement, employment opportunities for the Anangu community; greater availability of clean water for native animals; control of feral animals and predators;

Mid and long-term benefits: Possibilty of the Anangu managing the program themselves; the reintroduction and successful establishment of the Black flanked rock wallaby; improved health and wellbeing of Anangu; improved health of country.

What worked:

$\Rightarrow$ The engagement of the Watarru community

$\Rightarrow$ Raising awareness of biodiversity across a range of stakeholders

$\Rightarrow$ The approach taken to marrying traditional and contemporary land management knowledge and scientific expertise

$\Rightarrow$ Providing employment in the community and reconnecting families with the land

$\Rightarrow$ Improving the health and wellbeing of the community

What needs work:

⇒ Ongoing project management presence in the community

⇒ An equal balance of power between Aboriginal communities and funding bodies

⇒ All parties sticking to the rules, once they are agreed

⇒ Build on the confidence of the Anangu as managers

⇒ Flexibility in delivery of the program to adapt to changing circumstances.

⇒ Staff selection and training (esp. Cultural and communication training)

Case study 10: Brisbane City Council (Queensland)

Description:

The Brisbane City Council has a wide range of programs in place in response to threats to biodiversity, ranging from research and data management, community participation, legislative responses and planning responses.

Impact:

Short-term benefits: Council able to purchase important areas of bushland. The regulatory and planning framework can also have immediate benefits for biodiversity.

Mid to long-term benefits: Benefits to biodiversity should be ongoing under current policy. Community-based programs and communication activities can take longer to have a significant impact.

What worked:

⇒ The acquisition of bushland (and associated public access)

⇒ The mix of policy staff and the research partnerships

⇒ Personal contact with members of the Community

What needs work:

⇒ More skilled on-ground staff

⇒ The ability to interact with a very diverse range of stakeholders

⇒ Mechanisms to encourage better flow of information

⇒ Determining the best mix of tools to address biodiversity conservation, with the planning, legislative (e.g. the City Plan and Local laws) and acquisition programs

⇒ Addressing tensions between development aims of the state government and the biodiversity goals of the Brisbane City Council

⇒ Increasing the levels of funding appropriate to the challenges and making the responses part of 'core business'.

Summary of Final Ten Case Studies									
Selection Criteria ⟍ Response	Geographic target	Threat process	Asset target	Area covered by response	Time response in place	Form of monitoring	Resources involved	Regulatory / voluntary spectrum	Private / public spectrum
1.4 Vegetation Management Act	Qld	VC	Native Veg	Property	Since 1999	Ministerial reporting/reg compliance	$150 million payout to landholders;	Regulatory	Public
2.2 Biodiversity Hotspots Program - Tasmanian (Midlands) component	Midlands of Tasmania	Comprehensive	High conservation natural ecosystems	Property	Since 2003/4	External government monitoring -	$36 million (for the entire Program)	Voluntary	Public
2.7 Land for Wildlife	Victoria	BD	Native Veg Fauna	5900 properties; 160,000 ha for wildlife	Since 1981	Voluntary management agreement compliance	$310,000 (2005)	Voluntary	Public
3.4 Bush Heritage Australia	National	VC, BD, CC, IF, W, F	High conser-vation ecosystems, TC, TS	Property 721,266 ha – protect 1% of Australia by 2025	Since 1990	Covenant compliance	$13.3m (2005-06)	Market	Public
4.6 Greening Australia – Living Landscapes program	South-west Western Australia	S, BD, VC	Comprehen-sive	5 catchments in SW WA – 113,700 ha	Since 1998	Group monitoring & evaluation	$2.5 million over five years	Voluntary	Public
5A Cotton BMP Land & Water module	Queensland, NSW	CGE, BD	Native veg, Biodiversity	Property	Since 2005	Self assessment to external auditing	$605,000 in development	Industry policy	Mixed
5B Breathe Easy – Greening Australia	Southern and eastern Australia	Climate change, BD	Native vegetation	Property	Since 2006/7	Periodic third party audits	Unavailable	Voluntary	Mixed
6.2 NHT associated region - NT NRM Inc	Northern Territory	Comprehensive	All	State	Since 2005	Mainly at project level	$16m (06-07 biodiversity investment)	Government policy	Mixed
7.4 Anangu-Pitjantjatjara - Yankunytjatjara lands - Kuka Kanyini Watarru project	NE SA	F, IF, BD, loss of cul-tural know-ledge & links to land	Vegn, Fauna, Country	103,000 sq km	Since 2004	Joint management reporting	Unavailable	Voluntary	Mixed
Other (cross-category) Brisbane City Council	SE Queensland	BD, W, F	Native flora and fauna	1367 km 2	Since 1925	Self-assess-ment (residents / Council)	$20 million/year (2006-2007)	Mixed	Private

Codes used in table: VC = vegetation clearance; IF = inappropriate fire regimes, W = weeds, CC = Climate change, BD = biodiversity decline;
S = salinity, CGE = community and government expectations, F = feral animals

Case study 1: The Queensland Vegetation Management Act 1999 (Queensland)

The institution and its response

In 1999 the state government of Queensland passed the *Vegetation Management Act (1999)* (VMA), with the Act commencing in 2000. Significant amendments were subsequently made to the Act through the *Native Vegetation and Other Legislation Amendment Act (2004)*. The Act regulates vegetation clearing across Queensland. It does this by working in conjunction with the Integrated Planning Act 1997 (IPA), so that clearing for purposes listed in schedule 8 of the IPA is considered as "*assessable development*", which requires a permit to be undertaken lawfully (Waters 2006).

The VMA is administered by the Department of Natural Resources and Water (NRW), and now applies on all land tenures – private (freehold) land as well as leasehold and unallocated State land. The State Rural Leasehold Land Strategy ('*The Delbessie Agreement*'), which came into effect in January 2008, is an important adjunct to the VMA as it provides for enhanced land management practice on leasehold lands.

Prior to the 2004 amendment to the VMA, Regional Vegetation Management Plans were developed to provide a bioregional context for implementing state policies for vegetation management (including the VMA). Around 350 community members were involved in the developing 23 plans across the state, which were developed by stakeholder-based committees and regional groups supported by agency coordinators, planners and technical advisors (Anon 2003). The new vegetation management framework introduced in 2004, consisting of legislation, a state policy and regional codes, superseded the Regional Vegetation Management Plans but incorporated much of their content into the regional codes.

The main amendment to the VMA by the state government in 2004 was to phase out broad-scale clearing (mostly for agriculture) by 31 December 2006. Whilst clearing applications were halted in a moratorium in 2003, the amendments provided for a final ballot of 200,000ha with all clearing permits to expire at the end of 2006. No other broadscale permits were granted to clear remnant vegetation during the transition period, and ballot permits could not include endangered and of concern regional ecosystems or essential habitat for threatened species.

Another amendment to the Act in 2004 was to include '*of concern*' and '*not of concern*' remnant regional ecosystems on freehold land, which previously had been available to be cleared. It was also possible for landholders to voluntary protect non-remnant regional ecosystems on their land through a vegetation incentives program.

Currently there are 10 '*relevant purposes*' for which clearing can be permitted under the VMA, including clearing for necessary built infrastructure where there is no suitable alternative site, fodder harvesting, thinning, public safety and weed control. In some situations, clearing may also be done under an exemption. Exemptions include building a single residence and associated building or structures, clearing

of non-remnant vegetation (on freehold land) and clearing in urban areas that are not *Endangered Regional Ecosystems*.

Where vegetation clearing requires a permit, the clearing needs to meet the criteria specified in Regional Vegetation Management Codes. Since November 2006, four codes based on bioregional areas cover all Queensland. These replaced 24 codes that had been used since the introduction of the new vegetation management framework in May 2004. All applications to clear require a property vegetation management plan. The application must be for one of the '*relevant purposes*' described in the Act and meet the performance requirements of the code for the relevant region. These codes vary between regions, for example fodder harvesting and thinning is allowed in the Brigalow region and the connectivity rules are different compared to other regions.

In August 2007, a new offset policy was approved by NRW that applies to development applications proposing to meet performance requirements under a Regional Vegetation Management Code. The policy is used by Vegetation Management and other officers when assessing applications. NRW officers also use maps of essential habitat produced by the Environmental Protection Agency when assessing clearing applications. These are maps of vegetation in which a species that is endangered, vulnerable, rare or near threatened has been known to occur.

Further information on the Act and its implementation is available in reports such as the Productivity Commission (2004) and Duggan (2005). Although changes have been made to the vegetation management framework since these reports were written, they provide a useful perspective on the Act around the time the amendments were introduced.

Developing the Vegetation Management Act 1999

Broad-consultation was undertaken with the community over the development of the Regional Vegetation Management Plans that supported the 1999-2004 version of the Act. Public consultation was not undertaken when the 2004 amendments were introduced, although the amendments were announced as an election commitment. Significant clearing had led to a moratorium on clearing being introduced in 2003, pending review of clearing laws. The timing of the new laws were not made public. Indeed, some of the staff in NRW weren't even aware of the 2004 changes to the Act until it was publicly announced.

Consultation is undertaken during the development or revision of the statutory Regional Codes that support the current Act. The process was considered more effective by some compared to other stakeholders, as there was a concern that vested interests could have too much sway.

A financial assistance package of $150 million for farmers adversely affected by the law was fully funded by the State Government, after the Australian government withdrew its offer to fund half of the package. The grants to restructure businesses were oversubscribed, and the state government allocated another $20 million so that all interested landholders could take part. It is estimated that it costs $10 million a year to administer the Act.

The VMA was framed for public benefit, although there are some potential private benefits such as preventing salinity and land degradation that could come out of the implementation of the Act. If there were extensive private benefits associated with ending broad-scale tree clearing, it was considered that a voluntary program would have worked.

Defining biodiversity, threats and targets

The purpose of the Act includes biodiversity, but it has a regional ecosystem (native vegetation) focus. At a broad-level, the Act describes its purpose is to regulate clearing of vegetation in a way that:

⇒   conserves remnant vegetation;

⇒   conserves vegetation in declared areas;

⇒   ensures clearing does not cause land degradation;

⇒   manages the environmental effects of clearing;

⇒   prevents the loss of biodiversity;

⇒   maintains ecological processes; and

⇒   reduces greenhouse emissions.

The schedule dictionary for the Act defines biodiversity as the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part, and includes:

⇒   diversity within species and between species; and

⇒   diversity of ecosystems.

Operationally, vegetation cover and type are used as surrogates for biodiversity in the implementation of the Act. Remnant vegetation is defined as either never being cleared, or having regrown to a specific canopy height and density to be considered to have the same values as if it had never been cleared. There are three categories of remnant vegetation: 'endangered regional ecosystems', 'of concern regional ecosystems' and 'not of concern regional ecosystems'. These are distinguished based on each regional ecosystem's contemporary remnant extent and the proportion this represents of its natural or 'pre-clearing' extent.

Non-remnant vegetation ('regrowth') is unprotected by the Act on freehold land, even where it has habitat value (Waters 2006). Non-remnant vegetation that had been cleared on or before 31 December 1989, on agricultural and grazing leases, is also captured by the Act. Regional ecosystem maps developed by the Queensland Herbarium are used as the basis for implementing the legislation. The 2004 amendments introduced Property Maps of Assessable Vegetation (PMAVs) which replace the regional ecosystem map by agreement between landholders and NRW. PMAVs can only be changed in limited circumstances and can be made at finer scale than the regional ecosystem map in some areas.

Endangered, vulnerable, rare or near threatened species are other elements of biodiversity that are considered in clearing applications under the Act. As previously noted, essential habitat maps are used that show remnant vegetation in which these species are known or have been known to occur.

Broad-scale clearing of vegetation was identified by stakeholders as the major threat to biodiversity being addressed by the VMA. This is reflected in the principal target in the 2004 amendment to the Act, which was to stop broad-scale clearing by December 31st, 2006. No other quantitative targets were identified. High rates of clearing in Queensland leading up to the late 1990's were widely acknowledged as a major threat to biodiversity. A paper by Cogger *et al.* (2003) estimated that land clearing in Queensland, based on 1997-1999 data, killed around a 100 million animals (mammals, reptiles and birds) and a 100 million trees per year. The significant impact of land clearing on biodiversity was recognised at the national level when it was listed as a key threatening process under the *Environment Protection and Biodiversity Conservation Act (1999)* in early 2001.

The vegetation clearing laws in Queensland are some of the most complex being implemented (Productivity Commission 2004, Waters 2006). One of the biggest threats identified by one stakeholder was fear the legislation may be based on a lack of understanding of its impacts. The complexity of the Act was felt to undermine the objectives being achieved, making it difficult for both assessment officers and landholders to understand. Two plain-English guides on vegetation clearing applications and fodder harvesting have been released by the State government to try and simplify the clearing application process. A $8million partnership program with AgForward, a branch of the agricultural group AgForce, has also presented workshops across the state to improve understanding of the Act.

Biodiversity outcomes

The principle tools used to administer the VMA and monitor its effectiveness is the state-wide remnant regional ecosystem mapping produced by the Queensland Herbarium and SLATS (the Statewide Landcover and Trees Study). SLATS is a major vegetation monitoring initiative to investigate the overall cover of woody vegetation in Queensland, and to report on the extent of land clearing in Queensland. These data are combined with the remnant regional ecosystem mapping to report on the extent of remnant and non-remnant vegetation cleared in Queensland. The initiative combines field verification and computer processing using remote sensing and Geographic Information System (GIS) technologies. The data collected by SLATS, and other information relevant to the Act such as regional ecosystem mapping, are held within databases in the State Government.

Landholders are able to access data that include a detailed boundary of their property and information on essential habitat and remnant regional ecosystems in NRW offices or freely available online from the EPA's website (www.epa.qld.gov.au/remaps).

When the VMA was originally passed in 1999 it took 9-12 months for it to commence and hence come into effect. This led to widespread 'panic

clearing' in response to a perceived threat to the property rights of landholders. The average annual woody vegetation clearance rate recorded by SLATS during 1999-2000 peaked at 758,000 ha/year (Department of Natural Resources and Environment 2007). Vegetation that may not have been cleared was bulldozed in the belief that the Act may restrict the opportunity to do this in the future.

The 2004 amendment of the Act was designed to put an end to broad-scale clearing, which was still ongoing in Queensland after commencement of the 1999 Act. The 2004 decision was driven by concern over the impacts of clearing on both biodiversity and greenhouse gas emissions. There was general agreement across all stakeholders interviewed that the 2004 amendment was effective in addressing the major threat of broad-scale land clearing, with some describing it as a blunt instrument. However, there was some difference of opinion whether biodiversity conservation or curbing greenhouse emissions was the main driver of the 2004 amendments.

It was considered that the 2004 amendment to the Act had an immediate positive impact on biodiversity, with an estimate of between 20-50 million hectares being saved. Until SLATS information on clearing rates is available for the period following the end of 2006, it will not be possible to quantitatively assess whether the goal of ending broad-scale clearing has been met.

Strengthening monitoring and learning mechanisms

As previously noted, the main tool used to monitor the impact of the VMA is the SLATS. All remote sensing technologies have strengths and weaknesses and the 2007 SLATS report (Department of Natural Resources and Water 2007) demonstrates that NRW is aware of it's limitations. An external review of the SLATS program was held in 2004, with input from a panel of experts on what could be improved. Some questions were raised about the spatial resolution of the software used and whether it could pick up areas less than 2 ha in size. This is the upper limit for some of the exemptions in the Act (e.g. areas < 2 ha can be cleared), which was considered inappropriate in some cases. Finer scale satellite imagery is available, but at some cost.

For stakeholders sitting outside the Department of Natural Resources and Water (NRW), it was felt that satellite imagery underpinning the SLATS data needs to be processed more speedily. Currently this information is released 1-2 years after it is collected. This has an impact on the time-frame for prosecutions, which are one year from when they are drawn to the attention of the department and five years from when the clearing event took place.

No formal adaptive management approach is in place in NRW. There are, however, opportunities to learn from staff, get input when the management codes are reviewed and consider feedback to the government from the public and interest groups. The Queensland Government is currently reviewing the administrative implementation arrangements of the VMA, which are likely to lead to changes in the way the Act is implemented. The review is expected to be completed by mid 2008.

What to sow, grow and throw

Preconditioning factors that were identified as important for the implementation of the Act were having bipartisan support from the State and Australian Government, good science and tools such as the regional ecosystem mapping and SLATS to draw on, a change in public perception about land clearing, good community engagement and financial assistance for landholders affected by the legislation. The most successful element identified was getting the 2004 amendment to the Act passed, which had a profound and relatively immediate impact. Voluntary mechanisms to support landholders doing the right thing, and that are binding on title, were seen as being complementary to the Act.

Case study participants acknowledged that the Act focused on rural areas and was less effective in an urban setting. A major exemption in the Planning Act, and its associated regulation, means that permits are not required to clear for urban purposes in an urban area (not including rural residential) that is not an *Endangered Regional Ecosystem*. Another exemption that was identified as needing tightening was the exemption for clearing of non-remnant vegetation. In most cases this means that regrowth can be cleared, which has implications for biodiversity at both the local and landscape scale. New processes will be needed to address regrowth management and other issues such as climate change, which are currently not included well in the Act.

One stakeholder felt that while biodiversity is listed in the purpose of the Act and in some codes, they were not designed specifically to protect biodiversity. Some questions were also raised about potential loopholes in the offsets policy that has recently been announced.

Another aspect associated with the implementation of the Act has implications for biodiversity. Property maps of assessable vegetation (PMAVs) that are issued to landholders lock in regrowth vegetation not currently captured by the Act. As a consequence, regrowth vegetation may mature into remnant vegetation over time, but may still be classified as non-remnant. Potentially this means that remnant vegetation could be cleared, which would represent a loophole in achieving the purpose of the Act.

Enforcement of the Act was an area that some stakeholders felt could be strengthened, as well as an increase in the number of prosecutions. Monitoring compliance can be difficult for staff, especially younger, less experienced staff. It was felt that more trained staff were needed to undertake strategic prosecutions as well as more people required to investigate reporting of illegal clearing. While there is still a system in place where people can call a hotline to 'dob-in' illegal clearing, it was felt more resources could be put into following up these complaints. Because there is a back-log of potential illegal clearing to investigate, some consider that more time is needed to act on breaches compared to the limits currently in place.

Overall, it is the implementation of the Act that appears to have caused the most concern, rather than the Act itself, which was considered a blunt but effective tool. The general feeling, however, was that better communication about what the Act meant for landholders, better handling of the Regional Vegetation Management Plan process (terminated in

2004), and better overall enforcement of the Act would all have lead to better biodiversity outcomes.

Benefits and impacts of the Vegetation Management Act 1999

The 2004 amendment to the *Vegetation Management Act* had an immediate impact on biodiversity by largely drawing broad-scale clearing of remnant woody vegetation to an end in rural Queensland. This could be viewed as having both a short-term and longer-lasting benefit for biodiversity, given the area of native vegetation that was otherwise thought to be destined for the chain. The medium to longer-term benefits however will depend on enforcement of the Act and complementary policies and programs that provide ongoing support for management that maintains and enhances biodiversity on private land. These would include both programs that raise awareness about biodiversity and provide support for on-ground management.

In summary, the benefits and impacts are:

Short term: The Act largely stopped broad-scale clearing of remnant woody vegetation in rural Queensland, so had an immediate impact on threats to biodiversity.

Medium to long-term: Enforcement of the Act is required to sustain the short-term benefits, as well as complementary policies and programs that provide ongoing support for management that maintains and enhances biodiversity on private land.

Interviews:

Leslie Shirreffs, Department of Natural Resources and Water (NRW), Brisbane

Peter Burton, Department of Natural Resources and Water (NRW), Brisbane

Peter Voller, DPIW Tasmania (Previously NRW)

Andrew Freeman, Agforce

Larissa Waters, Environmental Defenders Office, Queensland

Note: Attempts to organise an interview with a regional facilitator were unsuccessful

Sources of information:

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Case study 2: Midlands Biodiversity Hotspot (Tasmania)

The institution and its response

In October 2003, the Australian Government announced 15 national biodiversity hotspots, which was the first attempt to identify such areas at the national scale. The hotspots were identified by the Threatened Species Scientific Committee (TSCC) with input from invited biodiversity experts, including representatives from conservation groups, museums and the states and territories.

The identification of biodiversity hotspots was a two-stage process. The experts first identified areas with many endemic species. They then assessed each of these areas for current conservation pressures and the possibility of future threats to biodiversity. The *'Maintaining Australia's Biodiversity Hotspots Program'* (MABH) was originally developed to manage threats to biodiversity in high conservation value areas that are still relatively intact and where their biodiversity values could be maintained. Threats included factors such as land clearing, development pressure, salinity, weeds and feral animals. One of the hotspots identified through this process was the Midlands of Tasmania, which is the focus of this case study.

The 15 hotspots have been used by the Australian Government as a framework to allocate funding for voluntary property acquisitions and for stewardship actions using a market-based approach. It was considered that timely intervention in hotspot regions may prevent long-term and irreversible loss of their biodiversity values, and provide high return on the conservation dollar. Around $12 million dollars was spent in the first three years following the announcement of the MABH program. In 2007, a round of funding of $21 million was announced for the '*Maintaining Australia's Biodiversity Hotspots'* Program. This program is using non-government conservation organisations as the delivery agents. They are responsible for finding and developing investment opportunities that meet or exceed the programme guidelines.

The Tasmanian Midlands Biodiversity Hotspot project was initiated after the identification of the 15 hotspot regions by the TSSC. The program was funded from the NHT Regional Competitive Component and ran between 2004-2007. The program was delivered through the Southern Midlands Council (SMC), with support from the Tasmanian Government Department of Primary Industries & Water. The main aim of the project was to work with landholders across the Midlands to help them protect the long-term future of threatened species and other special values. Financial assistance was given to landholders for conservation actions through a negotiated agreement. Involvement in the project was voluntary.

Another aim of the Southern Midlands Council's program was to fill gaps not covered by other programs working on private land in the Midlands, such as the Private Forest Reserve Program. Field work for the project began in November 2005 and was completed by March 2007. 50 properties were visited and assessed by the project officer. Conservation agreements were secured for 16 of these properties, 11 of these were conservation covenants and 5 were vegetation management agreements. Once the conservation agreements were finalised, they were transferred to the Tasmanian Government's conservation on private land section who

were responsible for paying the funds that were negotiated as part of the agreement.

The Australian Government's MABH program is being delivered in the Midlands through the Tasmanian Land Conservancy in conjunction with Southern Midlands Council. It is using a tender-based system. While some reference will be made to this program in this case study, the main focus is on the Southern Midlands Council's (SMC) project delivered between 2004-2007.

Developing the 'Midlands Biodiversity Hotspot' project

Funds of $930,000 were secured by NRM South and NRM North (two of the regional organisations in Tasmania) from the Australian Government in 2004 for the first round of the Midlands Biodiversity Hotspot project. $456,000 in incentive funds and $135,000 in management funds (for weed control and fencing) was allocated to landholders. Landholders estimated that the funds allocated through the Program would only pay a portion of the costs involved in managing for conservation outcomes. There was the potential for some income to be lost due to alternative land-uses being ruled out as part of the management agreement. The funds that are allocated as part of the agreement are not intended to cover lost income, but rather to support management related to biodiversity outcomes.

The project had a Steering Committee involving representatives of NRM South, NRM North, DPIW and the Southern and Northern Midlands Council. The Committee oversaw the development and implementation of the project. The up-front planning that went into the project was considered valuable. A communication strategy was developed for the project, which was followed by the project officer.

Both blanket and targeted approaches were used to make landholders aware of the SMC's Midlands Biodiversity Hotspot program. 5,000 brochures were printed and distributed to stakeholders in the hotspot region residing outside of the towns. Brochures were also sent again with rates notices. All landholders were contacted so that everyone had an opportunity to be involved. Members of the committee were also able to draw on their experience in the region to identify potential properties for the scheme. Some 'cold calls' were made where there were known sites of special significance on private land. The Program quickly had enough properties to allocate the funding made available through the Australian Government.

Defining biodiversity, threats and targets

The overall focus of the program was on native systems, with particular attention paid to threatened species. The brochure that was circulated to landholders indicated that the program was about protecting '*special native plants and wildlife*' on private land. One landholder felt that the program particularly focused on fauna. '*Biodiversity*' was also identified as bushland, threatened species and their habitat in the brochure. While the focus of the project and communication material was on threatened species and their habitat, all native bushland was considered to have some value.

A framework listing priority species and communities to be targeted by the project was produced by the Steering Committee and DPIW. The species and communities were divided into three priority groups based on their conservation status. This framework was one of the inputs used by the project officer, who also had to consider what was on offer from landholders who approached him. Where possible, funds were allocated to properties that had plants or animals considered unique to the Midlands.

The targets identified in the framework were considered measurable and definable, but unrealistic given the resources available. Having made this point, it was felt that the project achieved more than could have been expected given the resources available due to the skills of the project officer and the delivery of the program through the Southern Midlands Council. The $/hectare offered through the Program was also considered unrealistic by one of the Committee members, as it couldn't compete commercially with practices such as grazing or forestry. This was considered likely to have an impact on biodiversity outcomes, as it was felt that some of the wealthy graziers in the area may not be attracted to the program. The Australian Government's MABH program announced in 2007 used a tender-based approach where landholders could nominate their own price, taking into account commercial alternatives. A formal evaluation would need to be undertaken to determine if the ability to take commercial alternatives into account made a difference to which landholders became involved.

The threats to biodiversity identified in the Midlands include weeds, inappropriate grazing and fire regimes, water management (e.g. farm dams, irrigation), intensification of agriculture and foxes. Foxes were first identified as an issue in 2002, when the first *NLWRA Biodiversity Report* was released. Money allocated through the Program focused on weeds (particularly Gorse) and fencing, but other management actions were identified in the reports written for each property. For example, the use of water was regulated on some properties, no fertiliser use was allowed and spray drift from surrounding land uses had to be managed.

Biodiversity outcomes

At the broadest level, the 16 conservation agreements that were negotiated in the first round of the Southern Midlands Council's Biodiversity Hotspot program covered 1,470 hectares of forest, woodland, grassland and wetland, which included 602 hectares of high priority vegetation communities spread across the three priority levels. 144 threatened plant species and 14 threatened fauna species were recorded on properties involved in the program. As noted previously, once the paper work was signed, the conservation agreements became the responsibility of DPIW. The data collected on each of the properties is stored on the private land conservation database in Hobart. In some cases, it was not possible to record data on threatened species in the database due to privacy concerns of landholders.

Each property that was funded through the Program had a natural values report written by the Project Officer, which followed a DPIW template.

Management actions were identified in these reports. As part of the initial assessment of a site, a *Vegetation Condition Assessment* was undertaken for each property. It is intended that these assessments will be repeated over time (perhaps every 5 years) by DPIW to monitor change in vegetation condition. Other monitoring activities may also be implemented. The ability to achieve this will depend on the resources available across the DPIW private land conservation team, which has many demands on its resources. There has been some debate about the ability of these category-based assessment methods to pick up subtle changes in vegetation, and hence their value as a monitoring compared to a reporting tool (Williams 2008). If the assessments pick up a change in category, however, then it should indicate a major change (either positive or negative) in condition.

The two landholders interviewed for the case study were unaware of what ongoing monitoring was going to occur on their properties. One was certain however that landholders themselves would not be undertaking formal monitoring, although 'informal' monitoring is undertaken when travelling around their property.

Strengthening monitoring and learning mechanisms.

The potential to monitor biodiversity on the properties involved in the Southern Midland Council's Hotspots project exists, if adequate resources are available to visit sites on a regular basis. The Vegetation Condition Assessment (VCA), which is the minimum set of information collected at a site, was considered too complicated and time-consuming by some of the monitoring teams working with DPIW. This attitude may change if the value of the approach is clear. It was considered that an experimental approach is needed across all land-uses to see how well the VCA is able to detect change and how management practices affect vegetation condition.

No formal adaptive management approach was in place for the program, however, the experiences of the project officer in the SMC program has enabled fine-tuning of the delivery of the Australian Government's MABH program. Both funding programs had a short turn-around time, so it was important to hit the ground running. While no formal surveys were undertaken on how the SMC's Program raised awareness and/or changed behaviour among landholders, the project officer told one story that illustrated what is possible with these kinds of Programs. When visiting a landholder's property, he was able to point out some orchids in the bushland that the owner wasn't aware of. Once the owners were aware of it, they started having field days for naturalists on their place, to share their new found knowledge and pride with other members of the community. It is likely that this story is a common one, and such experiences could be explicitly captured if resources were available for social surveys.

There was a perception amongst some interviewees that the Australian Government's Hotspots Program announced in 2007 did not appear to build on the 2004-2007 program as much as it could have. People were unaware of any assessments undertaken by the Australian Government of how successful the Midlands program was, and what the MABH might look like. This left some of the interviewees feeling they hadn't been consulted and that the momentum built up through the Southern Midland

Council's hotspots program could have been lost. Part of the unease expressed in the interviews appears related to the fact that at the national level, the two programs were never linked administratively. Consequently, while the two programs seemed to be two phases of the same initiative to people at the regional level, they were separate programs at the national level. As it turned out, that Southern Midlands Council and the project officer involved with the first program were able to have ongoing involvement to provide continuity in the Midlands region. This worked out well as the project officer had built up considerable trust and respect in the farming community and the MABH program has been over-subscribed with expressions of interest.

What to sow, grow and throw.

The Southern Midlands Council's Biodiversity Hotspot Program that ran between 2004 and 2007 was considered very successful amongst all of the stakeholders interviewed. This was reflected when all of them gave a high score when asked what impact the Program had on biodiversity outcomes. The Program managed to gain a foothold on private land in a region that the Tasmanian Government had found it difficult to engage with. Importantly, it raised awareness that some properties in the Midlands had bush blocks of value. One of the Steering Committee members suggested that the program be nominated for an award, describing it as '*lean and efficient, requiring minimal supervision, achieving high biodiversity outcomes and a good geographic spread*'.

One of the main success factors identified was having an effective and professional project officer, who bought a number of skills to the position. Delivering the program through a local Council was also seen as a success factor, as it had closer links to the people in the region than centralised government. This was one way that the distrust between farmers and the State Government identified in the interviews could be addressed. Providing information on the biodiversity values of his property was the most important element of the program identified by one landholder, demonstrating the value of baseline surveys of the natural values found on private land.

The importance of the skills of the project officer in programs such as this cannot be over-emphasised. In the case of the Southern Midlands Council's Hotspot Program, the project officer identified a number of 'rules of thumb' he used when visiting landholders that would lay the foundation of a good relationship. These included: starting the dialogue by talking about human interactions with and practical use of the bush; realising that you were going to learn from the landholder (not coming across as a know all); being clear about what the Program had to offer; being aware of the landholders time schedule and not rushing off if they had the time to talk. Not all NRM project officers have this (or a similar) list at their fingertips, so there could be room for training people in the art of talking to and understanding landholders.

In terms of identifying and negotiating the conservation agreements, the process in place was considered to have worked well. The assessment of the natural values on a property was seen as the most valuable contribution of the project, as it opened the owner's eyes to what was here. A major sticking-point however was the time it took to make payments against the agreements once DPIW became responsible for

them. This could take up to 12 months in some cases. The time delay was related to the Department having responsibility for a number of private conservation programs and not enough resources to manage them. In future, if delays of this period are expected, it is essential that landholders are informed of the time-lines involved - at least then they know what's involved. Preferably, however, it would take less time to pay landholders.

The major effort in the SMC Program was put into identifying and negotiating the agreements. Maintaining on-going relationships with landholders and providing continuity was therefore seen as an important area to build on. This could be achieved by visits to the property to discuss how effective the management actions are and whether the original funding was sufficient, a regular newsletter and making landholders aware of funding opportunities. One landholder felt that setting up a team that landholders could utilise to manage fire for biodiversity outcomes would be useful. Other areas that could be improved included rate relief for parts of the property managed for conservation outcomes and a change to the way that governments value land. Certification for environmentally friendly management was proposed as an alternative, or perhaps a complementary response, to conservation agreements.

More flexible management systems, based on outcomes and landholder knowledge, was identified as an area to build on by both landholders. It was recommended that rather than landholders being told how many sheep (for example) they can have as part of their management agreement, they should be asked to meet particular biodiversity outcomes. This would then enable them to use a range of management approaches available to meet the agreed goals.

Putting more resources into communication was identified as an area to build on by the two Steering Committee members as it was felt that this would raise the profile of biodiversity and threatened species in the community. One suggestion was that an event could be scheduled that bought together the landholders involved in the SMC program. Undertaking social research about drivers and intentions of landholders and how they respond to what's on offer was also identified as important by one of the Steering Committee members.

Benefits and impacts of the Southern Midlands Council's Biodiversity Hotspot Program (2004-2007)

Many short-term impacts of the SMC Hotspots program can be identified, including: raising awareness in the general Midlands community that the region contained some important sites for biodiversity and that these were of value; providing resources for management actions on sixteen properties to maintain or enhance biodiversity values; and increasing the number of threatened species and high conservation vegetation communities in the private reserve system.

In the medium-term, these benefits should continue given the length of the management agreements that landholders have entered into. The magnitude of the benefits however will depend on the level of ongoing support from the Department of Primary Industries and Water (who are responsible for the management agreements on the properties) and the

time and resources the landholder is able to commit to conservation management in the context of running a farm business. To maintain awareness of biodiversity in the general community in the medium-term, continued education programs will be required but are not currently planned for.

The longer-term benefits of the program will depend to some extent on what happens when management agreements come to an end. This is an issue that all tender-based systems that do not have 'in-perpetuity' management agreements will have to face. Given that some of the agreements will continue for at least another 10 years, the organisations responsible for overseeing the agreements will need to keep good records and retain some corporate memory about the programs. Ideally they should have ongoing contact with the landholder throughout the management agreement. It is unknown at this stage how many landholders will continue managing the areas they have set aside for conservation outcomes in the long-term.

Interviews:

Graham Green, Project Officer, Southern Midlands Council Biodiversity Hotspot Program

Louise Gilfedder, DPIW, Steering Committee member

Sally Bryant, Go Wild, Steering Committee member

John and Isobel Atkinson, Landholders with a conservation agreement through the Program

Nan Bray, Landholder with a conservation agreement through the Program

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Case study 3: Land for Wildlife (Victoria)

The institution and its response

Land for Wildlife (Victoria) is a voluntary program supporting landholders or managers who provide habitat for native wildlife on their land, run through the Department of Sustainability and Environment (DSE). The Program has been in operation since November 1981, when the first property at Winchelsea was registered. The original idea for the Program arose out of regular 'core group' meetings held between the Department (then Fisheries and Wildlife Service) and the then Bird Observers Club of Australia (now Bird Observation and Conservation Australia). At one of these meetings it was recognised that landholders who were voluntarily protecting habitats for wildlife on their land should be encouraged and assisted. This acknowledged the importance of private land in conserving many habitats and species that are not represented on public land, in maintaining links between public reserves and in contributing to sustainable agriculture.

By 1990 there were 800 properties registered in the scheme. At that time, the scheme was substantially upgraded with the appointment of a State-wide Coordinator based in Melbourne, part-time extension officers around the State, establishment of a centralised property register, initiation of the newsletter and notes series and regular field days and other events program. The additional resources addressed a real gap in biodiversity extension on private land at this time. In April 1997 there were 4,067 properties registered through the Program, and this had grown to 5,985 properties by August 2007. Since 1997, the scheme has also extended interstate and operates under a common set of principles and standards contained in the *'Arrangement to Co-ordinate Land for Wildlife schemes 2000'*.

The types of properties that are eligible for *Land for Wildlife* status are diverse, including farms, bush blocks, parks, golf-courses, school grounds, cemeteries, Commonwealth land and prisons. In recognition of the contribution being made by landholders to wildlife conservation no fees or costs are associated with joining the Program. Group registration is also possible, which is particularly suited to a number of small blocks or several larger properties with a 'landscape approach' to wildlife habitat. The fact that *Land for Wildlife* doesn't alter the legal status of a property in any way makes it appealing to many landholders. The *Land for Wildlife* status applies to the whole property, as the aim is to manage all land in an integrated way, even though the focus of habitat retention and enhancement may only be on a portion of the property.

Once a land manager has expressed an interest to join the program, an on-site visit is made to their property by an extension officer or someone who has been trained in the assessment procedure. An assessment of the property is undertaken and advice about contributing to biodiversity conservation provided as required. Some landholders who are already integrating nature conservation with other land management objectives qualify immediately for *Land for Wildlife* status and receive a sign to put on their gate. Other applicants can 'work towards' registration. Both categories of membership receive a regular *Land for Wildlife* newsletter, *Land for Wildlife* Notes (which contain detailed information on specific topics) and access to field days, neighbourhood days, open-properties, information sessions and advice from the extension officer. In addition to

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the support network provided by the extension officers, community volunteers around the state also provide support.

The assessment form used to determine if properties are eligible to join the *Land for Wildlife* scheme describes the property, the habitat on it and the achievements and aims of property management. The level of interest and commitment of the landholder is also taken into consideration when assessing a property for inclusion in a scheme. The habitat descriptions cover habitat retention and habitat restoration. Attributes such as the extent and connectivity of vegetation, its stability (e.g. weeds, threats, ability to regenerate) and structural complexity are all considered in the assessment. Wildlife species are listed, but no spotlighting is undertaken. The descriptions of habitat follow those used in the Atlas of Victorian Birds. In recent years, the Ecological Vegetation Class found on the property has been recorded. No quantitative measures are currently included in the property assessment. However, the incorporation of a vegetation quality assessment using the Habitat Hectares method into the assessment procedure is under consideration. After ten years as a member of the *Land for Wildlife* scheme, if requested, properties are revisited to provide advice on further enhancements and to see if the owners have maintained the values the property was selected for.

Landholders sign an agreement after the assessment has been completed, indicating that they will make a reasonable effort to pursue the maintenance and enhancement of native flora and fauna and/or to integrate nature conservation with other land management objectives. They also agree to give reasonable notice to DSE prior to relinquishing control of the land, or of leasing or renting the land, so that the Department may negotiate with any new owner/occupier as to whether the *Land for Wildlife* status may continue to apply to that land. The *Land for Wildlife* sign remains government property and is returned to DSE if the property is sold or the landholder no longer remains a member.

Developing Land for Wildlife

Land for Wildlife officers use a number of means to raise awareness of the program and encourage landholders to become members. Brochures have been developed, field days and meetings are held, some properties are targeted using 'calling cards' that inform the owner about the Program. Other groups such as the *Trust for Nature* also promote the scheme to landholders. In the past landholders were consulted about their experiences with the Program by surveys run every five years. Targeted programs were undertaken by some extension officers in the early 1990's, including work on superb parrots in northern Victoria which was considered a success. Data has been collected via the scheme brochure on how landholders heard of the scheme.

In the early to mid-90s, the *Land for Wildlife* program received $400,000 a year from 'New Initiative' funding. Over the last few years, funding for the Program has been decentralised and as a consequence has declined. Funds are distributed amongst the DSE regions in Victoria, as recurrent general revenue thus it is difficult to determine expenditure on the scheme, but it is believed to have undergone a real decline. Each region then decides how much resources are needed to support the Program. Under this model, extension officers can get called off to other duties such as fire-fighting, and their role filled by less experienced officers. The

trend towards financial constraints influencing the effectiveness of the Program was identified by Smith in his review of the Program in 1998. The change in the funding model has continued to have an impact on the number and type of staff available to support existing and new properties, the frequency of newsletters and the ability for the Program to be proactive.

The amount of money spent each year by landholders has been documented through surveys that were sent to 1 in every 9 landholders. When the last survey was undertaken in 1999, landholders estimated that they were spending $1,178 on conservation management on average each year. This equated to a capital investment of around $5.7 million. By this measure, the private investment in conservation activities far exceeds that made by government. This is despite most of their actions providing a public benefit, apart from when they are able to derive a production benefit from their actions. By and large, however, previous surveys have found that most participants in the Program do not rely on farming for their income.

Defining biodiversity, threats and targets

Land for Wildlife has developed a program logic and defined broad outcomes. The *Land for Wildlife* newsletters focus on wildlife and habitat, but the program covers all native biodiversity. One of the landholders interviewed agreed with this description, whereas another felt that more focus could be put on biodiversity and integrated systems.   This landholder also felt that non-native species that played the same functional role as natives should be considered part of biodiversity overall. This demonstrates the range of perceptions that landholders can have about the Program, depending on their experience and personal values.

Land for Wildlife is one of ten programs monitored by Department of Treasury and Finance for their effectiveness. Each year the Program has to report on how much habitat that is under-represented on public land is represented on new participants' properties. Forty percent of properties are meant to meet this goal. Extension officers can also identify targets for reaching a certain amount of habitat in their performance plans. At the program level however, there is no other overall quantitative target for reaching certain outcomes for biodiversity.

All threats to biodiversity at the property and landscape scale are potentially addressed on *Land for Wildlife* properties. They are identified as part of the assessment process and management action discussed with the landholder. Grazing by sheep and cattle was raised as the most important issue by one property owner, and weeds and hares/rabbits by the other. Other properties would have other threats to address.

Biodiversity outcomes

Once registered as *Land for Wildlife* members, properties are listed in the Statewide Property Register database.   Information on the location, management and natural values of each registered property, collected during on-site property assessments, is transferred to a computerised register linked to the agency's Geographic Information System (GIS). Information collected on flora and fauna on various properties is also entered onto the State's Wildlife Atlas and Flora Information System. An

interactive system has been developed to enable the precise locations of all flora and fauna data to be plotted onto a 1:100 000 scale, high quality map series called BioMap. BioMap accesses data directly from DSE's Corporate Geospatial Data Library and allows some 6,000 combinations of user-definable map themes to be selected. Using this tool, it is possible to provide extension officers, Local Government and registered landowners with maps showing *Land for Wildlife* properties in relation to natural values such as threatened species habitats.

Various parameters on *Land for Wildlife* properties can be extracted and displayed graphically from the *Land for Wildlife Statewide Property Register*, including:

⇒   the number of *Land for Wildlife* properties;

⇒   the number of on *Land for Wildlife* properties assessed in each Region;

⇒   area of retained native habitat of different habitat types; and

⇒   size classes of *Land for Wildlife* properties.

Land for Wildlife extension officers regularly report on such parameters as:

⇒   number of properties assessed for *Land for Wildlife;*

⇒   number of hectares of new wildlife habitat in *Land for Wildlife* properties;

⇒   length of fenced streamside habitats; and

⇒   number of properties with water frontage (streams etc.).

Each of these performance indicators relate to outputs rather than outcomes. They can be used to demonstrate trends over time in attributes such as the area of retained habitat, as shown in Platt and Ahern (1995 a, b).

Based on the information in these databases, the *Land for Wildlife* program currently involves over 14,800 people. It manages over 560,000 hectares of combined properties, of which 160,000 hectares is managed as wildlife habitat. This includes a wide range of ecosystems found on private land including forests, woodlands, heaths, grasslands and freshwater environments. The *Land for Wildlife* scheme covers a significant proportion of the private land estate in Victoria, which is around 14 million hectares. Regular surveys of landholders were also intended to gather qualitative information on what they are doing on their property, whether they thought it was making a difference, how people have heard about the scheme and so on. Surveys of landholders were originally undertaken every five years, with only two completed (1994 and 1999). Since then, this activity has not been given priority over maintaining the scheme.

No quantitative property-based monitoring is undertaken at the Program level, although it would be undertaken if the resources were available. As noted in the introduction to the case study, the Head Office of DSE has indicated that they want all relevant programs in Victoria to incorporate

the Habitat Hectares measure of vegetation condition into their assessments. This is part of 'net gain accounting', which helps the government assess one of its major vegetation policies. It would also be informative to reassess some of the other attributes recorded at existing properties, based on the original information in the assessment forms. This contains some good physical and other data that could be used as the basis for assessing change over time. As part of this revamping of the assessment process, the plan is to add codes for Threatened Species to the form used to evaluate properties.

Individual landholders monitor various components of biodiversity on their properties, particularly bird species. Depending on their level of experience and interest, this monitoring can range from the formal approach used by *Birds Australia* (with the data going into their centralised system) to more informal monitoring mechanisms. One of the landholders visited also monitored the flowering of trees on their property and regularly monitored a series of photo points. There have been various tertiary student studies (Hons, Phd) on LFW properties and these are encouraged by the scheme.

Strengthening monitoring and learning mechanisms

Smith (1998) felt that monitoring of nature conservation outcomes was beyond the resources of the *Land for Wildlife* scheme. He therefore recommended that specific indicators should be identified and assistance sought through partnerships and co-operative research projects with other organisations and tertiary institutions (e.g. *Birds Australia*, Universities). He also suggested that if a voluntary survey scheme based on *NatureSearch* in Queensland was established, it would provide a mechanism for monitoring and evaluating nature conservation outcomes in terms of wildlife diversity and abundance on a selected group of *Land for Wildlife* properties and a group of 'control' properties.

These recommendations are still relevant 10 years after the review. The move towards incorporating 'habitat hectares' measures into property assessments will help provide some consistent data on new properties joining *Land for Wildlife*, but it will be important for raw data to be stored if it is to be useful as a monitoring tool as well as a reporting tool. The habitat hectares score is not very exciting to landholders, so some way of presenting the data collected in a more engaging way to landholders should be considered. It is also essential that this request to collect additional data by DSE, which will place greater expectations on the property assessors, receives adequate support

The intent to revisit properties after 10 years to see if the agreement is still current is good in-principle. The extent to which the 10 yearly visits have occurred however is unclear. By the time the 10 years came around, some interviewees felt that the program had inadequate resources to undertake any systematic assessment of properties. If resources were available to undertake these assessments, it would also be valuable to examine if any trends were apparent. Several interviewees felt the visits could be more frequent than 10 yearly, which would require further resourcing by the department. Another source of information on changes in properties over time were the surveys of landholders that were undertaken in 1994 and 1999. Maintaining these surveys on a five yearly basis, as originally intended, would provide useful qualitative information on conservation outcomes on these properties.

At a broader scale, the original state-wide coordinator for *Land for Wildlife* felt that the contribution that the Program made to biodiversity conservation needed to be considered in the broader context of the range of conservation programs on public and private land that were now in place. This required the development of a landscape goal for biodiversity, and then an assessment of how different programs/tools were available to meet these goals. These tools could then be assessed using a cost benefit model and funding most effectively applied. No one approach to biodiversity conservation will be effective, so a tool is needed to focus on what the different programs do best and shape investment accordingly.

No formal adaptive management system is in place to learn from the experience of staff and stakeholders involved in the program. However, annual meetings are held for all extension officers (originally two were held a year) and feedback is received from landholders through surveys (currently in abatement), field-days and through extension officers. Workshops have also been held in the past on topics such as monitoring and some of the management issues landholders have to deal with. This broad range of activities provide ongoing input into how the Program could be built on and grow, but the resources are not available to implement the recommendations.

What to sow, grow and throw

Several papers and an independent review of *Land for Wildlife* were published between 1994-1998 (Platt and Ahern 1995 a,b; Smith 1998). Smith (1998) noted that the *Land for Wildlife* scheme in Victoria was arguably the most successful voluntary, non-binding model for nature conservation on private land in Victoria, and Platt and Ahern (1995a,b) proposed that the approach could be used as a model throughout Australia. These commentaries demonstrate the high regard that the program was held in at the time. . Smith (1998) identified the following critical success factors for the Victorian Land for Wildlife scheme: it's simplicity; accurate information and practical advice; extension officers; standard of service delivery; credibility and criteria for registrations; co-ordination, planning, monitoring and evaluation, and funding (salaries and operations). Overall it was felt that risks to biodiversity had been reduced through education, extension and empowerment, with lack of awareness still a key issue amongst landholders.

It is clear that since this review was written, the effectiveness of the program has diminished because of decreasing resources, both human and financial. For example, the program used to have 12-14 extension officers and now has 8 part-time extension officers to service the existing properties (~ 6,000) and engage new properties. The decline in real funding for the program was identified earlier in the case study. Everyone that was interviewed felt that the fundamentals that were part of the program when it was expanded in 1990 were sound, with some enhancements required. The need for additional resources to support and enhance the activities of the Program was unanimous. The idea of other groups running the program such as *Trust for Nature* or Greening Australia has been raised at various times, but overall this was not felt to be a workable solution.

Preconditions for a successful voluntary program such as *Land for Wildlife* were identified as: enthusiastic landholders who were willing to learn; skilled, devoted and enthusiastic staff who will stay on for a while (i.e.. continuity of staff); proactive and targeted extension; and robust support from Head Office that demonstrates this is a legitimate and important program. The initial property visit and contact with extension officers is considered one of the key elements of success of the program. The newsletters and field days were also highly valued by landholders, and the newsletters in particular were felt to include excellent technical and practical information. Everyone indicated that they would like four newsletters published a year, as used to be the case, rather than the one that is currently produced each year.

A small number of LFW properties in each region have a public open day each year run by an extension officer (the LFW Open Property Scheme). Landholders also indicated that they would like to see at least 2 gatherings per year run by the extension officer. The possibility of drawing on landholders themselves to run meetings/field days or host other interested landholders was also raised. The potential to draw more on landholder interest in supporting the program should be considered, although this would still require at least initial support from the extension officers, who already have more than enough to do. It is essential though that landholder interest continues to be 'fired up' through on-ground activities and informative written material.

One area that was identified as a gap in technical information provided by *Land for Wildlife* was fire management for ecological outcomes. Originally this was considered too big (and complex) a topic to touch. In order to cover this often contentious subject well, access to the latest science on the topic is required. DSE's new fire ecology framework could be a source of such advice. DSE has a pool of scientists in the Arthur Rhylah Institute that have contributed to *Land for Wildlife* in the past. This relationship was felt to work best when the State Coordinator was co-located with the scientists. With the decentralisation of the program, it was felt that the links with Departmental scientists could be strengthened. Importantly, the science needed to be translated into an easily accessible form for it to be useful for *Land for Wildlife*.

Smith (1998) identified a trend that reducing regional DNRE budgets was forcing alternative, less effective extension services in some regions e.g. assessments by contractors. This was resulting in less-effective provision of *Land for Wildlife* services i.e. alternatives to part-time, community-based extension officers. The use of unqualified staff to undertake the role of extension officers, including when they were called off to other duties in the regions, still continues. Complaints have been received from landholders about the quality of the services provided by some of the non-extension staff, which diminishes the credibility of the program. It is important that trained extension officers are located in each region and that they are able to use all of their allocated time to *Land for Wildlife* activities. Where the part-time officers have complimentary work in the Department, such as being a Threatened Species officer, useful synergies can occur.

An interesting perspective was given by an interviewee who helped set up the expanded *Land for Wildlife* Program in the late 1980's. He felt that

they should have promoted a landholder union with high profile advocates to champion the cause. If the program had done so, there may have been more resources now. Instead *Land for Wildlife* tended to focus on individuals or small groups. The 'Club' concept wasn't what was in mind originally, but it can give positive energy and a sense of exclusivity. It was suggested that the Program could introduce a 'gold card' for achieving good outcomes on a property. With a membership of 6,000 landholders, a voice representing the group as a whole could have had a strong political influence.

The increasing range of vegetation/habitat management schemes may cause confusion for landholders. Developing a 'one stop shop' for information on wildlife/habitat programs, rather than the 10-15 sources of information currently available through different sources. The idea of a toolkit of responses could be helpful in terms of streamlining information available to landholders. It may or may not reduce the workload of *Land for Wildlife* officers however, as easier access to programs could increase the level of interest.

The introduction to the case study identified that the *Land for Wildlife* model had been adopted in other states and territories across Australia. It would be timely to review the success of the national component of the program and consider a central coordination role again, as was done through the *Bush for Wildlife* Program.

Benefits and impacts of Land for Wildlife

Lack of awareness of biodiversity amongst landholders was seen as a key issue that *Land for Wildlife* addressed. Overall it was felt that risks to biodiversity had been reduced through education, extension cultural change and empowerment. This can lead to changed awareness and behaviour of landholders, with the management information provided in newsletter and notes and through ongoing contact with extension officers essential to the programs impact. The short-term benefits and impacts of the Program are likely to be significant, but maintaining these over the medium to long-term requires sustained investment and support of the program. In that way, the enthusiasm of landholders can continue to be uplifted and regular assessments of the impact of management activities on conservation outcomes can be assessed.

Interviews:

Felicity Nicholls, Statewide Coordinator, Land for Wildlife

Miles Geldard, Regional Facilitator, Land for Wildlife, North-west Victoria

Stephen Platt, Statewide coordinator, Land for Wildlife, 1990 – 1997

Ian Davidson, Private consultant, Glenrowan, Victoria

Doug Robinson, Trust for Nature, North-eastern Victoria

Frank Robinson, Land for Wildlife property owner, Lockwood

Pam and John Land, Land for Wildlife property owners, Neilborough

Sources of information:

Platt, S. and Ahern, L. (1995a) Voluntary nature conservation on private land in Victoria – evaluating the Land for Wildlife programme. In: *People and Nature Conservation: Perspectives on private land use and endangered species recovery*. (Eds A. Bennett, G. Backhouse and T. Clark). Pp. 211-216. Transactions of the Royal Zoological Society of New South Wales.

Platt, S.J. and Ahern, L.D. (1995b) Nature conservation on private land – the role of *Land for Wildlife*. In: *Nature Conservation 4: The role of Networks*. (Eds DA. Saunders, J.L. Craig and E.M. Mattiske) pp. 200-311. Surrey Beatty & Sons, 1995.

Smith, S.J. (1998) *Review of Land for Wildlife (Victoria)*. Parks and Wildlife Service, Department of Environment and Land Management, Tasmania. 54 pp. ISBN 0 7246 6203 0.

Land for Wildlife website:
http://www.dpi.vic.gov.au/DSE/nrenpa.nsf/childdocs/-A59F5093F6D6511D4A2567D600824A61-BA15AEEDADB3CA6C4A2567D600824A6C?open

Land for Wildlife property assessment form, 2005 version

Case study 4: Bush Heritage Australia (National)

The institution and its response

Bush Heritage Australia (BHA) is a national, non-profit organisation that aims to protect Australia's unique and abundant diversity of life through the creation of reserves on private land. This is achieved by acquiring and managing land, water and wildlife of outstanding conservation value through purchase, gift or bequest. When land is purchased it is bought on the open market and then cared for in perpetuity. Ongoing responsibilities and costs of managing the land are assessed and planned for at the time of purchase.

The organisation has grown considerably since it was established in 1990. At this time, Dr Bob Brown used his Goldman Environmental Prize of $49,000 as a deposit to buy 241 hectares of forest at Liffey River, abutting the Tasmanian Wilderness World Heritage Area. As the forests were destined to be wood-chipped, Dr Brown borrowed the rest of the money needed to buy the land from friends and the bank and set up the Australian Bush Heritage Fund.

From these modest beginnings, BHA currently owns and manages 29 reserves throughout Australia covering over 720,000 hectares. Together, these reserves safeguard more than 242 vegetation communities, including at least 83 that are listed as of high conservation value. Over 2,700 plant species, including at least 250 of conservation significance, and at least 532 bird and animal species, including 195 that are known to be threatened, are now protected on the reserves. BHA reserves are actively managed with actions including pest plant and animal control, erosion control, seed collection and revegetation work and fire management.

In 2006 BHA launched the *Anchors in the Landscape* program. Five regions were identified Australia to focus the activities of the organisation, including fund-raising. This program is the primary filter for selecting properties for acquisition. Reserves in these regions are described as 'anchors' in the landscape; properties that not only secure important conservation values, but also provide focal points from which to launch regional conservation programs. The five regions currently identified as anchors are:

⇒ Gulf to the Channel Country (and Lake Eyre);

⇒ Queensland Uplands and Brigalow Belt;

⇒ Grassy Box Woodlands from the Victorian/South Australian border into central New South Wales;

⇒ Tasmanian Midlands; and

⇒ South West Botanical Province - from Shark Bay to Esperance.

The potential exists for other anchors, particularly in northern Australia. Because these are, in essence, indigenous lands, BHA wanted to hold discussions with appropriate people and organisations before putting these on a map.

The *Beyond the Boundaries Program* is another recent BHA program. It was initiated in recognition that the amount of land needed to effectively conserve Australia's biodiversity was beyond acquisition, both in terms of the costs involved and the availability of critical areas for purchase. BHA also recognised that with more than 70 per cent of Australia's land in private ownership, it needed to work with the people and organisations that control these substantial and significant areas.

The *Beyond the Boundaries Program* is designed to help build regional conservation initiatives with BHA reserve neighbours, local and indigenous communities and other key property owners and managers. As the effectiveness of the program is seen to be greatest in areas where BHA is an active player, the program will focus on the five anchor regions. It is intended to support and encourage others to instigate, or further develop, conservation management on their land by sharing expertise and resources. An example of this program in action is at the Charles Darwin Reserve in Western Australia where adjacent lands are under a management agreement with neighbours.

Conservation on Country is another recent program that works with Indigenous and non-indigenous people on Indigenous-held lands and Bush Heritage Australia properties. This program aims to support Indigenous landholders to increase their capacity to manage protect and conserve their country. The program also assists Indigenous people to increase the quantity and quality of high conservation land they own through accessing the Indigenous Land Corporation's Environmental Acquisition Program.

Developing Bush Heritage Australia

Bush Heritage Australia is the trading name for the Australian Bush Heritage Fund, which receives funding from a variety of sources. This includes donations from private individuals and organisations and public funding through, for example, state and Commonwealth governments. In recent years The Nature Conservancy, a major non-government organisation that is based in the United States and with offices around the world (including Australia), has made substantial contributions to properties purchased by BHA. Substantial in-kind contributions are received for legal and accounting services, which are included in the accounts.

The proportion of funds from different sources varies from year to year. The 2006/2007 financial year is provided as the most recent example. The total income of Bush Heritage Australia for this year was $13,145,000. Nearly $11 million of this amount was raised in donations and bequests, with almost $7.2 million being gifts for large projects. Over $1.2 million was contributed in grants from governments, trusts and foundations including the Australian Government Department of Environment and Water Resources, Land & Water Australia and the NSW Government. So far a small amount of funding has been received from corporate donors, with the funding from the Macquarie Bank Foundation for a pilot monitoring program arising out of a unique relationship. Overall, 76 percent of expenditure in 2006/2007 was directed towards land acquisition and conservation management, 18% on fundraising and development, and 6% on administration.

The amount of money received from public programs such as the *National Reserve System* (NRS) and the *Australian Biodiversity Hotspots* programs is a relatively small part of the overall income of BHA. The contribution made through the NRS however was seen as fundamental to the success of BHA as it produces confidence in major philanthropic organisations to invest and has leverage far beyond its up-front dollar value in terms of acquisition. The long-term management costs for the reserved purchased with support for the NRS reduces the leverage ratio over time. From the perspective of the NRS, BHA was considered to add value to the program, with a strength being their capacity to build skills and expertise and their experience across a variety of landscapes.

Working bees and the *Volunteer Ranger Program* provide opportunities for volunteers to help with special projects or with general reserve work. Volunteer rangers work alongside reserve managers to protect the land and its wildlife. In 2006/2007 BHA benefited from 3,406 days of volunteer support. The estimated value of this contribution was $684,000 but was not included in the accounts for that financial year, which are outlined below.

In addition to volunteering opportunities, field trips and limited camping are available on Bush Heritage properties with a small number of reserves able to be visited without a guide. While this provides donors with some opportunities to benefit from their investment, it was felt that most don't have serious expectations of private benefit – they are simply satisfied they've contributed to a long-term conservation benefit. It was also argued that contributing to the national target of 22 million hectares in reserves is important for Australia.

Defining biodiversity, threats and targets

The vision of BHA is that by 2025 it will specifically protect one per cent of Australia (more than 7 million hectares) and in doing, conserve significant areas of land and water that are of the greatest importance for protecting the nation's biodiversity. The 7 million hectare target (which equates to the size of Tasmania) represents one-third of the national target of 22 million hectares of quality habitat determined by scientists as necessary to effectively conserve Australia's plants and animals (Possingham *et al*. 2002). The 7 million hectares would consist of properties owned by Bush Heritage Australia, as well as partner properties managed in a sympathetic way for conservation outcomes – either directly by BHA or with their advice.

The 1% goal is considered achievable if immediate action is taken by BHA, with help from its supporters. A question mark was raised however, as to what the target means, depending on how it was measured. For example, will it be new areas where conservation is currently not the primary management goal, or could it include areas already managed for conservation such as Indigenous Protected Areas? The cost of managing such a large area was also raised as an issue.

Biodiversity has a manifestation at different scales for BHA. At the national scale, bioregions and their sub-units are used as high level surrogates for biodiversity. At the continental scale 7 goals have been identified, each with their own criteria and indicators. One of these goals is to improve the proportion of the units in IBRA (Interim Biogeographic

Regionalisation of Australia) regions when selecting new properties. An ongoing partnership with ANU is developing tools to help prioritise sites at the IBRA level. The approach being taken moves beyond species and communities (composition), which is often the focus of biodiversity programs, to processes and functions that underpin and are provided by biodiversity. This recognises that biodiversity is dynamic in space and time and is reflected in the description of biodiversity on the BHA web-site: *biodiversity is the sum of the land, its plants and animals and its cycles of nutrients, energy and water*. This is often summarised in promotional material for the organisation as '*land, water and wildlife*'.

At the property scale, specific management goals are set which will be tested with ongoing monitoring. These stem from the characteristics and management issues for each reserve. Properties that are funded through the National Reserve System also have to incorporate goals set by this program, which are based on IUCN categories. The threats managed at each reserve will also vary, but common management issues include feral animal control, fire management and the removal of grazing by exotic stock. Feral animal control was felt to be a particular strength in south-western WA, although it was felt that a more regional approach would be more effective. In this region, fire management was currently passive, but more active management is underway in other regions such as western Queensland where a fire management plan is being developed.

Biodiversity outcomes

At the broadest scale, the areal extent of different IBRA subregions can be used as one measure of biodiversity. At Gondwana Link, a program called 'Veg Machine' is utilising Landsat imagery to show dynamic changes in vegetation cover from 1988 to present. This tool can be used to indicate active threats such as land clearing and salinity, as a tool to assess the health of prospective reserves and more broadly to assess changes in vegetation productivity as part of the 'minimum set' of data collected at sites (see further detail below).

BHA has a strong impetus and motivation to adopt systematic monitoring systems across their reserves and is investing resources accordingly. Simple, integrated and meaningful monitoring systems are being developed to demonstrate the link between monitoring and on-ground action, both to internal and external audiences. In particular, BHA believes that it is incumbent on it to be able to show to its donors it can deliver on what it says it will do.

In 2005 a three-year pilot project for *Ecological Outcomes Monitoring* was established at Eurardy Reserve in Western Australia. This was funded by the Macquarie Bank Foundation. Data is now available for three years for this reserve, with recorded changes in bird population and vegetation considered to more likely reflect the drought than changes to management. The monitoring results at this and other reserves in Western Australia are captured in the report '*Restoring land and wildlife. South-west Western Australia*' (Bush Heritage Australia 2007). An annual conservation report, which was first available in March 2008, captures the monitoring results from the Bush Heritage Reserve Estate as they build over time. This systematic approach to monitoring will allow assessments of the impact of factors such as management actions and rainfall over

time. At the national scale, the use of remote sensing imagery and national datasets should allow targets at that scale to be measured.

Detailed information on the property-based monitoring systems being developed and implemented by BHA is available on its website and the report mentioned above. Work on developing ecological goals at a property level is also under development, with a new ecologist being recently appointed to lead this area. A minimum set of data is recorded on sites throughout a property, the sites being selected according to a range of criteria to make sure they are representative. The minimum data set is collected from each site on a regular basis, at least once a year. The status of the bird population at a site is used as an indicator of overall ecosystem health. Photo monitoring points are also installed at a scattering of additional sites to complement this 'minimum set'. A range of other data may be gathered at particular sites depending on the resources or expertise that are available and the nature of the reserve. This is called the 'desirable set'. BHA is seen to be open to recommendations on additional monitoring arising from research undertaken on their reserves, such as the work by Chris Dickman and his students on Ethabuka. Ecologists on staff have been doing some of the monitoring, but it is increasingly being done by volunteers and consultants.

The emphasis on monitoring at BHA to date has been on ecological outcomes. BHA has been funded by Land & Water Australia and the Natural Heritage Trust to undertake a research project (called 'Increment') to develop custom-designed software that will enable rigorous reporting to supporters on biodiversity outcomes achieved as a result of their investment in reserve management activities. There are also plans in place to involve monitoring of practice and attitudinal change in the future. Formal links are being developed with Sydney University to undertake targeted research, which BHA would like to expand to other institutions. A range of informal links to experts is in place as well. This underpins the importance identified by the organisation of basing their resource allocation on sound knowledge.

The spatial database system used to store the monitoring and other property data collected by BHA is under development and predominantly accessible internally. The database has been designed to collate and manage the data and provide coherent and reliable information in reports and maps. The database will include monitoring information gathered at all sites, together with information on the management actions taken across entire properties. Vegetation productivity information deduced from satellite data will also be included in the database. Screen based maps will be used to display key observed and measured qualities, and additional information, including areas, lengths, proximities to nearby features and densities within broader areas, will be derived using the Geographic Information System being developed by BHA. In this way, primary questions such as "what is the density of an invasive weed and how does it relate to the presence of a specific soil type" or "what is the likelihood that my access road will be flooded following rain and where will this flooding occur" can be answered and this answer integrated into a management technique capable of eradicating invasive weeds or reducing the likelihood of flooding.

When asked about the likely time-lag to see a response to activities undertaken by BHA, case study participants answered across the range from immediate to long-term, depending on the property and region in question. For example, in Victoria, an immediate response could be demonstrated when a little pocket of woodland was bought that would have otherwise been cleared. In some instances impacts can be demonstrated in less than five years, such as removing feral horses at Carnarvon. This has a positive impact on reducing erosion and increasing birds and reptiles. For some other management interventions, such as introducing ecological fire regimes at Ethabuka (a semi-arid zone reserve), it could take 10-20 years to demonstrate a significant response. The responses in these more arid systems are episodic, with rainfall being a major driver. Changes in behaviour were seen to range from immediate (especially if a land owner was offered money to purchase a reserve) to a few years. A combination of drivers was identified in terms of the time for biodiversity assets to respond, including the degree of modification of system and when the modification occurred.

An important message from BHA identified by participants was that purchasing land for biodiversity outcomes waves a big flag to say that these bits of bush are important. This has significant symbolic value for politicians and farmers and has influenced government policies on land clearing in the past. Demonstrating that organisations other than government can manage a large part of the landscape for conservation outcomes has other impacts, which are still having a ripple effect. For example, it demonstrates that governments no longer have a monopoly on knowledge about managing landscapes.

Strengthening monitoring and learning mechanisms

The monitoring systems being put in place by BHA are relatively new and in some cases still being developed and tested. This includes the national-scale methodology being developed to systematically underpin the acquisition of properties. In order to be transparent to both partners and donors involved with BHA, it will be important to make these methodologies available once they have been finalised, as currently the prioritisation process is seen as a mystery by some. BHA has the opportunity to provide a leadership role in the development of systematic monitoring schemes at multiple scales. Others can learn from both the successes and failures of the approaches being developed by this organisation. The National Reserve System will be working with BHA and other organisations to develop a monitoring system for reserves purchased under this scheme. This will build on the common elements of groups like BHA and the Australian Wildlife Conservancy.

Reserves acquired by BHA are managed under an Adaptive Management System – a learning-based approach where actions are constantly reviewed and adapted in light of progress towards defined biodiversity outcomes framed by knowledge of ecological processes. The goal is to constantly review actions on the ground and adapt these as BHA monitor how the land and its populations of animals and plants change as a result of management activities or the local conditions. Adaptive management is incorporated in the templates that form the basis of management plans at individual reserves.

BHA describes this system as working in a cycle with four stages:

(1) **planning**, where we set the conservation goals that we want to achieve. This may be restoring a wetland, stabilizing a population of a threatened species or dealing with a pest animal problem;

(2) **actions**, where we allocate the resources that we need, and do the work on the ground (inputs and outputs);

(3) **outcomes**, where we monitor the land and the wildlife and analyse how they are changing under our management regime; and

(4) **reporting**, where we record these changes and report back to our supporters on the results of our work.

While an adaptive management system is in place within BHA, which is one of the few case studies to have a formal system for biodiversity outcomes, some participants felt that more time was needed to provide evidence about how well it is working. Others thought that the organisation was both receptive to, and good at, adaptive management. In terms of adaptive management systems for the operations of BHA, Bush Heritage staff identified that the organisation embraces considerable adaptation processes within the governance and internal structure, and that the organisation is aware of and is constantly responding to structural changes and external influences. It was suggested that this can be demonstrated by the major changes that have taken place in the organisation from its modest beginnings in 1990, although some of the people interviewed identified that rapid growth such as this could also raise some tensions between different philosophies and cultures. It was acknowledged that the internal adaptive management process does not receive as much attention as the systems developed for biodiversity outcomes, but at least it is something that the organisation is aware of.

What to sow, grow and throw

BHA has grown substantially from the initial purchase of the Liffey properties in Tasmania in 1990. Staff and property numbers have grown quickly and a number of new and innovative programs have recently been put in place. These include a focus on partnerships with other organisations, managing across landscapes, developing long-term monitoring systems across a number of scales and building strong relationships with indigenous groups. These examples should take the organisation past the 'stamp-collecting' stage that has been a criticism of organisations like this that acquire properties. Managing the rapid growth of the organisation was considered a challenge by some. The organisation was thought to have a great future if they planned and measured delivery so they didn't overextend, had the right staff on board and succession plans in place for key staff. Staff selection could be a challenge in a competitive market and it was considered important to select people who had the skills needed in areas as diverse as financing, marketing and conservation management.

Building on indigenous relationships was identified as particularly important. Opportunities could exist in the future to employ indigenous land managers, who were seen as ideal to manage remote properties as they want to live there in the long term. An example where working with indigenous groups has worked well at a regional scale was in south-

western Australia, where work done with the local Noongar group received special mention.

It will take some time for the new programs introduced by Bush Heritage Australia to bed down, but they represent some innovative thinking in the context of nature conservation on private land. As noted previously, BHA has the opportunity to provide a leadership role; not just in the development of systematic monitoring schemes at multiple scales but in managing private land for conservation outcomes more generally. In terms of identifying pre-conditioning factors that need to be in place to make such organisations a success, these were seen as: having a clear statement of what you are wanting to achieve; having the systems in place to meet these goals; and having a long-term commitment to implement them.

The bulk of the staff of BHA are based in Melbourne, with some permanent managers living on its larger properties. This latter model was seen as working well overall. In order to build lasting relationships in the regions BHA has identified as their 'Anchors', it was felt however that a stronger presence would be valuable where permanent staff weren't located, rather than having people 'fly in and fly out'. Providing adequate support to staff who lived on remote properties, so they could be effectively managed, was also identified as an area that could be built on.

Views on the approaches to partnerships by BHA varied. Overall it was felt that their ability to develop partnerships was strong, across such diverse groups as researchers, government and regional NRM groups. One respondent however felt that more effort was needed in appreciating the true nature of partnerships by the organisation, as well as collaboration and integration across landscapes. These are areas that should mature over time as the programs that are being put in place settle down and regional differences in partnership arrangements are worked through.

Because BHA is reliant on funding from donors (both private and public) to continue its operations, it has an added incentive to demonstrate its credentials in managing properties for conservation outcomes. It was seen to be important to continue growing the reputation to show BHA is 'fair dinkum', reliable, scientifically credible, effective and here for the long term. An area that was currently being over-hauled was the visitation program to reserves, with BHA examining the approach used by the Australian Wildlife Conservancy at its Mornington property in north-Western Australia. When more data is collected on the management of their properties, one respondent identified the value of having regional hubs as part of a national database that allowed access to regionally specific material.

Ecologists working for BHA felt that access to knowledge and expertise is critical, and that the organisation needed to continue and build on this. One area that it was recommended that BHA could consider future investment in were some PhD scholarships to increase the understanding of biodiversity and it's management on their properties. A further expansion of their research partnership model, which is being considered by BHA, was also considered worthwhile. Developing a better understanding of how to manage for biodiversity outcomes in a changing climate was identified as an area that could be strengthened, but this is

an area all management agencies struggling with. The efforts of the organisation to seek external advice and their responsive to the latest ideas on management were considered strengths by several respondents. There was one respondent however, that felt ecological science was perhaps having too much influence over the organisation, and that the ecologists needed to be more pragmatic, travel out into the regions more and 'get their hands dirty'. These different opinions most likely reflect the different management models BHA has found itself working with.

Benefits and impacts of Bush Heritage Australia

Organisations like Bush Heritage Australia are able to demonstrate short-term impact and respond to opportunities much more quickly than government. It can have positive and immediate impact on biodiversity by purchasing properties under immediate threat.

In terms of medium to long-term impact, BHA will be able to monitor the effect its management has on biodiversity by the systems that are being put in place. These are the most comprehensive systems identified in any of the case studies. There is the potential for substantial, positive long-term impact on the properties that BHA has purchased, although these are less certain for properties in the *Beyond the Boundaries* program where other managers own the land. What happens with pastoral leases in the longer-term is uncertain.

Interviews

Dr Steve Morton, Vice President, Bush Heritage Australia Board

Stuart Cowell, Beyond the Boundaries Coordinator, Bush Heritage Australia

Paul Foreman, Applied Ecology Manager, Bush Heritage Australia

Ben Carr, Beyond the Boundaries policy officer, Bush Heritage Australia

Keith Bradby, Gondwana Link, SW Western Australia (BHA are partners in the Gondwana Link program)

Tim Bond, NRS, Australian Government

Mike Chuk, Regional Planner, Desert Channels Queensland Inc.

Professor Chris Dickman, University of Sydney

Sources of information:

Bush Heritage Australia (2007) '*Restoring land and wildlife. South-west Western Australia*' Bush Heritage Australia, Melbourne.

Possingham, H., Ryan, S., Baxter, J. and Morton, S. (2002) *Setting Biodiversity Priorities*. A paper prepared as part of the activities of the working group producing the report Sustaining our Natural Systems and Biodiversity for the Prime Minister's Science, Engineering and Innovation Council.

www.bushheritage.org.au/

Case study 5: Living Landscapes (Western Australia)

The institution and its response

Living Landscapes was a community engagement and landscape planning process that ran between 2000 to 2006 across the agricultural landscape of SW WA. Its goal was to increase farmer participation in nature conservation activities by linking science and community through a simple framework for learning, planning, doing and reviewing (Smith and Penter 2006). *Living Landscapes* provided opportunities for land managers to learn about their local ecology, through their experience and through the eyes of others and then to apply the new understanding at the local scales whilst contributing to landscape outcomes. The project involved over 76 families from the South Tammin, Dowerin Lakes, Gabby Quoi Quoi, Morbinning and Wallatin Creek catchments.

The catalyst for the *Living Landscapes* concept was a generous bequest from Ms Elsie Gadd to Greening Australia (WA). Preliminary discussions began in 1997 between Greening Australia and Alcoa World Alumina Ltd. about a program that could build on the Alcoa Landcare Vision Project. This partnership led to a successful funding bid to the first round of the NHT to run the *Living Landscapes* program.

Three of the five catchment groups involved in the *Living Landscapes* project had taken part in Alcoa's *Landcare Vision Project*, which started around 1990. The two other groups had formed in 1996 and 1998 respectively. All groups had a history of working together on *Landcare* related issues such as salinity and loss of production. Importantly this meant that a decision-making framework was in place, people had worked as a team and had regular meetings and the group members had built trust between them, which normally takes considerable time to develop.

The process used to engage, support and build the communities involved in *Living Landscapes* consisted of four elements: awareness raising; types of information; exploring values and developing visions; and ways to present and deliver information (Smith and Penter 2006). Using the principle of active learning, the engagement process emphasised experiences that involved learning by doing and, most importantly, were fun. The emphasis on fun was considered vital to the success of the project.

Each of the groups involved in *Living Landscapes* developed catchment plans, which were underpinned by science using the focal species approach (Lambeck 1997). Focal species are those species, plant or animal, identified as most at risk from the threats in the landscape being studied. The assumption is that if you meet the requirements of these species, then the needs of other less sensitive species will also be met. In agricultural areas of WA, birds have been used as the target taxon because of their abundance, relative ease of surveying, mobility and because they are placed towards the top of the food chain. Birds can also be visually striking and are animals that most people can relate to, and hence useful for awareness raising.

Photos taken by individuals and families were used to encourage them to describe their hopes for the future of their district and their perspectives on the health of the landscape. Once the catchment plans were in place,

the catchment groups decided what projects the money they were allocated would be spent on. Each year, funds were put in the groups' accounts so they knew how much they had to work with for on-ground activities.

More information on the *Living Landscapes* project can be found in Smith and Penton (2006), which reviews the 'lessons learnt' as well as in a case study on the project by Read and Besson (2003). A number of the case studies of on-ground works and more information on the program is available on Greening Australia's WA website.

Developing the Living Landscapes program

Communities that were invited to join the *Living Landscapes* project had adequate capacity, were willing to participate and were ready to go beyond what they had achieved in *Landcare*. Three groups had already been involved in Alcoa's *Landcare Vision Project* and others were invited by neighbouring groups (e.g. the Dowerin Lakes Group, which hadn't been involved in the Alcoa program). All of these groups had experience in group dynamics, were looking for new opportunities and were already active in *Landcare*-style on-ground works.

The project received funding, sponsorship and support from philanthropic, government, non-government and private sources. The following funding base represents an investment of around $2.5 million over a five year period:

⇒ Alcoa World Alumina - $256,000 in a 5 year partnership supporting on-ground and social outcomes;

⇒ Natural Heritage Trust I - $500,000 between 1999-June 2003;

⇒ Natural Heritage Trust II - $429,000 through Priority project funding between July 2003 – June 2005. Some of these funds were spent on other projects as part of the overall package;

⇒ Greening Australia (WA) - $560,473 though a five year commitment of Gadd Bequest funds;

⇒ Avon Catchment Council (ACC) – continuous strong support over the life of the project contributing to the success of the NHT interim funding for 2004-2005;

⇒ Landholders –around $787,000. This was mostly in-kind (labour, chemicals, vehicle/machinery usage etc).

As noted earlier, the philanthropic funding made available through the *Gadd Bequest* was a very important component as it helped leverage corporate and government funding. The contribution made by landholders is considered to be underestimated, eg, it doesn't include the value of land taken out of production and no rate relief was given on areas that were revegetated. While the project received priority funding from NHT2, through the support of the ACC, no further funds were available to continue the project in that area because the focus of the NHT had moved to high conservation areas.

The motivation behind the project was to deliver public good outcomes. Some private benefit may have been gained where there was overlap

with *Landcare* outcomes such as reducing salinity. Overall however, the biodiversity benefits arising from the project were largely felt to be of public benefit, ranging between 80-100% of total benefits.

Defining biodiversity, targets and threats

The approach taken by the *Living Landscapes* project was 'learning by doing' so no absolute definitions of biodiversity were provided at the start of the project. Instead, using the focal species approach to underpin planning allowed a number of issues to be discussed, such as the decline in landscape health and vegetation condition, the use of native vegetation as a surrogate for biodiversity and the importance of connecting habitat and protecting biodiversity assets in general.

Looking back on the project, landholders identified birds as the main focus, seeing them as indicators of the health of the overall landscape and a useful tool to raise awareness. They also recognised that loss of habitat and fragmentation were the main threats to biodiversity, so they could see the value of providing new habitat through revegetation. Taking a holistic, landscape-scale approach to biodiversity was also identified as an important part of the project.

The targets and goals that were set varied between different catchments depending what was agreed during the planning process. Using the focal species approach enabled groups to identify landscape restoration targets. Some groups signed up to maintain what birds they had while others attempted to return what had been lost. In one catchment, the aim was to fence and revegetate the entire length of a major creek, a project that built on work started with Alcoa. Linking remnants was also identified as a goal in at least one catchment.

Often the goals that were set by the catchment groups were to be met over a long time period, for example between 50-100 years. It was therefore not possible to achieve these goals over the life of the *Living Landscapes* project, which lasted for five years. The targets were considered technically realistic, but needed to be supported by effective on-ground action over a considerable period.

As noted previously, decline and fragmentation of native vegetation were identified as major threats to biodiversity in the *Living Landscapes* program. Salinity was also mentioned, although this varied regionally. Non-biophysical threats that were identified included a lack of awareness of the magnitude of the issue and the lack of capacity of farmers to undertake biodiversity work when they have so many other calls on their time.

Biodiversity outcomes

Figures collected on the major outputs of the project at the paddock level (Smith and Penten 2006), follow:

Native vegetation protected:	2,496 ha
Re-vegetation using local native species:	676 ha
Seedlings:	750,567 plants
Seed:	369 kg
Fencing:	602.5 km

Despite the collation of these figures on the completion of the project, no systematic program was put in place across the project to monitor biodiversity outcomes. Because many of the goals were considered long-term, it made it difficult for groups to report on whether the progress made was adequate or not. This suggests the value of setting interim goals along the way. The resources needed to set up a rigorous monitoring system and associated database would be considerable and would need to be incorporated in the initial planning stages of the project.

Photo-points were established at the sites involved in *Living Landscapes* prior to work beginning. The aim was to re-survey the points regularly. Bird surveys were also undertaken. Other quantitative measures were discussed by some groups such as water-table monitoring, but the investment in time and resources was considered too great for the expected returns. One catchment group continued monitoring of its own accord (using photo-points and aerial photos) following completion of the project as it had access to GIS databases to store such information. The momentum of the other group was lost without external assistance and support. In one instance the large amount of land revegetated was felt to have led to profound changes, so monitoring was considered unnecessary.

The *Living Landscapes* project encouraged changes in behaviour and attitude by educating and inspiring landholders, and provided feedback loops between changing attitudes and changing behaviours. In the interviews, opinions on how long it can take to witness a change in behaviour varied enormously. Some felt that that changes could occur within 1-12 months after joining the *Living Landscapes* project. Where rapid change occurred, it was associated with the influence of the Alcoa project that preceded it and the emphasis on involving the whole family. Others felt that it could take 5-10 years to see changes in behaviour, with significant changes not expected in less than 6 years according to one respondent and 2-3 years by another. The capacity to quantify these changes was limited, but some of them were documented by capturing stories.

When asked about the response of biodiversity assets to the on-ground actions associated with this project, it was felt that an indication of functional responses (e.g. after fencing a site from stock) could be seen in 3-5 years. Direct signs of change in biodiversity were felt to occur at a minimum of five years (or between 5-10 years according to some), and for significant change it would perhaps take 10-20 years. The challenge identified by one respondent was to identify some component of biodiversity that would respond early so this could act as a trigger to encourage ongoing involvement in the project.

Strengthening monitoring and learning mechanisms

'Learning by doing' was a fundamental component of the *Living Landscapes* project which took a 'look, see and learn' approach. The project used a 'plan-do-review' project management cycle, which incorporated nature conservation using experiential learning activities and tools based on scientific research data (Smith and Penton 2006). One of the landholders felt that it took the five years of the project for the adaptive management approach to get up and running. This is likely to

have varied across the five groups that were involved. A staff member involved in the project felt that they learned as much as the landholders and that the landholders are educators in their own right.

Monitoring mechanisms could have been strengthened in the project by allocating the necessary resources at the start of the project. Providing ongoing assistance to landholders would also help maintain their motivation and collect data that may need expert input. It would still be possible to do this if the resources were available. While a number of case studies illustrate the experiences of landholders during the project and the lessons learned, it was felt that more of these would be useful.

What to sow, grow and throw

The *Living Landscapes* program was considered a success by all of those interviewed in terms of landholder engagement and capacity building. A number of success factors were identified:

⇒ making the program fun and accessible;

⇒ engaging families and kids in social activities (family friendly);

⇒ strong communities;

⇒ using the focal species approach;

⇒ competitive funding model where groups allocated funds internally;

⇒ mentor/agency involvement and technical support;

⇒ continuity of staff;

⇒ providing a program for farmers to work in and let them know that they are part of a whole.

Another indication of the success of *Living Landscapes* is that the approach has been taken up in other regions (such as the Corangamite region of Victoria) and forms the basis of a larger project called *Ecoscapes* in south-western Australia. This program is designed to contribute to the long-term survival of biodiversity assets across the wheat-belt and has a large focus on working with communities to carry out environmental activities. It is envisaged to run for at least 20 years. The twelve landscapes that have been identified as part of the *Ecoscapes* program are in a different part of the wheatbelt than the *Living Landscape* projects.

The critical success factors identified for the Living Landscapes project by Read and Bessen (2003) were grouped under the following headings: Partnerships; Tools, activities and resources materials; Facilitation and leadership; the Planning process; and Implementation. This overlaps with the list above to some extent, as well as identifies some additional factors. The Read and Benson case study, which was undertaken about 3 years into the project, did not comment on success in terms of biodiversity outcomes. Most likely it was considered too early to do so. It is difficult to draw conclusions about the contribution of the project to biodiversity outcomes in this case study as well, due to the absence of ongoing monitoring across the project catchments.

Preconditions for success that were identified across the interviews include:

$\Rightarrow$ a proactive President in favour of such programs to push the reluctant;

$\Rightarrow$ an existing group structure and a cohesive group working well together;

$\Rightarrow$ community engagement;

$\Rightarrow$ good governance arrangements;

$\Rightarrow$ good planning, clear timeframes, identifying roles and responsibilities (the time and resources are not always available to do this properly);

$\Rightarrow$ understanding the community you're working in;

$\Rightarrow$ extension support;

$\Rightarrow$ the right personalities and skills for the job; and

$\Rightarrow$ people with project management skills (e.g. shouldn't expect technical people to do this).

Areas that could be built on included continuing extension support for the farmers involved in the project (by people based in the catchment) and having a better understanding of the demographics of farmers and who is likely to be around throughout the life of a project. Both of the farmers that were interviewed felt that the project was too intense and would have benefited from being spread over 10-15 years. Both said that it had taken a few years to recover from the project, in terms of doing new activities and catching up with the farming tasks that had to be postponed because of time spent on *Living Landscapes.* Despite this, both farmers thought the project was a success. In this context, it was felt that more financial resources could be made available so farmers didn't have to draw on their own resources so much.

One comment about what could be thrown away dealt with the current approach to agriculture. It was felt that an honest look was needed at what it's current worth is, what it costs and what alternative production options are open for pursuit. This 'restructuring of agriculture', it was suggested, should take place from the ground up.

The social process used in *Living Landscapes* is only one approach to improving biodiversity outcomes in agricultural landscapes. This is demonstrated by the range of other responses highlighted in the case studies associated with this project. It was felt by one respondent that massive land use change wasn't possible through an approach such as *Living Landscapes*, but that it was an important part of the mix. To get significant change it was felt that what was needed was sustained investment, integrated approaches and to determine the relative importance of the different parts of the mix needed (e.g. voluntary, social process, regulatory, incentives based).

Benefits and impacts of Living Landscapes

Short-term benefits: Increased community capacity and understanding of biodiversity in agricultural landscapes, significant areas of native vegetation protected and planted.

Mid-term benefits: Elements of the *Living Landscapes* approach being taken up by the Ecoscapes project, albeit in a different part of the wheat-belt. The ongoing benefit of having areas of vegetation protected and revegetated.

Long-term benefits: Difficult to quantify without monitoring systems in place, but having remnants protected and areas revegetated (assuming that land use remains the same) should have some benefits for biodiversity in the longer-term. This was certainly the intention of the long-term goals set by the catchment communities.

Interviews:

Dr Robert Lambeck, CEO, Greening Australia, WA

Anne Smith, Living Landscapes Coordinator, WA

Jarrad Hollins, farmer, Dowerin Lakes Catchment Group, SW WA

Robert Dew, farmer, Gabby Quoi Quoi Catchment Group, SW WA

Catherine Lyons, Senior Policy Officer, State NRM office, South Perth

Sources of information:

Living Landscapes website:
   http://live.greeningaustralia.org.au/GA/WA/OngroundAction/livinglandsc apes.htm

Lambeck, R.J. (1997) Focal species: a multi-species umbrella for nature conservation. *Conservation Biology* 11: 849-856.

Read, V. and Bessen (2003) Mechanisms for improved integration of biodiversity conservation in regional planning. Read, V & Associates and Bessen Consulting Services.

Smith, A. and Penter, M. (2006) Living Landscapes: lessons from the central wheatbelt of Western Australia. Veg Futures 06 on-line conference proceedings.

Case study 6: Cotton Industry BMP Land & Water Management Module (New South Wales / Queensland)

The institution and its response

Of the 10 case studies in this report, the Cotton Industry Best Management Practice (BMP) Program is perhaps the least overt in its focus on biodiversity as the BMP deals with a range of issues across the production and resource management spectrum. However, the relevant component of the Program, the *Land & Water Management Module*, constitutes a significant industry response to threats to biodiversity, and it is this module that is the focus of the case study.

The existence of a cotton industry in Australia from the early to mid 1800s is not commonly appreciated as it wasn't until dam developments in northern NSW and southern and central Queensland in the 1950s and 1960s that its presence became more apparent. It is from this time an exponential growth in cotton production commenced, with 17,000 bales harvested in 1934 increasing to 87,000 bales in 1971 then to a record 3.4 million bales in 2001.

During this period, the cotton industry invested heavily in mechanisation and irrigation infrastructure. Maintaining phenomenal productivity growth, however, also depended on confronting the harsh exigencies of Australia's landscape and climate variability. Pests were also a major problem. For this, the industry response was a dependence on multiple applications of pesticides to crops, at rates of up to four times greater than other agricultural industries. These pesticides included, before their banning, DDT (dichlor-diphenyl-trichlorethylene), CDF (chlor-dime-form) and endosulphate, among other chemicals. The quantities used and the aerial method of application, which frequently resulted in spray-drifts to adjacent areas, became a major issue for the industry from both a public health and environmental perspective.

The cotton industry, through its peak grower-based research body, the Australian Cotton Growers' Research Association, its peak industry organisation, Cotton Australia, and its statutory research funding body, Cotton R&D Corporation, made a concerted effort throughout the 1990s to confront the pesticide issue. Its success has been highlighted by the significant levels of industry adoption of integrated pest management systems and other means of reducing chemical application to a bare minimum. The Cotton Industry BMP Program was born from this effort, and early versions of the program focussed squarely on the use of pesticides and their environmental impact.

The BMP process is based on concepts of continuous improvement through an adaptive cycle of planning, doing, checking and acting. Risk assessment and planning form the basis of farmers' responses to environmental threats. Participation is voluntary and involves a self assessment process and independent audits.

The success of the BMP approach to managing the pesticide issue, together with a growing public-sector interest in supporting environmental management systems opened the door to expanding the BMP Program to cover soil, water and vegetation issues. In 2005, a *Land & Water*

Management Module was added to the BMP. Much of this module deals with resource assessment (Objective 1), soil management (Objective2) and efficient irrigation (Objectives 3-6). Together with elements of Objective 1, it is Objectives 7 and 8, which deal with native vegetation and riparian management, that respond most directly to biodiversity threats.

The *Land & Water Management Module* involves a set of steps and principles for each of its 8 objectives to be followed by cotton growers. Many of the steps are supported by decision support tools, such as SOILpak, NUTRIpak, WATERpak and HydroLOGIC. Growers are reminded of their duty of care and their legal obligations through the provision of summaries of current legislation. The steps often include a description of: problems; means of assessing whether a grower has a problem; symptoms; and management options. Key to the process is the completion of self-assessment worksheets, where growers rank their performance against four standards (levels), level four being the most comprehensive form of response to an issue.

The practices advocated for the biodiversity components, and hence the practices that growers assess themselves against, include the preparation of farm plans that clearly mark native vegetation, vegetation condition assessment, condition monitoring, habitat maintenance, revegetation where practicable, maintenance of riparian zones, active involvement in local groups or with neighbours in dealing with vegetation issues, fencing of riparian zones, good stock management, and integration of riparian lands into Pesticide Application and Management Plans among other responses. Annual *Self Assessment Declarations* can be submitted for independent auditing.

The Cotton Industry BMP process was largely funded by industry, with some matching government support through the R&D levy matching arrangement. The *Land & Water Management Module* was jointly funded by industry and government through the NHT EMS National Pilots Program, which provided $602,000.

Developing the Land & Water Management BMP module

The original Cotton Industry BMP dates back to collaboration between the cotton industry bodies previously described and the Land & Water Resources R&D Corporation (now Land & Water Australia) in the early to mid 1990s. The BMP development was in part derived from recommendations to emerge out the Cotton Pesticides Research Program. Today we are all familiar with the notion of best management practice, but even into the 1990s it was still largely a white-collar business concept and remained, for agriculture at least, somewhat of an extension aspiration. The Cotton BMP is one of Australian agriculture's first attempts to develop a formally structured BMP process.

While the *Land & Water Management Module* was released in 2005, it had been on the drawing board from around 2000. Its development had been delayed by the cotton industry's engagement in water reform process. In Queensland, for example, the requirement for irrigators to have Land & Water Plans helped drive the development of the module, but also provided the opportunity for the module to be incorporated into

compliance arrangements – a process that required some consultation as well as technical consideration.

The original module development was also delayed by industry debate as to just how much the BMP process should be broadened. The concern here was that part of its effectiveness was based on its focus on pesticides. Another concern was whether cotton growers already had enough 'on their plates' and that more time might be needed to bed down the original module process.

Under the guidance and authorship of Allan and John Williams, the *Land & Water Management Module* was prepared and incorporated into the BMP in 2005. The two brothers each had legal training as well as farm management experience. Allan concentrated on a rigorous and objective process of distilling the literature on appropriate land, water and vegetation management into easy-to-follow guidelines, while John prepared summaries of relevant legislation so that growers could readily grasp their rights and responsibilities. Feedback on drafts was provided by a project steering committee (the BMP Committee), largely comprised of cotton growers.

Allan Williams suggests that the four-point scale adopted by the module is based up work undertaken in the US by ecologist, Gary Jackson. The writing process was followed by industry-lead consultation with key stakeholders and other researchers, particularly through the conduct of regional workshops.

One of the BMP's more vocal advocates, Mike Logan, a cotton grower from Narrabri, was the first farmer in Australia to have an environmental management system (EMS) certified under the ISO EMS process. The similarities between the Cotton Industry BMP Program and the requirements of EMS are clear, and it was natural for the Cotton Industry to become involved in the Australian Government's EMS National Pilots Program in 2003. This relationship showed that the cotton industry was keen to broaden its BMP beyond its pesticide focus to embrace other natural resource management issues. It also enabled the Land & Water Management Module to be further promoted during its initial implementation phase.

One of the researchers interviewed during the consultation process noted that the BMP process is '*very tightly held to the cotton industry's chest*' and that the original consultation process was limited as 'the industry basically knows what needs doing'.

Defining biodiversity, threats and targets

The *Land & Water Management Module* does not attempt to explicitly define biodiversity, nor does it make explicit what specific biodiversity threats it is responding to or the assets it is protecting. It is, after all, part of broader BMP Program, and deals with wider issues of natural resource management.

That said, it is clearly relevant to the protection, maintenance and even enhancement of both fauna and flora through several means:

⇒ improving water use efficiency to minimise tailwater runoff and reduce water diversions (protection of aquatic habitat);

⇒ protecting habitat for the harbouring of beneficial predator species;

⇒ maintaining and improving soil biotic activity;

⇒ maintaining healthy weed free native vegetation, including in riparian buffers;

⇒ implementing wetland-friendly grazing regimes;

⇒ reducing or eliminating hazardous chemicals;

⇒ monitoring nitrate and other chemical leaching and runoff; and

⇒ managing weeds and feral animals across the whole farm.

Targets can relate to programs such as the BMP in two senses. In one sense, targets can be applied to the total number of people adopting a given practice or set of practices, and/or the physical area of reach these practices cover. In another sense, it can be applied to the quantitative or qualitative extent to which the practices are adopted within individual operations.

In the case of the former, Cotton Australia set a target of 60% of growers being introduced to the original BMP process in 1999. By 2003 it had exceeded all expectations and delivered change management to at least 80% of cotton farms (Macarthur Agribusiness 2004), although only 30% have gone through to the stage of independent auditing.

For the Land & Water Management Module, the target for introduction was set at 30% between October 2004 and October 2005. By January 2006, 18% had been introduced, 8% had participated in self assessments and 0.4% has gone through to audit.

Several forms of monitoring takes place. The first is industry level monitoring, where Cotton Australia and the CRDC have funded a number of external reviews of progress being made in terms of adoption of the BMPs. Such reviews provide the kind of adoption statistics referred to in the previous paragraph. Two significant reviews have taken place, in 2003 by Macarthur Agribusiness and in 2006 by Hassall and Associates. A project to develop the BMP Program into an EMS also reviewed industry progress on environmental activity.

The various catchment management bodies are also involved in monitoring grower activities, and in some cases such as with the Namoi CMA, the bodies link participation in the Land & Water Management Module process with eligibility for on-ground works such as subsidies for fencing native and/or riparian vegetation. A representative of the Namoi CMA, however, suggested that while the CMA could provide data on total kilometres of fencing put in across the catchment, it could not disaggregate this on an industry-by-industry basis.

Another form of monitoring takes place on farm, whereby growers who adopt the module measure their progress against the goals and targets they set for themselves in their farm plans and against the four-point assessment criteria set out in the module's worksheets.

Biodiversity outcomes

The *Land & Water Management Module* has only been in place since 2005 and to date has not been evaluated comprehensively. The EMS study notes, however, that adoption of the module has been greatly less than that experienced for the original, which largely dealt with pesticides. A key finding of the study is quite telling:

> With NRM, however, there doesn't yet appear to be drivers of the magnitude we saw back in the 1990s for chemicals, and this coupled with the fact that science has not yet provided enough guidance for some issues on cause and effect and best practice approaches to ensure desired results are achieved, and the lack of availability and access to resources required to implement the Land & water Management module, is creating a bit of uncertainty and maybe apathy on behalf of growers in terms of adoption.

A benchmarking study undertaken by Cotton Consultant's Australia Inc in 2006 showed that BMP accredited growers are more likely to plant native vegetation along waterways, provide alternative watering points for stock, and monitor feral animal species.

The anticipated outcomes from the *Land & Water Management Module* are extensive, and the following snippet covers those closest related to biodiversity:

⇒ improvements in on-farm natural resource management, resulting in a more sustainable industry;

⇒ industry members who are educated and skilled in responsible natural resource management;

⇒ demonstrated environmental and natural resource management stewardship by industry participants;

⇒ closer liaison with catchment management groups regarding the achievement of catchment targets;

⇒ increased capacity of growers to deal with resource use issues on a local, catchment or regional scale;

⇒ more sustainable use of natural resources on farms;

⇒ minimised environmental impacts from cotton production practices and activities; and

⇒ improved monitoring (due to audits every few years) of risks associated with the cotton farming.

Strengthening monitoring and learning mechanisms

As previously stated, the level of monitoring in the Cotton Industry BMP Program is considerable and the industry has an excellent handle on who and how many of its members have participated in the BMP process. These reviews, however, are largely based around participation and adoption levels, and although attempts are made to outline the environmental benefits, they tend to be qualitative in nature, particularly in respect to native vegetation and biodiversity. The studies, for example, do not indicate how many hectares of treatment or kilometres of fencing have taken place. By the same token, the catchment bodies also struggle to provide this level of information at the industry level.

As a learning system, the BMP process is excellent. It is based on concepts of continuous learning at the farm level. BMP workshops and

farm-walks also enable growers to share their experiences and learn from one another. The demonstrated benefits of the continuous learning process, underpinned by formal audits, are described by the Australian Cotton Growers Research Association:

> The audit identified a direct link between the areas of improvement observed on the properties and the BMP modules available to the growers at the time of the audit. Farms that had undertaken their second BMP audit showed real improvements in environmental management, and the auditing process provided a benchmark to indicate that progress had been made. It was observed that farms practicing BMP generally had better environmental management practices, as well as superior documentation and records management.

At the institutional level, the regular review of the BMP process enables the industry to consider when and how to adapt the best management principles that are advocated. However, because targets are more directed towards adoption than impact, the feedback loop has some limitation. It is here that there is opportunity for the industry to be working (even more) closely with the catchment management bodies, particularly in respect to their monitoring and evaluation activities. In order for this to be effective, however, the catchment management bodies also need to focus more on impact than output.

What to sow, grow and throw

The *Land & Water Management Module* builds upon a highly successful BMP process that is highly regarded across many agricultural industries as the benchmark for dealing with environmental issues. The impact that the original BMP process had on the pesticides issue is also widely acknowledged. Within the cotton industry, the BMP process is lauded by participating growers, and this is reflected in the high adoption rates of its early versions. The decision to add a module dealing with other NRM issues was therefore logical.

The major issue confronting the *Land & Water Management Module* is its voluntary basis in the face of the lack of market incentives. Few consumers presently translate their environmental sentiments into willingness to pay more for products. Closely associated to this, few retailers see the opportunity to extract a premium from sustainably produced products. From an environmental outcomes perspective, the ability to link actions on farm to landscape scale change is difficult. These challenges have translated into considerably less participation in the *Land & Water Management Module* than the previous BMP versions that dealt with issues very much in the regulatory spotlight. The pursuit of market based approaches to environmental outcomes still requires further thought and support if BMP processes are to grow and adapt.

While the *Land & Water Management Module* does not cover biodiversity issues comprehensively, the industry is a major supporter of the Cotton Catchment Communities CRC which does take a broader view. That said, there is a good alignment of the components of the module and the targets set out in relevant catchment management plans. That this alignment also provides linkages to on-ground incentive programs bodes well for adoption of practices that meet biodiversity outcomes.

The benefits and impacts of the Land & Water Management Module

Adoption levels of the Module are to this point in time disappointingly low, but this is against a backdrop of the faith placed in it following the phenomenal success of the Cotton BMP initiative in respect to dealing with pesticides.

The Cotton industry continues to promote the module and sees it as an important part of the industry's response to environmental issues, including biodiversity.

Short-term benefits: Improved awareness of the role of vegetation in productive landscapes, particularly as habitat for beneficial species in integrated pest management programs. Compliance with requirements in order to receive on-ground incentives provided by catchment management organisations for fencing remnant and riparian vegetation. The Module also reminds growers, in plain english, of their duty of care and responsibilities under various land and water management legislation.

Mid and long-term benefits: A landscape approach to undertaking agricultural activities, including matching land use to land capability, with maintenance of natural landscapes seen as part of a productive system..

Interviews:

Allan Williams, Cotton Australia, Narrabri

Sheila Donaldson, Namoi Catchment Management Authority, Tamworth

Nick Reid, University of New England, Armidale

Bruce Pyke, Cotton R&D Corporation

Sources of information:

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Case study 7: Breathe Easy (National)

The institution and its response

Greening Australia (GA) was formed by the United National Association of Australia and the Nursery Industry Association of Australia in 1982 to mark the Year of the Tree. On World Environment Day that year, the Prime Minister of the time announced the establishment of the National Tree Program, which aimed to reverse tree decline throughout Australia. Greening Australia provided the non-government arm of the National Tree Program.

With representation in every state and territory and a national office in Canberra, Greening Australia became the primary focus for non-government tree projects. Since 1982, Greening Australia has played a pivotal role in some of the country's largest environmental initiatives including the One Billion Trees Program, Bushcare Support, Exchange and Green Corp. Most of these programs have been delivered for the Australian Government. Currently, Greening Australia is the largest not-for-profit environmental non-government organisation in the country, employing 400 staff in 47 locations nationwide. The organisation has achieved international acclaim with inclusion on the United Nations Global 500 Honour Roll in 1998 for outstanding achievement in environmental protection, and received the Prime Minister's award for its 25-year partnership with Alcoa of Australia.

Greening Australia has undergone a natural evolution over the years - from a tree-centric to a landscape-focused organisation. The organisation's mission now is to scale up and intensify its work, engage communities, draw upon the best science and apply years of practical experience to conserve and repair the nation's most important natural assets. In recent times Greening Australia has undergone a transformation with the appointment of a science leader, a new sophisticated web-site and a strong move into the area of carbon sequestration through tree planting. The organisation has been looking at carbon as an 'ecosystem service' from native vegetation for several years, but the market hasn't been ready to deal with such services until recently. If this bold move into the carbon market works, it will reduce the dependency of the organisation on short-term government programs.

The *Breathe Easy Program*, which was launched in mid-2007, is one element of the new approach being taken by Greening Australia. The Program is promoted as a premium carbon neutral product that provides a 3-in-1 solution to global warming. *Breathe Easy* focuses on mass planting of a mix of species to offer a combination of 1) Carbon Offsets, 2) Landscape Recovery and 3) Nurturing Biodiversity. The focus will be on large-scale planting of a broad mix of local tree and shrub species. Large-scale tree planting in strategic areas is seen as a way to assist landscapes recover, while planting a combination of local grasses, shrubs and trees creates food and shelter for wildlife. This approach is considered more resilient (less risky) than monoculture planting schemes for carbon offsets, where only one species is planted.

Breathe Easy is designed to meet the Kyoto Climate Control Treaty and the NSW Greenhouse Gas Abatement Scheme, and the Australian Government's Greenhouse Friendly Initiative. Breathe Easy guarantees that trees will remain in the ground for 100 years and be secure through

title; ensures planting will occur in the right places, at the right time of year and at the right scale; and provides a range of risk management strategies including insurance, over-planting and appropriate fire, weed and pest management. Greening Australia also guarantees that with careful management the diverse plantings will survive to maturity and establish permanent plant communities. All trees planted will meet a range of criteria including complying with international standards such as the plant species used must reach a mature height of at least 2m.

The Gondwana Link project in south-west Western Australia is used as an example by Greening Australia of one of the key re-vegetation projects *Breathe Easy* collaborates with in regions of high biological significance. Together with its partner Bush Heritage Australia, Greening Australia has acquired a number of large properties in south western WA for protection and mass native vegetation planting. Supporters of *Breathe Easy* are informed that they will be helping to protect and foster thousands of species of native wildlife and plants, while restoring the ecological 'link' stretching from Kalgoorlie to the Karri.

Developing the Breathe Easy Program

Because *Breathe Easy* is a commercial operation, some elements of the initiative remain commercial-in-confidence. No broad public consultation was undertaken in the initial stage of development, although growing public concern about climate change was certainly taken into account. The landscape planning process however was a participatory process.

Breathe Easy does not seek government commitment, except where government agencies or business enterprises act to direct investors or support R&D. The program runs on a commercial basis with the expectation of internal returns. Its focus is on corporate and other large clients. It is difficult for the non-government sector to raise the sort of money needed to enter the carbon market, and so innovative approaches such as participation in *Breathe Easy* are required.

Defining biodiversity, threats and targets

Breathe Easy is working on a definition of biodiversity that is ecologically robust and operationally practical. The aim is to have this in place around June 2008. In terms of restoration, the program is looking for tangible improvements, which are still to be defined. Biodiversity is one of three main objectives that Greening Australia is now focusing upon, the other two being water quality and sustainable livelihoods. The *Breathe Easy* program is seen to focus on vegetation and restoring ecosystems and biodiversity at the landscape scale.

Breathe Easy has set a goal of revegetating 30,000 hectares over 3 years. This is an aspirational goal, but is considered achievable if the right intellectual and financial resources are in place. Greening Australia acknowledges supply constraints such as the lack of available land, seed, people and techniques for large scale revegetation. The organisation has been addressing some of these issues by building new industries such as native seed supply businesses, which have doubled in the last 30 years. Support for the native seed industry is provided by Greening Australia through its *FloraBank* service established in 1998 with support from the Australian Government. This service shares the best available knowledge

from research and practice in native species seed management. It is seen as an important mechanism for the seed industry to scale up to meet demand for large scale carbon plantings.

Gondwana Link is one of the 'inspirational projects' identified on the *Breathe Easy* website where Greening Australia has undertaken large-scale revegetation projects. The partners have identified, through a Conservation Action Planning process supported by The Nature Conservancy, a few key conservation assets to focus on in relation to biodiversity outcomes, including wallabies, proteaceous shrubs and water quality. This provides a manageable set of assets to improve and monitor their status.

Breathe Easy is using large-scale restoration to target the impacts of climate change and fragmentation, which are threats operating at a range of scales. The scale of commitment is matched to the scale of threat. External collaborators suggested that the program was addressing habitat loss and the maintenance of native flora and fauna in the landscape.

Biodiversity outcomes

Breathe Easy commits to quality assurance for its carbon sequestration via periodic third party audits. Long-term monitoring of the carbon planting assets is guaranteed on a 100-year title and will be ascribed through a Forestry (Carbon Sequestration) Right, or equivalent. At the moment Greening Australia is seeking to have the product certified through the Australian Government Department of Climate Change and Water (formally the AGO). In the first instance Greening Australia will hold the title of the land, as this is the simplest model for certification by the government. It will also look at leasing arrangements. An external observer felt that a lot more work was needed on third party auditing and that there may not be enough skilled people to do such audits.

The carbon market is compliance driven. At the moment there is no requirement to report on biodiversity outcomes of carbon offsets. Greening Australia is committed to do this to demonstrate the biodiversity outcomes of its activities to their clients, as this is its 'point of difference'. One of the interviewees stated that monitoring for biodiversity will only be seriously undertaken in Australia if it is made a legislative requirement and has a dedicated budget commitment in the national budget. Currently, the monitoring undertaken by the Bureau of Meteorology is the only example of this.

A web-based, spatially explicit data system is being developed that will be able to demonstrate who does what, when and why in terms of the *Breathe Easy* revegetation sites. Demonstration sites for the database have already been built, so the process is well underway.

Greening Australia is currently developing a monitoring and evaluation (M&E) program to demonstrate where plants are grown, how many plants are grown, if they are still alive etc. The *Conservation Action Planning* (CAP) program developed by The Nature Conservancy, and used by Greening Australia, provides clear M&E criteria and identifies targets and assets. It is envisaged that the M&E program will take a couple of years to put into place.

Strengthening monitoring and learning mechanisms

Adaptive management will be embedded in the M&E program that is currently being developed by Greening Australia. It is a major component of the CAP approach. External stakeholders were unaware of the M&E arrangements of the Program at the time of interview, which is not surprising at this early stage. It is not possible to comment further on how to strengthen either the monitoring or learning mechanisms being adopted by *Breath Easy* when the details are not available.

What to sow, grow and throw

The carbon trading market is expanding rapidly, with some experts estimating the market will be worth US$2.3 trillion in five years time. The post-Kyoto agreement that is currently being negotiated will have an impact on how this market plays out, which in turn will have a major impact on the success of *Breathe Easy*. It will be important to have commitment to a carbon market at the national level.

There is an opportunity for Australia to change the carbon market dynamics in the post-Kyoto Protocol negotiations currently underway. Greening Australia is engaging with government in terms of policy related to public good as part of the carbon market. *CarbonSMART* (the Landcare carbon program) would also like to see biodiversity included in the carbon trading market. Single species plantings for carbon offsets have a lower cost, but also can have perverse outcomes such as affecting the hydrology of a system. Potential tensions between growing plants for carbon and biodiversity outcomes are evident e.g. the highest growth rates for carbon are generally not in the areas where restoration work is being undertaken.

It was identified that standards for biodiversity-related carbon initiatives are needed. Current rules such as the Kyoto Protocol requirement that plants must be greater than 2m at maturity have implications for including understorey and smaller species in carbon plantings. Understorey species can be included in Kyoto compliant carbon, if the overstorey grows to >2m and has a >20% projected cover. This means that woodlands and their grassy understorey will count, but not grasslands. The price of carbon will determine how much biodiversity can be incorporated into the plantings, but currently the carbon market won't pay for public good outcomes. If the carbon price goes to the upper bounds that are predicted, there would be greater scope to undertake non-Kyoto restoration. It is felt that carbon won't provide all the funds for biodiversity restoration (e.g. orchids don't sequester much carbon), so Greening Australia will look for additional funding sources.

Breathe Easy is focusing on larger customers, where the transaction costs of doing business are lower. The website has been developed to support these clients and their staff. At the time of interview, Mirabella Lights had just signed up to the *Breathe Easy* program. The company saw the benefit in co-branding, with the message that trees would be planted to achieve triple-line benefits. Other potential deals are under negotiation. Most recently, the Tasmanian Government has announced that it will use the *Breathe Easy* program as one way to address the greenhouse emissions of the Tasmanian Government, with plantings only occurring in Tasmania. Running and maintaining a major program like

Breathe Easy is costly, so similar or bigger deals are needed to make the program a success.

Currently the *Breathe Easy* program can't afford the transaction costs associated with obtaining extensive household-level participation, which would need significant expenditure on expensive television advertisements and so forth to attract. Small to medium sized enterprises also come with high transaction costs. The program could potentially target households and smaller businesses as clients if it could negotiate in-kind support from advertising agencies or media outlets, for example. Educating the market, both nationally and internationally in terms of carbon offsets and biodiversity is required. This will help raise funding opportunities that could lead to multiple carbon and biodiversity outcomes.

One area that was identified as needing more information was the carbon sequestration potential of native species. Most information on growth rates in the past has come from forestry, but some research by Greening Australia in south-west Western Australia is measuring the yields of a more diverse range of species. A mechanism is needed to share the growth data and bring it into the public arena. More research is also needed on mechanised techniques for large-scale restoration (something could be learnt here from the agricultural industry). An eye will need to be kept on the availability of native seed for planting large areas, which is mentioned earlier in the case study.

The two external observers felt that there was a need for increased community awareness about carbon trading and it's relation to the environment. Generally, there was felt to be a lot of misinformation around and fraudulent claims being made about carbon offsets. It is important therefore that credible information is given to the community by *Breathe Easy* and that it can substantiate the claims it makes. An opportunity was identified to build a partnership between *Breathe Easy* and *CarbonSMART*, and one or two other initiatives, so that they could work together and demonstrate a concerted approach to carbon management. There was concern that if communication was not done correctly, carbon offset programs have the potential to take the limelight away from other key priorities related to sustainability and environmental conservation.

It was identified by some respondents that it is difficult to find people with the right skills to work in the carbon offset area due to the high demand for people with NRM experience.

Benefits and impacts of Breathe Easy

Short-term: The *Breathe Easy* program has at least two clients (one corporate and one government) as well as a modest number of household participants. Greening Australia is increasing awareness about the links between carbon offsets and biodiversity outcomes. The program is still in a development phase in terms of definitions, monitoring and evaluation, data storage and adaptive management. The commitment to biodiversity outcomes, however, appears strong and the income from carbon offsets has the potential to change the nature and scale of restoration works in southern and eastern Australia in particular.

Medium-term: The price that is paid for carbon will influence how much effort can be put into the biodiversity component of plantings. *Breathe Easy* recognises that carbon-based motivation will not be the only source of funding for biodiversity, so will look for investment streams if required. As the market becomes more sophisticated and Greening Australia looks for further 'points of difference', *Breathe Easy* will need to be able to demonstrate the biodiversity as well as the carbon benefits of the scheme.

Long-term: Plantings done by *Breathe Easy* are guaranteed for 100 years. As the plantings are planned to be large-scale and incorporate a diversity of local species, its actions should have significant long-term benefits for biodiversity.

Interviews:

David Williams, National CEO, Greening Australia

David Freudenberger, Science Manager, Greening Australia

Matthew Reddy, CarbonSMART, Corporate Offset and Sponsorship Enquiries, National Sales Director

Grant Axman-Friend, Sustainable Insight, Brisbane

Numerous attempts were made to contact Joe Mirabella, who was the first (and until very recently the only) major corporate sponsor of Breathe Easy. Despite this, it was not possible to organise an interview.

Sources of information:

Breathe Easy website: http://www.breatheeasynow.com.au/html/how/

CarbonSmart website:
http://www.carbonsmart.com.au/Page/For+Individuals/Overview+of+CarbonSMART.aspx

Case study 8: Northern Territory Integrated Natural Resource Management Plan (Northern Territory)

The institution and its response

The Natural Heritage Trust (NHT) was established by the Australian Government in 1997 to help restore and conserve Australia's environment and natural resources. The NHT includes a range of programs and activities, the most significant of which are directed through regional bodies. There are 56 NHT Regions in total, 21 of which are also associated with the National Action Plan for Salinity and Water Quality (NAP). As with NAP associated regions, NHT regions involve a variety of organisational models varying in their statutory basis and formality, depending on the State in which they are associated. In March 2008 the new Australian Government announced a program called 'Caring for Our Country' that effectively replaces the NHT and NAP. The program reduces the amount of direct funding that the Australian government allocates to regional groups and establishes a competitive funding process to deliver activities against a set of six national priorities. Regional groups can bid for these funds, alongside other groups such as non-government organisations, universities and private consultants.

For the purposes of this report, the Northern Territory Natural Resource Management (NT NRM) region was selected as the case study for the regional model. The Northern Territory is considered as a single natural resource management region with a population of only 206,000 living in an area of 1,347,000 square kilometres (one-sixth of Australia's land mass). This means that the region is equivalent to the whole territory – no other jurisdiction in Australia has only one NRM region covering its full landmass. Grazing leases (47 percent) and Aboriginal freehold land (44 percent) are the dominant land tenures. These factors make the region an interesting contrast with the more established and smaller regional groups such as those in Victoria, which include the catchment management authorities that were established by state legislation in the early 1990s in advance of the NHT.

The NT Integrated Natural Resource Management (INRM) Plan was accredited in 2005, after taking around a year to develop. Prior to the development of the NT INRM Plan, the NT had no over-arching strategy or framework for natural resource management to guide its investment or on-ground activities. The process of developing the INRM Plan operated in parallel to the development of the NT Parks Conservation Masterplan, with considerable overlap between the documents. Implementation of the Masterplan has been flagged to cost around $200 million and is yet to be endorsed by the NT Government. A further reason for choosing the NT NRM region as a case study to include in this report was that the Daly and Mary Rivers sub-regions of the NT were evaluated in 2005 as part of a larger project on the biological outcomes of regional investment (Burnside 2005). By revisiting the region in early 2008, around 2 years after it was accredited, it was felt that some useful lessons could be learnt.

The Landcare Council of the Northern Territory (LCNT) was 'thrust' into the role of developing the NT INRM Plan, which caused considerable difficulties (Burnside 2005). The LCNT was an advocacy body, which had

representatives from a number of sectional interest groups, so was not designed to develop an NRM plan. It had no staff, was not an incorporated body and relied almost totally on the Department of Natural Resources, Environment and The Arts (NRETA) for services and support. Oversight of the INRM Plan by the Landcare Council ended on September 30th 2005, after the plan was signed-off by the Australian and NT governments and when the initial round of projects were being developed. The Council still continues to undertake other important roles in the NT, acting as a representative, advisory and community reference group to and for the Minister for Natural Resources, the Environment and Heritage.

The new NT NRM Board, which is skills and knowledge-based, was established in November 2005 as a non-profit, incorporated association. The Board has seven members (compared to between 12-16 on the Landcare Council), with a small number of staff to support it. The largest investment in staff continues to be in the facilitator/ coordinator network, which includes over 30 local, regional, Indigenous, Landcare and Australian Government positions. The facilitators/coordinators are funded differently, are under the control of different organisations, and are approved in different ways. New changes to Australian government NRM funding means that the future role of some of these positions is uncertain. The role of the Board is to provide strategic coordination of NRM in the NT and oversee the investment of NHT and NAP funds. This includes overseeing the implementation of the INRM Plan and the development of further plans and investment strategies. To date, the Board has managed the initial regional investments identified by the Landcare Council (2004-2007) and developed a 2007-2010 investment strategy for the NT. Currently funding is guaranteed until June 2008 with extensions approved for some projects. The changes to the regional model introduced by the new Australian government will have an impact on the implementation of the remaining years in the 2007-2010 investment strategy.

Developing the NT INRM Plan

The INRM plan acknowledged some unavoidable constraints to getting comprehensive community input into the plan – a relatively short planning timeframe (around a year from start to finish) and the difficult logistics of engaging and involving all stakeholders across the territory. Despite these constraints, three rounds of consultation were undertaken with a broad group of stakeholders. An outline of the consultation process is included in the INRM Plan, as well as a more detailed internal publication that was written to document the consultation process and what came out of it. Ongoing consultation is undertaken through the regional investment strategy process and more broadly through the facilitator/coordinator network.

Burnside (2005) reported that all of those consulted for their evaluation (of biodiversity outcomes from the regional investment process) stated that the process of strategy development was difficult for a number of reasons. For example, it was reported that haste required the use of processes some stakeholders saw as being poor, with limited time available for feedback on written material. In contrast, those interviewed for this case study overall felt that the consultation process was comprehensive, given the time available for the development of the plan. The key message from both evaluations is that the timeline set for the

development of the plan should have been longer. In hindsight, one individual felt that the opportunity to embed the INRM Plan into wider NT government business was missed during the consultation phase.

Indigenous people represent 28% of the population in the NT and Aboriginal freehold land covers 44% of the Territory. Joint management of national parks is also widespread. Consultation with indigenous people is therefore a key element of the process. Consultation with remote Aboriginal communities was undertaken primarily through input from Land Councils and Indigenous Land Management Facilitators. It was acknowledged that this approach was not ideal, but within the timeframe available, it was not possible to visit all of the remote communities. A more fundamental point was raised during the interviews: no amount of consultation with indigenous communities matters if the language and content of the plan do not relate to indigenous language and beliefs.

The other main land manager in the NT is the pastoral industry, which leases nearly 50% of the territory to graze cattle. This means it plays an essential role in the management of biodiversity. Five main pastoral groups (including the Barkly Landcare group) are found in the NT. The industry considered that the consultation for the development of the INRM Plan was good, but was disappointed that the first representative of the pastoral industry was nominated to the NRM Board in November 2007, two years after it started. This highlights some of the challenges changing from a representative group like the Landcare Council to a skills based Board.

The total amount invested between 2004-2007 by the NHT in biodiversity programs in the NT was $4,530,000. Matching and in-kind resources provided by the NT was $10,111,000, leading to a total of $14,641,000 allocated to biodiversity programs over this three year period. A further $21.12 million was invested in 'Land Programs', $16.31 million on 'Inland Water Programs' (which includes some NAP funding) and $19.76 million on community knowledge and institutions. All of these additional programs have potential implications for biodiversity. There was a widespread perception that the money given to the NT through the NHT was allocated according to the NT's population or the number of its electoral seats, but the Australian Government indicated that other criteria were used.

The focus of the NRM Board to date has been getting the money expended due to tight time lines. Developing partnerships to invest in NRMB projects, (for example with industry groups) is considered an important way forward. The Board is being proactive, with a sub-committee set up to examine carbon trading and cooperation with a key group working with indigenous land managers and carbon offsets underway. The West Arnhem Fire Management Agreement was put forward by several people as an example of where greenhouse gas abatement can help both the environment and indigenous employment and a model that the NRMB could consider. The program is a partnership between Darwin Liquefied Natural Gas (DLNG), the Northern Territory Government, the Northern Land Council and relevant Aboriginal Traditional Owners and indigenous representative organisations, formed to implement strategic fire management across 28,000 km2 of Western Arnhem Land for the purposes of offsetting some of the greenhouse gas emissions from the Liquefied Natural Gas plant at Wickham Point in

Darwin Harbour. The project aims to reduce greenhouse gas emissions as well as conserve environmental and cultural values in the project region, which is equivalent to the adjacent World Heritage-listed Kakadu National Park.

In the evaluation by Burnside (2005), there was a large number of potential (and actual) co-investors identified that the NRMB could work with. Some investors such as the Department of Defence and Aboriginal Land Councils will naturally have a higher profile in this region than in others. Burnside noted that the amount of anticipated investment, and the sustainability of the sources was not clear in all cases from the Regional Investment Strategy. As the INRM Plan evolves, so too will the partnership opportunities.

Currently the vast majority of investment in NRM in the NT is public, with most people interviewed saying that the benefit from the investment is 100% public. Some interviewees felt that the pervasive nature of threats such as inappropriate fire regimes and invasive weeds meant that large amounts of money could be invested with uncertain outcomes. The need to prioritise this investment was acknowledged amongst those interviewed. Identifying 'hotspots' in the NT Parks Masterplan was considered one way of doing this.

Defining biodiversity, targets and threats

Biodiversity is defined in the NT INRM plan as '*the variety of all life forms: the different plants, animals and micro-organisms, the genes they contain and ecosystems of which they form a part. Biodiversity is life.*' The plan recognises that biodiversity includes terrestrial, inland waters, and marine and coastal elements, and the plan is organised into these three elements. Aspects of biodiversity management (e.g. fire) are included in other sections. Native vegetation and threatened species have particular emphasis.

Stakeholders who were interviewed for the case studies had different perspectives on biodiversity, depending on their world-view. One person said there were as many operational definitions as there were stakeholders, with some focusing on threatened species, some on vegetation and others on threatening processes. This was reflected in the interviews. Pastoralists defined biodiversity as 'healthy country/productive landscapes' and felt that aiming for pre-1788 community composition was not a useful goal. Biodiversity was described as a foreign term to indigenous people, although they have an understanding of what it means and use the word. Importantly however, it doesn't coincide with how they relate to country. It was considered very hard to capture the indigenous connection with country – simply, they just have a feeling. It can be hard, for example, for non-indigenous people to understand that a rock can be a site of significance.

The NT INRM plan sets out a number of targets and objectives that relate to terrestrial biodiversity. Targets emerged first as desired outcomes from public consultation processes, and were converted to targets and validated in a series of technical workshops (Burnside 2005). A major source of detailed guidance was the NT Parks and Conservation Masterplan (Department of Natural Resources, Environment and the Arts 2007). Finally, there was some further CSIRO input and checking.

The aspirational target for the INRM Plan is '*By 2050, the NT's terrestrial biodiversity will be conserved through effective and informed management to sustain environmental, cultural and economic values of Northern Territorians*'. As with all regional plans developed through the NHT, the INRM Plan also has specific Resource Condition Targets (RCT) and Management Action Targets (MAT). Examples of two of these targets that relate to terrestrial biodiversity follow:

> <u>Resource Condition Target 3-3</u>: By 2020, there will be no decline in the conservation status of any 2005 listed threatened species or communities, and no additional species or ecological communities will require formal listing as threatened as a result of continued threatening processes.

> <u>Management action target 3-7</u>: By 2010, all sites of national and international conservation significance are identified, and conservation protection (including establishing collaborative management for biodiversity conservation) of the set of these sites is increased by at least 50% from 2005 levels. (This MAT is linked to RCT 3-3 above).

Perspectives on whether the targets were realistic and measurable varied. There was overall agreement that the aspirational goal was just that – aspirational – and wasn't meant to be realistic. The management action targets, and to some extent the resource condition targets were considered realistic and measurable if the resources were available. Having said that, it is clear that many of the timelines that have been identified in the current NRM plan cannot be met with the current level of resources. With the planned revision of the NRM plan over the coming months, it is the goal that the targets will become more focused and strategic (noting that the impacts of the Caring for Our Country program on the revision is uncertain). When Burnside asked a similar question in 2005, the objectives and targets were considered ambitious given the limited number of people able to carry out required tasks, even though they were thought to be achievable bio-physically. There was also a view that targets and setting priorities may have been more precise if the NT was separated into a 'tropics region' and an 'arid region'.

The three main threats identified by the majority of people interviewed for this case study were 'fire, weeds and feral animals.' Several people also identified a lack of resources (both human and financial) and capacity as a threatening process, with remoteness being a particular limitation. The lack of strategically placed facilitators with continuity of positions was also seen as a threat. Other threats identified by one or two individuals were land clearing (and associated water use), disease and unmanaged lands such as some crown and aboriginal land. 'Canberra' (i.e. the Australian Government) was also identified as a threat in the context of the process they had in place for regional delivery at the time. Some of the threats to biodiversity that were identified, such as feral animals, were seen to be outside the land management aims of indigenous people. They managed these species however to address the priorities in the NRM Plan.

In 2005, the main threats to terrestrial biodiversity were identified as (i) fire, (ii) invasive species, (iii) some human ideas about the value of these species, (iv) inadequate information and baseline data, including

the recording and documentation of Indigenous knowledge (Burnside 2005). The logistical difficulties of accessing all of the NT and the limited human resources available for such as large area were also regarded as threats to all biodiversity, or at least as important barriers to taking action.

Biodiversity outcomes

Projects such as the Parks Masterplan and the recent report on threatened species in the NT (Woinarksi *et al*. 2007) have underlying sets of data that form an important baseline for the NT. In terms of on-going monitoring, people interviewed for the case study had different levels of understanding about what was underway in the Northern Territory. Overall they were able to identify a handful of projects at the most, some of which focused on monitoring biodiversity itself and others on monitoring threatening processes such as altered fire regimes. It is interesting therefore that Griffith *et al*. (2007) identified 42 biodiversity monitoring programs conducted by science-based organisations in the Northern Territory and 26 community-based programs (not including programs on feral animals). The difference between what is underway and what people are aware of reflects the need for a centralised database on monitoring projects. While individual databases exist for some of the major projects such as remote sensing of fire regimes, there is no one coordinated system to access monitoring information. The 'Land Manager' database, which is hosted by the Tropical Savannas CRC, could provide a possible holding place for such data although at the moment the information it holds is at a fairly broad level.

Some of the interviewees felt that the State and Australian governments had the main responsibility to identify standards, undertake the monitoring and store the data. Having close links to government were therefore considered important. Greater advice from the Australian Government on 'matters for targets' was identified, which reflects the findings of the latest National Audit report on the regional delivery model. The need for the NRM Group to have a monitoring and evaluation system that allows them to report on the outcomes of the projects they fund was acknowledged. This system is currently being developed with the assistance of an M&E expert in the NT Government who was funded through the NHT. The value of undertaking retrospective monitoring of earlier projects funded by the NHT was also identified. Having access to the findings of these reports before further investment decisions were made was identified as an important process to put in place.

A comprehensive monitoring strategy for biodiversity has just been published in the Northern Territory (Griffith *et al*. 2007), which should help the deliberations in the region. As noted previously, the report identified 42 biodiversity monitoring programs conducted by science-based organisations in the Northern Territory and 26 community-based programs. The majority of these programs focused on threatened species. Given the range of programs already in place, it was considered futile to provide a 'one size fits all approach' to monitoring the outcomes of current and future biodiversity conservation projects.

The report concludes that implementation of biodiversity monitoring program across the NT needs to realistic, evidence-based and staged due to constraints on capacity and funding. The recommended approach is that:

⇒ Implementation should focus initially on strengthening threatened species programs to ensure monitoring is adequate for existing goals. Developing monitoring protocols will assist in this activity;

⇒ Following this, targeted management experiments, prioritised on threatening processes having greatest risk to biodiversity, should be implemented in specific areas where the threats are greatest; and

⇒ Surveillance monitoring and landscape monitoring should be implemented on a continuing basis following the validation of cost-effective sampling methodologies.

Because of the patchy nature of the monitoring programs currently in place, there is no way to systematically report on whether the biodiversity targets identified in the NRM Plan have been met. Once the current information is consolidated, it may be possible to provide more coherent reporting at more than the project level.

The time identified for biodiversity assets to respond to changes in management was variable. In the 'Top End' of the NT, it was considered that a successful response could be seen in 3-5 years. In the drier rangelands, it was felt that responses could take much longer – between 20 – 50 years. Both rainfall and fire were identified as important drivers of these responses. The reliable annual rainfall in the north was identified as an important factor in the speed of the response. Behavioural responses could occur quite quickly, depending on the circumstances. An example that was given was the requirement of funding for groups to work collaboratively. This changed behaviour overnight, as many people who had previously not worked together put in joint funding proposals.

Strengthening monitoring and learning mechanisms

The feeling overall was that there is little experience of adaptive management in relation to biodiversity outcomes in the NT, including in NT NRM. While it can occur at the project level, an overall framework was not in place. Griffith *et al.* (2007) identified that adaptive management can work well in some situations but provides little information in others. Having clear management objectives was identified as a critical step to linking monitoring results to decision making. The examples given in Griffith *et al.* (2007) could help develop a stronger and more targeted approach to adaptive management. These authors also recommended that community-based monitoring could be enhanced through establishing a web-based facility for data storage and reporting and that overall communication could be strengthened through reporting of monitoring results through instruments such as State of the Environment reporting.

At an informal level, it was felt that there was considerable learning about what works and doesn't through the facilitator network, as well as through feedback to the NRM Board through the community and politicians. The current work on M&E being undertaken through the NRM group should help formalise the approach to adaptive management across the board.

What to sow, grow and throw

A range of factors were identified that needed to be in place for success, as follows. Most of the factors on the list were identified by several people, except were indicated:

⇒ embedding the NRM Plan and activities in government (views on this varied strongly);

⇒ having a facilitator network to draw on;

⇒ realistic timelines;

⇒ fewer, more strategic/larger projects;

⇒ less interference from government;

⇒ a functional M&E plan and data storage system;

⇒ adequate resources;

⇒ continuity of staff;

⇒ having five larger producer groups in place (identified by one person);

⇒ having governments and organisations working together in a coherent fashion (identified by one person); and

⇒ more interactions with other regions to learn from (identified by one person).

The fact that the INRM Plan represented the first framework for natural resource management in the NT was a major achievement. This reflected a real commitment from the Landcare Council, NRM Board and the NRM staff. Overall it was felt that good in-roads had been made on collaborative projects, something that was less common before the NRM Plan. Areas that could be 'grown' included more investment from industry, including the potential that carbon trading or greenhouse gas abatement could bring. The potential for co-investment from the health and education departments was also identified, as the links between environmental health and indigenous health were clear.

While the facilitator network was considered vital to the delivery of the NRM Plan, there was overall agreement that a review of where they were based, who they reported to and their responsibilities was needed. This would include a cost-benefit analysis. As part of this process, it was felt that the most important biodiversity assets to target should be identified, and the facilitator groups targeted around these areas. This differs from the current model where facilitators tend to work with larger, pre-existing groups – both indigenous and non-indigenous.

Presently a decision support system is being built by the NRMB (NT) consisting of layers of information in GIS for, with a completion date of December 2008). This information will be able to be interrogated to underpin strategic decisions. It is anticipated that it could be coupled with the NRM Toolbar to allow wider access of NRM information.

As noted previously in the case study, the large indigenous population in the NT adds an extra dimension to NRM, so that building relationships is especially important. With the next iteration of the INRM Plan, it was felt

that greater input is needed from 'the mob on the ground', including visiting indigenous people on their country. The current plan is considered useful, but is not seen as a workable document for indigenous people. The intent of the plan is translated at the operational level, but it was considered that it would be even better if the plan itself was embraced by indigenous people. Building in the time and resources needed for effective engagement is therefore critical. Identifying the range of skills or support needed by indigenous people, including administrative skills, was also identified as a way to move forward.

The benefits and impacts of the NT NRM Plan

Short-term: The NT INRM Plan has been in place for around 2.5 years, so is still in its early days. It has provided an overarching plan for natural resources in the NT, where none existed previously. It also encouraged a more collaborative approach to project development and implementation.

Medium to long-term: With the recent changes to the regional delivery model by the Australian Government, greater uncertainty has been cast over the NT INRM plan and the biodiversity benefits that may arise through its implementation. With a greater focus on investment from industry however, which is the direction that the NRM Board was already heading in, the longer term benefits could be significant.

Interviews

Sue van-Cuylenburg, Chair, NT NRM Board

Adrienne Farago, EO, NT NRM

Jim Forwood, Chairman, Landcare Council of the Northern Territory (during the development of the INRM Plan)

Dr Robyn Delaney, INRM Strategy Manager, Landcare Council of the Northern Territory and NT NRM Board, Darwin NT (at the time the INRM Plan was being written)

Justine Yanner, Caring for Country Coordinator, Northern Land Council

Stuart Kenny, EO, Northern Territory Cattleman's Association

George Scott, President, Barkly Landcare Group

Jarrad Holmes, Threatened Species Network, WWF, Darwin

Mike Misso, Bushcare coordinator, Australian Government

Les Russell, Australian Government, Canberra

David Lambert, Australian Government, Canberra

Numerous attempts were made to set up an interview with one of the regional facilitators working for the NT NRM, but this turned out to be unsuccessful

Informal discussions were held with NT State Landcare Coordinator, Ian Linley

Sources of information:

Australian Government NRM website: http://www.nrm.gov.au/nrm/nt.html

Department of Natural Resources, Environment and the Arts website: http://www.nt.gov.au/nreta/natres/index.html

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Case study 9: Kuka Kanyini Watarru (South Australia)

The institution and its response

Kuka Kanyini is a project in the Watarru region of the Anangu-Pitjantjatjara Yankunyatjara (APY) lands in North-western South Australia. It is a partnership between the Watarru Community, the SA Department of Environment and Heritage, the Department of Premier and Cabinet, APY Land Management and the Aboriginal Lands Taskforce. Day to day management of the project rests with the SA Department of Environment and Heritage. Watarru is a small community with a population ranging seasonally between 60-100 Anangu. It lies within an Indigenous Protected Area of 1,280,000 hectares and is one of the most remote communities in Australia, with one school, a clinic, a store and recently bituminised roads.

Kuka Kanyini is a Pitjantjatjara word that, loosely translated, means looking after game animals, but it is much more than that (Liddle 2006). It's vision is: restoring landscape, animals, plants, skills, health, pride and knowledge to ones country. The project aims to manage country, conserve biodiversity, maintain culture and improve the social, economic and emotional well-being of peoples in the APY Lands. It involves the control of feral animals, the protection of valuable water in rockholes, the potential for reintroduction of species including preferred plant and animal species and is based on what Aboriginal people say how the land can function. Western science compliments this process.

Kuka Kanyini Watarru has been in operation since January 2004. The concept evolved from the findings of the Department for Environment and Heritage's 10 year biodiversity survey of the APY Lands which was undertaken between 1991 and 2001 and the relationships that developed during that time. Anangu from Watarru requested assistance from DEH to address community health and wellbeing issues and believed that proper land management and natural resource use would play a major role in achieving this. Within Aboriginal worldviews the natural and cultural environments are cosmologically intertwined. When Aboriginal people talk of 'country', therefore, they refer not just to an area of land or body of water but to a mythical-religious landscape of places, values, resources, stories and cultural obligations.

Management of country is at the heart of Kuka Kanyini (DEH 2005). It is a means for Aboriginal communities to support the management of their land and sustain the existence of Aboriginal people and their culture on traditional lands. Watarru was ideally suited as the first Community to undertake the project because it is a biologically significant area supporting populations of rare and endangered plant and animal species. It is also a relatively socially cohesive and proud community where the Elders continue to manage the land in accordance with traditional law (where possible) and where good communication and trust has been established through earlier projects. The community also has a number of health and social problems which the project aimed to address by involving the community in caring for country.

Kuka Kanyini Watarru is a pilot project that represents a whole-of-government response and is planned to take place over 10 years.

Originally the project sat in the Aboriginal Partnerships program of the Natural and Cultural Heritage section of the Department for Environment and Heritage. In late 2007 it was moved to the Office of the Director of the Regional Conservation because the project has both policy and delivery components. The Office of the Director is working out future directions for the project, with the intention that it will sit under the Outback program of the Regional Conservation section when capacity allows. The Program Coordinator for Kuka Kanyini divides her time between Adelaide and Watarru, where she works for up to four weeks at a time. During the periods when the Coordinator has been on extended leave, a caretaker arrangement has been put in place.

Developing Kuka Kanyini Watarru

Kuka Kanyini Watarru is a Community driven project, as noted in the introduction to the case study. Following the biological surveys of the 1990's, Anangu from Watarru requested assistance from DEH to address community health and wellbeing issues and believed that proper land management and natural resource use would play a major role in achieving this. Meetings were held with project partners regularly over a two year period from 2002 to 2004 as the project was developed. Consultation has been ongoing in the development of the Sanctuary Plan for the region (McFarland 2005), which aims to present best ecological advice to assist project officers and Anangu to positively manage game and bush tucker plants.

The project is funded by the South Australian government. In the 2006 Annual report, reference to applying for funding from the Indigenous Land Corporation was made (DEH 2006). The same report shows that $462,267.00 was spent on the project in the 2005-2006 financial year, with just over half of this covering salaries. Funding is currently guaranteed until 2009, which is halfway through the project. A formal review will be undertaken this year. The benefits from the project were seen as public rather than private.

The Kuka Kanyini 'brand' is used more broadly in the APY lands, with a project by the same name set up with the Walalkara community, funded by the Alinytjara Wilurara NRM Board through the NHT. Other examples of where the concept is applied in the region, such as through APY Land Management, are given in Davies (2007).

Defining biodiversity, threats and targets

The Sanctuary Plan published in 2005 lists targets for Kuka Kanyini and the operational component prioritises a draft program of work for up to five years based on cold and hot months. The targets in the plan were considered realistic and achievable with appropriate resources. A number of objectives for the Kuka Kanyini project are also identified in the first annual and second reports for the project (DEH 2005, 2006), as follows:

⇒ Increase the number of preferred foods (e.g. bush foods for consumption) on a sustainable basis;

⇒ Re-instate diverse age structures of vegetation;

⇒ Clean and protect fouled rock-holes so that clean drinking water is available for diverse species; build structures to protect rockholes from excessive drinking and fouling camels;

⇒ Develop a sanctuary area where reintroductions and breeding of preferred species that support Indigenous culture and maintain biodiversity can occur;

⇒ Reduce feral animals on Watarru land (mainly camels) and seek economic return for them;

⇒ Provide constructive areas of employment outside of the Community Development Employment Program;

⇒ Support the transfer of traditional knowledge and language from older people to Anangu youth; and

⇒ Improve the wellbeing of participants and the general community.

When asked what biodiversity meant in the context of this project, interviewees identified threatened species, increasing the amount of bush foods, habitat and cleaning up waterholes. As noted in the introduction to this case study, the concept of 'country', which encompasses biodiversity, refers to a mythical-religious landscape of places, values, resources, stories and cultural obligations. One would therefore expect a different response if this question was asked of Anangu at Watarru. It was not possible to interview Anangu directly, given the resources available for the case study and the time of year when hot weather and summer cultural responsibilities see movements of people around the region.

Biophysical threats that were identified to biodiversity in the Watarru region were Buffel grass, inappropriate fire regimes (both a lack of fire and burning too large areas were cited in different cases) and feral animals such as cats, foxes, camels and donkeys. Institutional threats were also identified, such as the lack of processes for effective communication between agencies. Disengagement of law and control and loss of traditional knowledge were considered threats, as were social rifts in the community due to money and lack of infrastructure at Watarru. For example, in early 2008 there were no telephone lines for the 4-6 weeks so people left the Community and subsequently work went undone.

Biodiversity outcomes

Monitoring by DEH for threatened species such as the Mallee Fowl and Great Desert Skink were underway in the Watarru region before Kuka Kanyini started. These programs are ongoing. Recently work has started on a program to introduce the regionally extinct Blank-flanked Rock Wallaby. This has reached very low numbers in the wild and captive breeding programs are underway to reintroduce the Wallabies in the area.

Once Kuka Kanyini started in 2004, the people of Watarru nominated a 35 x 35 km area (1225km2) of core country containing suitable habitat, water and a minimum number of sacred sites as an unfenced no-hunting area in which to concentrate Kuka Kanyini management activity. Baseline data collection, and fire, water and camel management were undertaken. An operational plan was published for the Watarru Sanctuary in 2005 (McFarlane 2005), which set out monitoring protocols

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for a range of animals, including predators. The program identifies small achievable goals within a bigger picture of change, which is considered a part of its success. Monitoring activities undertaken by scientists and Anangu are reported in the Annual reports and trends stated. For example, in the 2006 Annual Report it was stated that mallee fowl populations had remained unchanged and the number of Desert Skinks had increased. Actual figures are not presented in these publications. Monitoring is also undertaken by school children, who measure, for example, scats and tracks around shed tanks. GPSs are used for this activity, and more could be made available if required. Recommended actions are made in the Annual Reports for further activities, including monitoring. Based on the information provided in the Annual Reports, it appears that several of the project objectives are being met.

Threatened species data is stored in a database in the APY lands and internally at DEH. No processes are in place at the moment for the community to access this data, although the children would have the skills. The Sanctuary Plan (McFarlane 2005) and the Annual Reports (DEH 2006) refer to a database where information such as monitoring data from rockholes is recorded. Easily readable monitoring sheets in Pitjantjatjara have been developed, are checked regularly and the information recorded on the database. The issue of access to certain data was raised in one interview. Aboriginal people have a different world-view, so it is important to understand that some knowledge could be secret/sacred and should only be seen by certain people. These issues need to be sorted out at the start of projects.

As noted in the introduction to this case study, the health and wellbeing of Anangu are an essential component of Kuka Kanyini and intimately linked to managing country. Recognising this link, a survey was undertaken just over a year after the project started to measure its impact on health and wellbeing (Department of Environment and Heritage 2005a). Seven key impact themes were evaluated with 20 interviewees. The findings indicated strong support for the project by Community members. They expressed many benefits from the project including enhanced sense of self-esteem, increased exercise, a fresh and diverse natural food source, a sense of autonomy and control, and hopes for cultural continuity and social sustainability. A strong body of literature supports the finding that health and wellbeing benefits are derived from such environmental management activities (Burdett et al. 2005). Another health and wellbeing report has recently been completed, but is currently not available publicly.

The response of biodiversity to the management actions undertaken through Kuka Kanyini will depend on the asset in question, with an interaction with rainfall also in play. The quality of water in rockholes that are cleaned and protected can improve within a year and provide water for native animals. Active fire management can increase bush foods in a couple of years, while threatened species could take 5- 10 years to respond.

Strengthening monitoring and learning mechanisms

The importance of taking an adaptive management approach was emphasised in the operational plan for the Kuka Kanyini Sanctuary by McFarlane (2005). Some feedback is provided to DEH on changes in

biodiversity and threatening processes by ecologists and Anangu. However, it was felt in one case that not enough scientific monitoring was undertaken to adaptively manage in a formal sense. Anangu would have their own system of reading the land and responding to the changes observed. For example, Liddle (2006) notes that simply driving all day to visit country relays information back to Aboriginal people on managing the land. The health and wellbeing reports provide an opportunity for adaptive management if the recommendations they make, such as appointing a social worker, are taken on board.

Kuka Kanyini Watarru is a pilot project, so provides an opportunity to learn about the learning and monitoring programs in place and how they could be improved. Following customary law is critical to the integrity of the approach, which provides an added dimension compared to other case studies covered in this project. A role for more input from ecologists was identified, with the potential for them to spend up to half of their time in the region. Developing a system that incorporates both traditional knowledge and western science in a way where all players are treated as intellectual equals is the key to success. This includes having Anangu as co-authors on scientific papers, which was identified by one participant in the case study. It must always be kept in mind that biodiversity conservation on indigenous lands is part of a much bigger picture. This means, for example, that a management plan cannot be picked up and implemented by just anyone because maintaining the right relationship between people and country is fundamental. These and other factors need to be considered when developing programs with Aboriginal people.

What to sow, grow and throw

The most successful elements of Kuka Kanyini Watarru identified by case study participants focused on the engagement of the Watarru community, the on-ground works and raising awareness of biodiversity across a range of stakeholders. The fact that the biological surveys of the 1990s contributed to the genesis of Kuka Kanyini was also considered a success, as was providing employment in the community. The health and wellbeing and Annual reports on the project demonstrate a number of achievements.

The success of Kuka Kanyini at Watarru has been recognised externally for its innovative approach through a number of awards. This includes receiving the SA Great Environment Award in 2005, and in 2006 being a finalist in both the Land and Biodiversity section of the Banskia Awards and the Prime Minister's Award for Environmentalist of the Year. The elements of the project that are highlighted in these awards include the approach taken to marrying traditional and contemporary land management knowledge and scientific expertise, the vehicle it provides for community development and the revitalising of relationships and traditional knowledge, and the health and wellbeing benefits.

Preconditions that were identified to have in place were:

⇒   ownership of the project by the community;

⇒   agreed ground rules so there are no surprises;

⇒   long-term commitment to funding and the community;

⇒ good project governance;

⇒ flexible program delivery;

⇒ a robust monitoring program;

⇒ a dedicated ecologist;

⇒ staff continuity;

⇒ contingencies for staff movements; and

⇒ project management with a commitment to interagency communication.

The importance of staff selection and continuity was mentioned by several people. Like all of the case studies in this project, finding the right people with the right skills is essential to the success of the project. Cultural training for non-indigenous people involved in the project was considered a key element, to minimise the number of cultural misunderstandings. Effective communication was also identified as a key to project success, especially with so many agencies involved. Having on ongoing project management presence in the community is important, otherwise some activities can lose momentum. Developing work plans with the community and having regular meetings was put forward as a way address this. In terms of biodiversity outcomes, it was considered important that the manager understood and supported data collection and management and the value of regular reporting.

The project coordinator identified a number of lessons that have been learnt from the project, starting by saying an equal balance of power is needed, recognising and accepting that the priorities for Aboriginal communities may not reflect those of the funding bodies (DEH 2006). A number of other challenges still face the project, many of them associated with the ongoing health and wellbeing issues in remote Aboriginal communities. The remoteness of the community also presents some challenges. For example, it can make it harder to organise training for Anangu in areas that we take for granted, such as getting a car of motorbike licence. These are essential if government vehicles are going to be used. The Canadian model was put forward as a good example of working with indigenous communities where agreed rules, benchmarks and timelines are agreed at the start of the project and it is explained that funding will only be received if benchmarks are met. Once the rules are agreed, it is essential that all parties stick to them.

The ultimate goal expressed in two interviews was to have Anangu self-managing Kuka Kanyini at the end of ten years. It was noted that while Anangu are confident in caring for country, their confidence as managers needs to be built on. This involves mentoring of participants, which is considered crucial to establishing ground rules and maintaining discipline (DEH 2006). Engagement of more of the community in working on the program, and linking the attainment of agreed goals to continued funding are both elements that were identified as helping towards self-management. Most of all, flexibility in delivery of the program is needed.

The benefits and impacts of Kuka Kanyini Watarru

One of the questions asked during the interviews was "Where would you place the impact of the program/project on biodiversity on a scale of low, medium or high? What score would you give out of ten? (0-4 = low, 5-8 = medium and 9 to ten = high)". Originally the intention was to use this in a matrix, but it became clear that the sample size was too small to do this. Instead it was decided to describe what the short, medium and long-term impacts of each program would be.

The response to this question by Leanne Liddle is worth recording, as it illustrates some of the differences between Aboriginal and non-Aboriginal world views. The response follows:

> "Anangu don't have a number-percentage type system and in fact there isn't much past the figure of three. In contrast scientists count, and want to know that their work has had multiple values. But the fact is you can't place a value on it ('it' refers to biodiversity outcomes - JW) because Anangu know that if they were to, the season could be bad next year, and there are so many species in the biodiversity/tjukurpa equation that it would be immoral if not culturally inappropriate to rank ones lands, above if it had an impact (sic). The impact can't be just biological as far as Anangu think."

Keeping those comments in mind, an interpretation of the short, medium and long-term outcomes of the Kuka Kanyini project follows.

Short-term benefits: Improved health and wellbeing of Anangu; increased involvement of the community in land management, including children; employment opportunities for the community; the reinforcement of traditional values; greater availability of clean water for native animals; control of feral animals and predators; continued work on threatened species.

Mid and long-term benefits: Anangu having increased confidence in being managers (in the western sense) and managing the program themselves; the reintroduction and successful establishment of the Black flanked rock wallaby; improved health and wellbeing of Anangu; improved health of country, and with it, biodiversity.

Interviews:

Leanne Liddle, Project Coordinator, Kuka Kanyini Watarru

Fraser Vickery, King Island NRM Board (was involved in setting up and managing Kuka Kanyini in the early years)

Jacqueline Wright, Project Officer/Analyst, Director's Office, Regional Conservation, Department for Environment and Heritage

Dr Matthew Ward, Regional Ecologist, Department for Environment and Heritage

Sources of information:

Davies, J. (2007) *Walking together, working together: Aboriginal research partnerships.* Desert Knowledge CRC Report No. 26.

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Case study 10: Brisbane City Council (Queensland)

The institution and its response

In 1925, the Queensland State Parliament passed the City of Brisbane Act to set up a single government in Brisbane. Before this, the Brisbane area had been divided up into 20 local authorities and joint boards. Brisbane City Council is the governing council for Brisbane. Unlike councils in Sydney, Melbourne, Adelaide and Perth, where the local councils are generally responsible for relatively small areas of those cities, Brisbane City Council administers the larger part of the Brisbane metropilitan area. It is the largest local government authority in Australia, in both population and budget – with jurisdiction over an area of 1367 square kilometres. Brisbane has a population of about one million and has recently experienced Australia's highest rate of capital-city population growth. It is also at the centre of the second-fastest growing region in the western world (south-east Queensland).

Brisbane boasts the title of Australia's most biodiverse capital city, with the protection and conservation of its biodiversity of vital importance to the Council and the community. Brisbane supports 1500 native plant species, about 500 wildlife species and innumerable insects. Over 40% of Brisbane's animals (excluding insects) are considered threatened.

The Brisbane City Council has a wide range of programs in place in response to threats to biodiversity. The programs are not listed in any one location, so for the purposes of the case study, as comprehensive a list of programs was put together as possible. The list of responses is provided in Appendix 4.They are grouped under the following themes: Research and data management, Programs that focus on community participation, Legislative responses and Planning responses. There are likely to be some programs that are still to be covered, but Brisbane City Council staff felt the list captured the breadth of the Council's activities.

Developing the Brisbane City Council's response to Biodiversity

At the broadest level the Council consults with a range of stakeholder groups through the Biodiversity Advisory Committee. Overall, this was considered to work well, although some representatives feel they aren't listened to (like all consultative committees) and some mixed successes were reported by Council staff. It can, however, give Council members confidence. It was noted that some issues have been addressed by the Council through this forum, and they are responsive to the concerns raised at the meetings. For example, if stakeholders identify a particular management issue as being of concern, the relevant personnel from Council will make a presentation at the next meeting. Broad consultation with the research community about priorities also takes place through the Biodiversity Research Partnership.

The general Brisbane community have the opportunity to provide feedback to Council at any stage as ratepayers, but also through more formal programs such as the Neighbourhood Plans. In this instance, Community Planning teams, drawn from designated planning zones work with Council to prepare draft statutory Neighbourhood Plans. These focus on important issues affecting the community, including protecting green spaces and biodiversity. These are a few of the mechanisms in place for

consultation, with other programs utilising different approaches to consultation depending on their goals.

The overall anticipated revenue of the Brisbane City Council for 2006-2007 was 1.67 billion dollars. Around $20 million per year is spent on biodiversity programs, with around $15 million being spent on acquisition of land. The acquisition funds are provided by an environmental levy paid by rate-payers, which has been in place since 1991. In addition to the $20 million spent directly on biodiversity, another $5 million or so is spent on parks and catchment management that is relevant to biodiversity conservation. This brings the total amount in the order of $25 million a year. Some high profile projects such as the Compton Road Fauna Array has received substantial funding ($10 million over several years). The key claim of this initiative is that is provides a comprehensive set of structures. In addition to the main overpass, there are special underpasses, wet culverts, exclusion fencing, rope ladders and glider poles.

Thoroughly prepared cases have to be put to Council for funding, drawing on as much evidence as possible. In-kind contributions from landholders are made through a number of programs, but estimates of the dollar value of this contribution were unavailable.

The benefits of the public investment in biodiversity are all considered to primarily be public. Certainly the driver is public good.

Defining biodiversity, threats and targets

The 2007 September edition of 'Your City Your Say', published by the Council, gave the following description of biodiversity: 'Biodiversity is a way of describing the variety of living things. It includes all different plants and animals, the habitats they form and the interactions they have with their environment. Biodiversity is not just restricted to natural areas – it is everywhere! Even in your backyard or local park'.

The Brisbane City Council has set a target to restore a further 10% of mainland Brisbane to natural habitat, so that 40% of the city will be covered by native vegetation by 2026. This approach uses native vegetation as a surrogate for biodiversity. The 40% target is the main driver of programs from a corporate perspective and represents a 10% increase on the current level of natural habitat. This goal will be met by acquisition, planning and restoration and is considered achievable if action is taken now. Within the overall 40% target, the aim is to ensure the representation of habitat is comprehensive, adequate and representative (CAR).

Targets are also set at the program and project level. For example, around 50% of native vegetation in Brisbane is on private land. The goal of the Wildlife Partnerships Program is to involve 1600 properties in their 3-teir program by 2012. Properties are selected for the scheme using values-based criterion. Significant flora and fauna species are considered when land is being acquired, using Council databases and other sources of information (such as expert opinion). The acquisition program aims to protect significant land, using CAR principles. It is now is now focusing on consolidation and connection of reserve system, having purchased the most important large areas of land. Biodiversity goals are also discussed

with the research community when issues, such as the use of nest boxes, are identified within Council.

The main threats to biodiversity were identified as the city itself and associated land clearing, institutional failure (such as the need to strengthen coordinated programs and the development agenda of some arms of Council) and limited compliance checking. Within native vegetation, weeds and land use such as horse grazing in the outer suburbs were identified as the main threats. Fire management was an issue that was raised several times in interviews, with agreement that it was a complex issue to deal with, particularly in an urban environment with so much infrastructure. This can make burning for ecological outcomes more challenging. The Council is part of the South East Queensland Fire and Biodiversity Consortium, which is trying to address these issues in a coordinated way.

Biodiversity outcomes

At a city-wide scale, biodiversity is monitored at regular intervals by assessing the extent of native vegetation (particularly regional ecosystems) using remote sensing. This allows broad trends to be captured and the overall 40% natural habitat target to be measured. The research partnerships program was considered essential to monitoring, as programs can be developed with expert input. PPBio (Program for Planned Biodiversity Studies) provides an example of the Council supporting a monitoring protocol being developed by a research team at Griffith University, amongst others. The first grid of the program was launched in June 2007 in Karawatha Forest in Brisbane. The program is part of an international effort that aims to develop a biodiversity assessment tool that local, national and international agencies can use to plan and manage development more effectively. The programs aim is to link long-term monitoring with conservation management in Australia, build on the groundwork established by the parent program in Brazil and contribute to global biodiversity assessment. All data will be publicly available on the world wide web.

At the program level, different levels of monitoring are underway or being planned. The Land for Wildlife (LfW) properties are visited regularly to assess if they are meeting their objectives. There were some questions raised about the skills of the officers undertaking this work. This comment was made in the context of a wide-spread shortage of skills and methodologies for monitoring in a quantitative way. It was felt therefore that the Council could not be blamed for this shortfall in their program. The Partnerships Program, under which LfW sits, is setting up a cost-efficient approach to monitoring that will be developed by mid 2008 which should address some of these issues. Management plans are written for large properties purchased through the Acquisitions Program, although the level of monitoring these entailed was unclear.

The general community undertake 'low level' monitoring as part of some programs, although most monitoring was considered beyond the capacity of the community. Considering animal ethics, particularly in community programs, is an important element of monitoring. For example, red filters need to used on torches and animals aren't allowed to be hassled. Standard procedures and reporting is followed here. At a project level there are requirements for researchers to report annually on the outputs

and outcomes of their projects, as well as to give public presentations on their work. Through its monitoring program the Compton Rd. project, mentioned earlier, was able to demonstrate a rapid reduction in levels of native animal death (by road-kill) following the building of the overpass.

The Council has a GIS and flora and fauna database. The database was set up 13 years ago and went through a low period, but has recently been reinvigorated. It is biased towards public land, with plans to add more information from private land if resources allow. Internal access by Council staff to the database is good, having improved in recent years, with external access to some elements also being in place. It was felt that some Council staff, such as development officers could make more use of the GIS, particularly as it flags things at risk. As noted by one interviewee, databases such as these are only as good as the people who use them. The Core Biodiversity Network map is seen as an important planning tool for both the community and Council staff to identify sites of significance and where they fit in the vision for the city.

Local laws and the acquisition of bushland by the Council were felt to have an immediate and positive effect on biodiversity as it directly addressed threats. These programs and the City Plan have been seen as the primary tools for protecting biodiversity. With 50% of biodiversity on private land, a case has been argued that the Partnerships Program is one of the main drivers to meet restoration targets. While such programs may take more time to demonstrate change (both behaviourally and for biodiversity) they are an important part of the suite of approaches available. This view was supported by one of the ratepayers interviewed, who felt that the Council needed to pay more attention to the management of private land under its jurisdiction.

Strengthening monitoring and learning mechanisms

The Program areas that were covered in detail in the interviews both have mechanisms in place to learn and adapt their approaches to meet their goals. For example, the Partnerships Program has an internal strategic plan that identifies adaptive management as an important component. A business plan is written at the start of each financial year when the activities of the Program are reviewed. They examine the assistance landholders require (based on surveys), look at barriers and identify easy solutions. Field officers also provide feedback to property owners on management.

The Acquisition Program reviews the schedule for purchasing properties formally every five years (most recently done in 2007), which is when priorities are reviewed and new information considered. An informal review is also undertaken annually. Decisions are made based on criteria such as the threats to bushland and what the Program can afford. Because land in Brisbane can be very expensive, the latter consideration is an important one.

In terms of strengthening learning and monitoring mechanisms, a review of the approaches used across the different programs and projects undertaken by the Brisbane City Council would be valuable. This would provide an overview of how well the goals at different scales (e.g. city-wide, patches of bushland) are being met and how different programs learn from the information they receive. It could also identify some

potential synergies and lessons that could be applied more widely across the programs. Structures are already in place for sharing of information between different programs working on biodiversity that could be built on.

What to sow, grow and throw

The preconditions identified for effective biodiversity programs across the Council were:

⇒ A community aware and concerned about biodiversity, as this is what the Council will respond to;

⇒ Decision makers who are aware of why biodiversity is important;

⇒ An adaptive management framework that identifies informed goals that are realistic and worthwhile, how to measure them and what do if they're not met;

⇒ A suite of programs, including regulatory tools, that are resourced, implemented and where necessary enforced in a coordinated manner;

⇒ Adequate resources;

⇒ Having the right mix of staff; and

⇒ Skilled staff both in the main office and implementing on-ground programs.

Some of the successful elements of the approach taken by the Council to threats to biodiversity were the acquisition of bushland (and associated public access), the quality of the staff and the research partnerships. These responses were influenced by the experiences of the people interviewed, with other successes likely to be identified if other programs and perspectives were included.

As with all the case studies in this project, the importance of having the right mix of staff with the right skills was identified as essential to successful outcomes. Recruiting staff in NRM is not easy, but in Brisbane the situation is somewhat alleviated (at least in the policy area) because of the pool of several Universities in the city. The Council is the single biggest employee of graduate students, therefore staff have good training for their roles and understand the academic environment. Staff in the policy section need to develop strong and well-presented cases for funding to put to Council, based on as much evidence as possible and therefore require a range of skills. One external interviewee was genuinely impressed by the rigorous way the BCC staff undertake their work and felt they demonstrated a real commitment to good biodiversity outcomes.

The need for more skilled on-ground staff was identified in one interview, but it was not possible to explore this further. It was felt this pointed to an overall shortage of skills, such as the ability to identify plants, because of the decrease in courses such as botany across the University sector. As personal contact with members of the Community was identified as a critical factor of success, then the ability to interact with a range of stakeholders is also needed. Other mechanisms identified to encourage a better flow of information on management issues included an email discussion forum, where the community could pose management

questions and receive advice on how to approach them. This would involve the Council developing a protocol in a systematic way.

The need for a mix of tools to address biodiversity conservation was agreed, with the planning, legislative (e.g. the City Plan and Local laws) and acquisition programs seen as important elements of the approach taken by Council. The program is vulnerable to external pressures such as land prices, population growth and landholder attitude, but these just have to be worked with. As noted above, programs that work directly with private landholders such as the Partnership Programs and take a voluntary approach are also an important part of the 'tool-box'. By putting a convincing case to the Council, this program has recently received more resources, going from 1 to 5 permanent officers. This should allow more effective delivery.

One of the tensions identified that sits over all of these programs is between development aims of the state government and the biodiversity goals of the Brisbane City Council. The rate of growth in SEQ reached a maximum of about 1000 in 2006 and currently remains about 600 per week. While the BCC has almost closed its population except for urban consolidation, places like Logan and Ipswich on the outskirts of the city are growing rapidly. Issues such as water availability and traffic congestion/air pollution tend to take precedence, with an 80 billion dollar infrastructure program planned over the coming years.

One way to address this tension is through increased communications and marketing of programs, so that both the communities and different levels of government can see the value of biodiversity. Greater interaction with the communications section of the Council, and communications at the Program level, were identified as areas that could be strengthened. The ability to do so will be affected by the level of resources available. By raising awareness of biodiversity in the community, more pressure is likely to be put on politicians to make it a core issue of government. This should help stabilise the funding available to programs, which can be vary depending on the changing priorities of the Council. While this is considered part of doing business, it makes it harder to provide consistent levels of service and support ongoing programs. An increased level of funding would also allow more effective delivery of programs.

The benefits and impacts of the Brisbane City Council

Short-term benefits: The introduction of the environmental levy in the early 1990s allowed the Council to purchase some important areas of bushland before prices became too prohibitive. These areas of bushland, some of which are relatively large, are a core component of the biodiversity of the city and provide significant amenity values for the people of Brisbane. The regulatory and planning framework can also have immediate benefits for biodiversity.

Mid to long-term benefits: Given the likelihood that the Council will meet it's 40% natural habitat target by 2026, and continue to fund a range of responses to threats to biodiversity, benefits to biodiversity should be ongoing. The suite of community-based programs and communication activities undertake by the Council can take longer to have a significant impact but are essential for involving the community and raising

awareness. Managing development pressure associated with population growth will remain a key challenge for the region.

Interviews:

Graham Phegan, Brisbane City Council, head of the Sustainability and Environment section

Tina Manners, Wildlife Conservation Partnerships Program, Brisbane City Council

Susan Dymock, Bushland acquisition program, Brisbane City Council

Associate Professor Darryl Jones, Griffith University, member of BCC Biodiversity Advisory Committee

Emeritus Professor Gordon Grigg, University of Queensland, Foundation Chairman Moggill Creek Catchment Group and Land for Wildlife Member.

Sources of information:

Brisbane City Council website: http://www.brisbane.qld.gov.au/ (principally the 'Environment' information in the Residents section).

Your City Your Say, September 2007 'Active in Nature' edition. Published by the Brisbane City Council.

Our shared vision: Living in Brisbane 2026. Brisbane City Council.

Brisbane City Council budget papers

Appendix 1: Methodology

The Terms of Reference for the project specified that the institutional responses to be evaluated as part of the project were:

⇒ Regulation of land management practices

⇒ Non-perpetual incentives and negotiated co-financing and stewardship arrangements

⇒ Arrangements for conservation on private land

⇒ Education and awareness raising

⇒ Industry accreditation schemes

⇒ The regional natural resources management model, and

⇒ Indigenous land management

The following set of selection criteria were identified as the basis for selecting ten institutional responses for in-depth analysis:

⇒ Geographic target

⇒ Threatening process

⇒ Biodiversity asset target

⇒ Area covered by response

⇒ Time response has been in place

⇒ Form of monitoring

⇒ Nature and scale of resources involved

⇒ Position on a regulatory to voluntary continuum

⇒ Position on a public/private benefit spectrum

Around 50 potential case studies were assessed against these criteria, with the following set of ten case studies selected in conjunction with the project Steering Committee (Table 1):

1. The *Queensland Vegetation Management Act* 1999

2. The Tasmanian Midlands component of the Biodiversity Hotspots Program (focusing on the first phase conducted between 2004-2007)

3. Land for Wildlife, Victoria

4. Bush Heritage Australia (National)

5. Living Landscapes, Western Australia

6. The Cotton industry

7. Breathe Easy, Greening Australia (National)

8. The NT NRM region

9. The Kuka Kanyini Watarru project, South Australia

10. Brisbane City Council, Queensland

The material informing the case studies was based on desk-top research and interviews with four main 'stakeholder' groups associated with each case study:

⇒ those responsible for developing the response;

⇒ those responsible for implementing the response;

⇒ those affected by the response and

⇒ those observing/assessing the response.

Two sets of questions were developed, one to ask the developers and implementers of the response, and a second for those affected and observing the response (Appendix 2). The questions were developed around the key questions for the project identified in the terms of reference:

❓ What biodiversity benefits are being sought by the measure

❓ What biodiversity benefits are being/likely to be achieved by the measure

❓ Are the biodiversity benefits being claimed realistic

❓ How are the biodiversity benefits being monitored/reported

❓ How could the biodiversity benefits of the measure be enhanced

As these questions were relatively generic, it became apparent that they required some slight modification for each of the case studies as the interviews were conducted.

A combination of face-to-face and phone interviews was used, with the questions provided in advance of the interviews. Background information on both the project and the interview was also provided to participants (Appendix 3).

A number of challenges arose when trying to set up interviews for the case studies, mostly related to the timing of project. The final sign-off for the ten case studies occurred in early January 2008. This meant trying to arrange interviews over the January holiday period when many people were unavailable.

Up to ten interviews were conducted for each case study, with some being easier than others to identify and line-up key people. This was related to, amongst other things, the time the institutional response had been in place and the ability to identify the relevant people through personal contacts or through a key person that had been identified in an institution who could recommend other stakeholders. Trying to identify stakeholders through various organisations' websites was generally not very effective, as often people's names and direct contact numbers are either not provided or updated. In some case studies, the programs that were being evaluated had been completed, and so some detective work was involved in identifying people to consult. It also meant that some people had moved onto other projects and quite often into other organisations, and it was not always possible to identify them and/or interview them.

Having identified a range of people to consult, considerable time and effort was involved coordinating interviews across a diverse set of stakeholders located around the country. Face-to-face interviews were valuable and necessary, particularly for those affected by the response (often landholders), however travelling time was an issue. Coordinating these personal visits with phone interviews, which were used when face-to-face interviews were not possible, presented a logistical challenge in the time available.

Despite the logistical challenges, most of the case studies involved around seven interviews. At a minimum, one person from each of the four main 'stakeholder' groups was interviewed. The exception was Kuka Kanyini in South Australia, where it was not possible to interview the indigenous people affected by the project. To be most effective, these interviews would need to have been held face to face, which would have meant travelling over 3000 kilometres return to remote north-western South Australia. Even if the resources and time were available, most of the community living in the APY lands travel to cooler climates during the summer period and for those who were still there the phone system had been out of operation for several weeks. One of the saving graces for this project was that the Program Officer was indigenous and could therefore provide some insights into the effectiveness of the project from the perspective of Anangu.

The majority of interviews were held between mid-January and mid-February2008, with few interviews that had not been possible to line up earlierrunning into March 2008. Trying to develop case studies from a diverse range of stakeholder perspectives was an exciting challenge, and certainly a greater one than expected. Each person brought a range of experiences and values to the interviews, some of which were contradictory. While this was not unexpected, it was important to represent the institutional response in a factual way, then to draw on the interviews to determine how the response was perceived by different stakeholders. Because no detailed history of the response of each institution to biodiversity threats was available for the majority of the case studies, this had to drawn together from diverse sources of information.

Appendix 2: Copies of the interview questions

A) 'Evaluation of responses to threats to Australia's biodiversity'

As noted in the 'Introduction to the project', The National Land & Water Resources Audit wants to learn from people and organisations who have developed and implemented a range of institutional responses to threats to Australia's biodiversity. We are interested in recording your perspective on how successful you think the (insert the name of the response) has been in meeting it's objectives and goals, based on the following questions. If you feel that a question does not apply to you, it can be skipped. It is estimated that the interview will take around an hour.

Interview questions:

Name of person being interviewed:
Date of interview:

Questions
Developing the project/program
1. Was there a consultation phase during the development and/or implementation of the response? If so, who was consulted and how were they engaged?
2. What level of investment (public and private) is/was involved? (absolute figures are preferred, but if unavailable a percentage figure would be fine).
Defining biodiversity, threats and targets
3. How is biodiversity defined in the program/project, what elements of biodiversity are being targeted (e.g. native vegetation, biodiversity, threatened species).
4. What objectives, targets or benefits have been identified as biodiversity outcomes?
5. What do you see as the main threats to biodiversity addressed by the project/program (e.g. biophysical, institutional, economic (not enough resources), lack of awareness?) and what actions are in place to address the threats?
Determining the impacts on biodiversity
6. Are the targets or biodiversity benefits realistic and measurable?
7. Where would you place the impact of the program/project on biodiversity on a scale of low, medium or high? What score would you give out of ten? (0-4 = low, 5-8 = medium and 9 to ten = high).
Monitoring, reporting and learning mechanisms
8. How are the biodiversity benefits being monitored and reported and does/will this demonstrate if the biodiversity benefits are being achieved? Have other forms of monitoring, such as potential attitudinal change, been undertaken?
9. In what form is monitoring data stored and accessed?
10. How long do you envisage it takes from the time of response to see 1) a change in behaviour (if that is being sought) and 2) a change in condition of the biodiversity asset.
11. What learning mechanisms are in place to modify the response to biodiversity threats if the need is identified?
12. What percentage of the biodiversity benefits are estimated to be private or public?
What to grow, throw and sow
13. What element of the response do you believe has been the most successful in improving biodiversity outcomes? (e.g. communications, on-ground actions, incentives)

14. What do you believe needed to be in place (pre-conditioning factors) to maximise the success of the response? Were these conditions in place, or is that what you'd like put in place if the project/program was run again?
15. What would you keep and build on (grow), reject or change (throw) and identify as alternative responses (sow)?

The questions about the impact of the response on biodiversity, and how long it takes to see change, will be illustrated using a matrix diagram in each case study.

B) 'Evaluation of responses to threats to Australia's biodiversity'

As noted in the 'Introduction to the project', The National Land & Water Resources Audit wants to learn from people and organisations affected by a range of institutional responses to threats to Australia's biodiversity. We are interested in recording your perspective on how successful you think the (insert the name of the response) has been in meeting it's objectives and goals, based on the following questions. This set of questions is also being asked of 'independent' observers of these projects and programs. If you feel that a question does not apply to you, it can be skipped. It is estimated that the interview will take around an hour.

Name of person being interviewed:
Date of interview:

Interview questions:

Questions
Developing the project/program
1. Were you consulted during the development and/or implementation of the response? If so, how?
Defining biodiversity, threats and targets
2. Is it clear how biodiversity is defined in the program/project and what elements of biodiversity are being targeted (e.g. native vegetation, biodiversity, threatened species)?
3. Are you able to describe the objectives, targets or benefits that have been identified as biodiversity outcomes for the project/program?
4. What do you see as the main threats to biodiversity being addressed by the project/program (e.g. biophysical, institutional, economic (not enough resources), lack of awareness?) and what actions are in place to address the threats?
Determining the impacts on biodiversity
5. Are the targets or biodiversity benefits realistic and measurable?
6. Where would you place the impact of the program/project on biodiversity on a scale of low, medium or high? What score would you give out of ten? (0-4 = low, 5-8 = medium and 9 to ten = high).
Monitoring, reporting and learning mechanisms
7. Is it clear how the biodiversity benefits are being monitored and reported and do you think that this does/will demonstrate if the biodiversity benefits are being achieved? Have other forms of monitoring, such as potential attitudinal change, been undertaken?
8. How long do you envisage it takes from the time of response to see 1) a change in behaviour (if that is being sought) and 2) a change in condition of the biodiversity asset.
9. What learning mechanisms are you aware of that are in place to modify the response to biodiversity threats if the need is identified?
What to grow, throw and sow

10. What element of the response do you believe has been the most successful in improving biodiversity outcomes? (e.g. communications, on-ground actions, incentives)
11. What aspects of the program/project have worked least effectively? Why?
12. What do you believe needed to be in place (pre-conditioning factors) to maximise the success of the response? Were these conditions in place, or is that what you'd like put in place if the project/program was run again?
13. What would you keep and build on (grow), reject or change (throw) and identify as alternative responses (sow)?

The questions about the impact of the response on biodiversity, and how long it takes to see change, will be illustrated using a matrix diagram in each case study.

Appendix 3: Background information provided to participants.

A) 'Evaluation of responses to threats to Australia's biodiversity'

Introduction to the project - January 2008

The National Land & Water Resources Audit (NLWRA) has commissioned Kiri-ganai Research and NRM Insights *to* assess the biodiversity outcomes of selected institutional responses to the threats to Australia's terrestrial biodiversity. Many of the projects and programs set up to address these threats use native vegetation as a 'surrogate' for biodiversity, which encompasses both native plants and animals. Some focus solely on biodiversity, whereas others include biodiversity as one element of a broader set of goals for a program.

In conjunction with the project Steering Committee, the following ten case studies have been selected to represent a range of institutions and a range of responses.

- The *Queensland Vegetation Management Act* 1999
- The Tasmanian Midlands component of the Biodiversity Hotspots Program
- Land for Wildlife, Victoria
- Bush Heritage Australia
- Living Landscapes, Western Australia
- The Cotton industry
- Breathe Easy, Greening Australia
- The NT NRM region
- The Kuka Kanyini Watarru project, South Australia
- Brisbane City Council

The project will provide case study analyses in support of the 2008 National Biodiversity Assessment. The case studies will be based on desk-top research and interviews with four main 'stakeholder' groups associated with each case study: those responsible for developing the response; those responsible for implementing the response; those affected by the response and those observing/assessing the response. The questions that form the basis of the interviews, which will be a combination of face-to face and telephone interviews, will be provided in advance to those involved. Participants will also receive copies of the case studies they have contributed to before they are published.

The case studies are designed to evaluate and assess the biodiversity outcomes of these institutional responses by determining what to keep and build on (grow), reject or change (throw) and identify as alternative responses (sow). The NLWRA is particularly interested in any preconditioning factors required for successful biodiversity outcomes, the impact of the different responses on biodiversity and over what time period these are expected to occur. By identifying the monitoring and learning mechanisms for determining biodiversity outcomes, and how these could be strengthened, the project will help inform future national assessments and Australia's responses to key threats to biodiversity.

For further information about the project, please contact:

- Professor Jann Williams on 03 6428 3311/jannw@bigpond.net.au or
- Dr Richard Price on 02 6295 6300/ richard.price@kiri-ganai.com.au.

B) 'Evaluation of responses to threats to Australia's biodiversity'

Introduction to the interview - January 2008

- The interview is intended to be a conversation about approaches to responding to biodiversity threats: it is not an inquisition!

- It will start by setting the scene for the relevant case study.

- The questions are a guide and will be adapted for each case study and stakeholder during the interview. If you feel that a question does not apply to you, it can be skipped.

- Interview material will be aggregated for each case study.

- Names of interviewees will not be linked to their individual statements.

- A list of interviewee names will be included in an Appendix to the report.

- Interviewees will be shown a copy of the case study they have contributed to before it is published.

Appendix 4: Brisbane City Council Biodiversity Initiatives – February 2008

Brisbane proudly boasts the title of Australia's most biodiverse capital city, with the protection and conservation of its biodiversity of vital importance to the Council and the community. Brisbane supports 1500 native plant species, about 500 wildlife species and innumerable insects. Over 40% of Brisbane's animals (excluding insects) are considered threatened.

The Brisbane City Council has set a bold target to restore a further 10% of mainland Brisbane to natural habitat, so that 40% of the city will be covered by native vegetation by 2026.

The Council has a wide range of programs that it has put in place in response to threats to biodiversity. These are not listed in any one place, so for the purposes of the case study, as comprehensive a list of programs was put together. It is grouped in the following themes: Research and data management, programs that focus on community participation, legislative responses and planning responses. The information is based on the September 2007 issue (the 'Active in Nature' edition) of 'Your City, Your Say' and the BCC website, with some additional information from interviews.

A Biodiversity Strategy was published in 1998, but is considered to be out-of-date. The intention is to review the strategy as soon as funds are available to do so.

Research and data management

Flora and Fauna database, focusing on threatened native species, important habitat areas and introduced species. The records in the database are used in planning and managing biodiversity.

Biodiversity Research Partnership Program, initiated in 2000. The Council is working with universities and others to undertake research and monitoring projects to find out more about biodiversity values, the impacts of urban pressures on these values and 'clean and green' solutions to help biodiversity. Very much a two-way partnership with the Council and researchers working together on priority setting. Each project writes a report that is relevant to and readable by Council, as well as give a presentation in an annual forum open to the community.

Programs relevant to biodiversity (focus on community participation):

Biodiversity Advisory Committee – includes representatives of a diversity range of groups with an interest in the environment, including a representative from Griffith University. Used as a mechanism for the Council to learn about the key biodiversity issues of concern to stakeholder groups. When an issue is raised, the relevant officer/s from Council attend the following meeting so any questions can be answered.

Core Biodiversity Network - a recent initiative that maps habitat areas and shows how they are linking by ecological corridors. Designed to a) help achieve the vision for the city's future by guiding investment in protecting and restoring habitat areas and ecological corridors, and b) be a valuable land-use planning tool to inform more biodiversity-friendly development patterns. For example, it is used as part of the Neighbourhood Planning process (see below).

Restore Brisbane – working towards examining and connecting the core biodiversity network to increase habitat for threatened species and improving ecosystem health and resilience. The Program encourages community participation in activities such as weed removal, habitat restoration and tree planting.

Habitat Brisbane - helps community groups restore natural habitats in parks, remnant bushland and wetlands and along waterways. Habitat Brisbane groups also help to <u>protect, monitor and increase</u> native flora and fauna populations, especially rare and threatened species.

Creek Catchment Groups – look after creeks and waterways.

Bush Neighbours – assists residents living next to conservation reserves with the identification and management of threats. Members receive a free Bush Neighbours Kit and quarterly bulletins.

Bush Neighbours has a School Program, which is designed to encourage participants' ability to identify good and bad behaviour in natural areas, focusing on the natural area closest to their school. The overall aim of the program is to encourage recreation which does not damage natural areas. The program is a free activity - a one hour session is aimed at year 5 students and integrates Education Queensland curricula.

Wipe Out Weeds – this program helps to manage weeds and give residents advice and information (weeds have invaded more than 60% of Brisbane's natural areas and waterways).

Wildlife Conservation Partnerships Program (with 3 tiers) – assists landholders living on large bushland blocks to protect and enhance the wildlife habitat on their land: Land for Wildlife, Voluntary Conservation Agreements (see below) and Voluntary Conservation Covenants.

Oxley Creek to Ocean (O2) Project –aims to create a regional carbon sink in South East Queensland over the next twenty years. The project aims to significantly reduce greenhouse gas emissions, as well as increase the level of forest cover in the region, enhance and protect biodiversity and repair waterways. Large re-plantings have already been completed at Bayside Parklands and Oxley Common.

Greening Brisbane Naturally program - which covers several projects that aim to improve the number and quality of trees and other plant life in Brisbane

Legislative responses

Bushland Preservation Levy – paid with Council rates – covers the purchase and protection of natural bushland areas in the city, including providing facilities for public access to these areas.

This is a set charge that is reviewed each year and is payable by owners of all rateable land in the city.

Since 1991 the Bushland Acquisition Program has purchased over 2400 hectares of habitat at a cost of $95 million. It is felt that key habitat areas have been secured, so the focus of the Program is now on protecting connectivity and ecological corridor linkages so wildlife can safely move across the landscape.

Natural Assets Local Law 2003 - designed to protect natural assets, including bushland, areas, wetlands, waterway corridors and significant trees in urban areas.

This law may affect residents if they own or occupy land:
- near a river or a waterway
- in a bushland area
- in an emerging community (future urban land) with large trees

Landowners or residents of Brisbane can request vegetation to be protected under this law. Applications are made in writing and should demonstrate why the vegetation meets the Council's objectives, such as:
- protecting the biodiversity values of the city
- preserving natural landforms such as coastal areas and steep slopes
- protecting the landscape character and cultural and historical values of the city

The application is assessed by the Development Assessment Ecologist Team who makes a site visit. If vegetation protection is given, there are a number of activities that are or are not permitted, with penalties up to $63,750 imposed for breaking the law.

The **Voluntary Conservation Agreements** program (part of the Wildlife Partnerships program) helps private property owners conserve native bushland on their land.

Planning responses

Ecological Assessment Guidelines (part of the Brisbane City Plan 2000) - The Ecological Assessment Guidelines assist property developers to prepare ecological assessment reports when making development applications. The guidelines help to interpret Brisbane City Council's acceptable solutions that are contained in City Plan's Biodiversity Code and Wetlands and Waterway Code.

Neighbourhood Planning – Community Planning teams, drawn from designated planning zones, work with Council to prepare draft statutory Neighbourhood Plans. These focus on important issues affecting the community, including protecting green spaces and biodiversity. Community consultation is held over the issues covered, the boundary of the neighbourhoods and the plans themselves.