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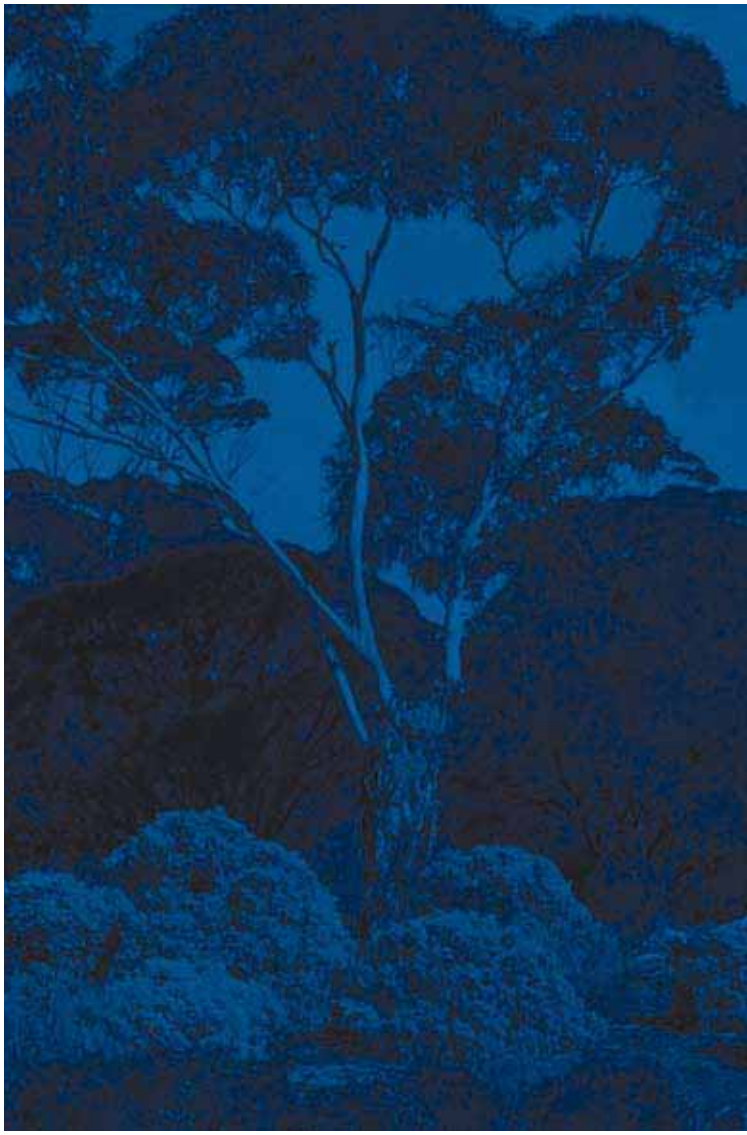

Conservation Incentive Design

Key elements of biodiversity incentive design and implementation–Illustrative case studies for biodiversity conservation

Anthea Coggan, Stuart M.Whitten, Famiza Yunus

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1. Abstract

Achieving effective conservation of biodiversity and ecosystem services is a major challenge for all Australian jurisdictions. This challenge is increased by continuing adverse trends in the condition and extent of biodiversity across a wide variety of bioregions, and land and marine tenures. These trends are of concern because of the importance of biodiversity for its own sake, and for its significance in underpinning human welfare; directly through the use and enjoyment of natural resources and indirectly through ecosystem services.

The challenge is complicated by persistent concerns about the costs and effectiveness of existing regulation and land use planning related to environmental protection and the conservation of biodiversity. The lack of appropriate incentives through the market is a major cause of the deterioration of biodiversity on private land (Hatfield Dodds 2004).

Normal market signals experienced by landholders primarily focus on goods for which they gain a private benefit, such as payment for a tonne of wheat. Landholders are generally not rewarded for the environmental goods that they produce, as the value of these environmental goods is not signalled in tangible ways, resulting in land management decisions that often fail to take account of their full natural resource management impact (Hatfield Dodds 2004; Whitten and Shelton 2005).

Photography: John Baker and the Department of the Environment and Heritage

Wetlands with Paperbacks

The failure of market signals to generate appropriate incentives for biodiversity conservation has lead to governments intervening in the activities of private landholders to protect biodiversity. Interventions have primarily taken the form of regulation, incentives, and other measures including moral suasion.

Regulatory approaches have a strong role to play in achieving biodiversity conservation, but a number of inherent deficiencies limit their effectiveness and the extent to which they can achieve biodiversity conservation goals. These deficiencies include a lack of flexibility, difficulty in effective enforcement and negative incentives from prohibition approaches (see Productivity Commission 2004). Well designed incentive-based approaches have the potential to overcome many of these deficiencies by positively encouraging landholders to meet biodiversity objectives in a more flexible, innovative and cost-effective way.

1 See for example the Productivity Commission 2004 report 'Impacts of Native Vegetation and Biodiversity Regulations' available at: www.pc.gov.au

2. Introduction

Incentive options differ according to the elements of biodiversity conservation that are targeted, their reward structures, and the way they incur design, implementation and administration costs, and importantly, they are voluntary. A large quantity of information about possible incentives and their implementation has been assembled within Australia and internationally, including recent developments in the field of market-based instruments. Despite substantial international and Australian based research on biodiversity conservation incentives, there is little that gives policy makers a guide to the practical steps and questions to ask in the selection, design and implementation of biodiversity conservation policy on the ground.

Key elements of biodiversity incentive design and implementation

The first section of this guide provides a concise but comprehensive framework for incentive selection, design and implementation for policy makers at the local, state and national level. In this first section you will find information on the following:

1. Defining the problem and setting targets;
2. Assessing if intervention is the right approach and then which kind of intervention;
3. Identifying the range of incentives available;
4. Selecting the right incentive for the issue; and
5. Designing and implementing the incentive to achieve results.

In Section 5, case studies are used to demonstrate the practical application of the framework. The case studies illustrate the pragmatic tradeoffs that are often made in practical incentive design and delivery. They highlight the key design and implementation experiences for a variety of incentives, their context and the organisation implementing them.

3. A framework for incentive design

Photography: Trevor Ierino and the Department of the Environment and Heritage

Victorian upper catchments 5

Structuring your thinking around incentives

There are a large range of potential incentive options available, each of which encourages biodiversity conservation through different reward options and payment vehicles. These incentive mechanisms vary from improving access to information through to providing payments or cost-sharing arrangements in exchange for the provision of biodiversity conservation outcomes. With so many potential approaches and often limited time in which to determine an appropriate approach, policy makers tend to choose what they know rather than systematically considering which incentive approach will best meet their needs given their objective and operating constraints. This approach has a high potential for policy failure, or at best inferior outcomes.

What the framework does

The framework provides a systematic structure for designing and implementing incentives for biodiversity conservation. It provides a structure for identifying and assembling the necessary information to support decisions about:

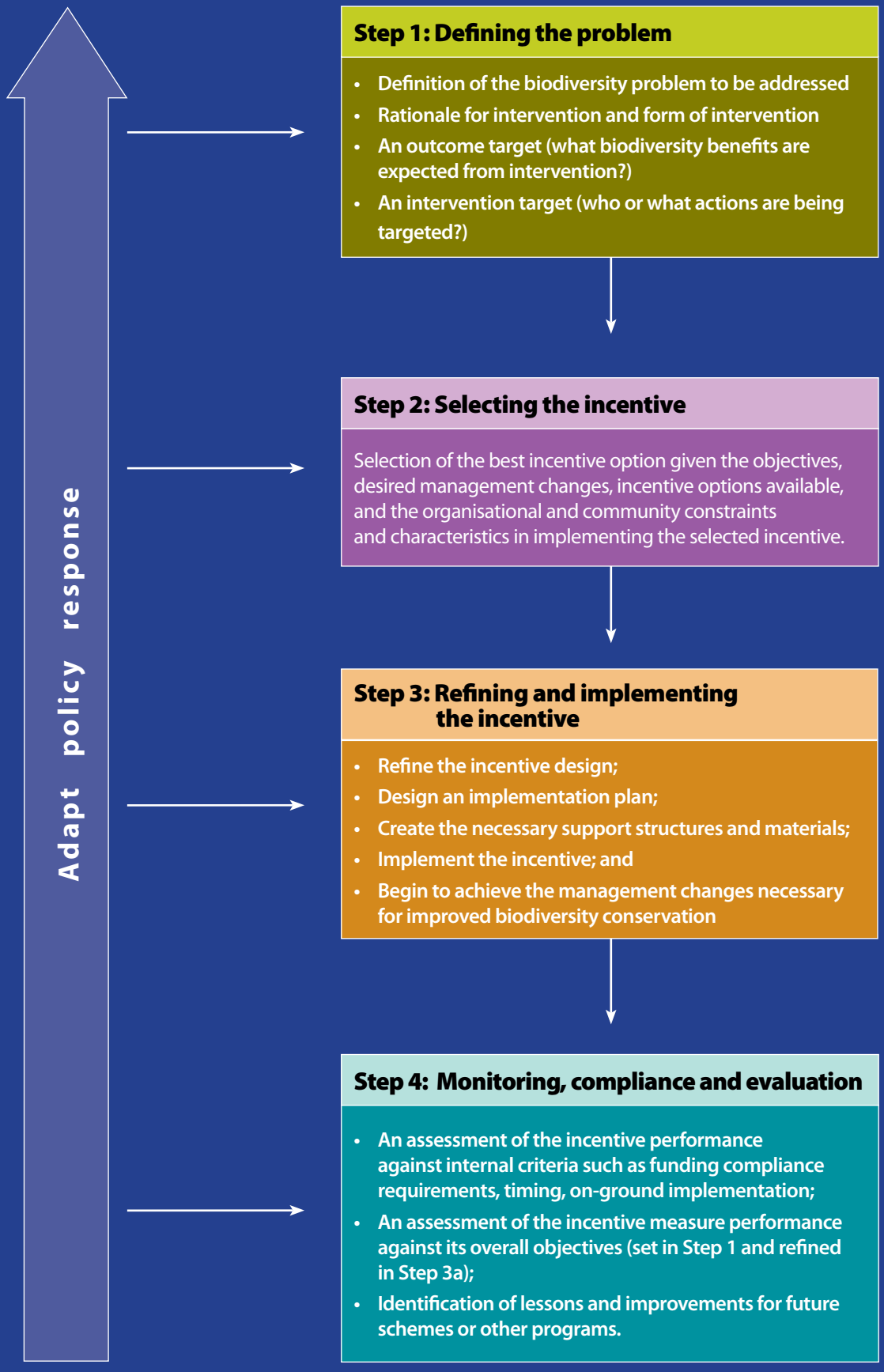
- When and where to intervene or influence private landowners actions;
- Whether to intervene through incentives or using other measures;
- What forms incentives may take and how to select an appropriate incentive;
- How to refine incentive design, incentive implementation; and finally,
- How to monitor and evaluate activities.

The guidelines in each phase are necessarily broad because of the diversity of factors important to good incentive design. Factors such as the type of biodiversity outcome desired, budgets, time, capacities, landholder experiences and so on are all important to good incentive design.

The framework is NOT a recipe for any particular incentive. Instead it is a set of steps and guidelines to prompt clear and rigorous consideration of the many important issues in incentive design. You may not need to complete all the steps in the framework or there may be additional steps that are necessary in particular cases. Further, the framework is not necessarily a linear process. In many instances previous steps will need to be revisited or reviewed to progress to an appropriate policy response.

A summary of the framework is provided in Figure 1 (pg5). Each component of the framework is discussed in more detail in the remainder of this section and summarised as a best practice guide in Table 2 (pg21).

Figure 1: The best practice incentive design and implementation framework



Step 1: Defining the problem

The objective of this step is to understand the problem and to establish clear goals for any incentive program.

The outcomes from conducting this step will be:

- Definition of the biodiversity problem to be addressed
- Rationale for intervention and form of intervention
- An outcome target (what biodiversity benefits are expected from intervention?)
- An intervention target (who or what actions are being targeted?)

The first step to designing an incentive mechanism is to gather the biophysical and human contextual information required to define the problem, identify why and where intervention using incentives may be considered, and set goals.

There are four (a through to d) subcomponents to this step as follows.

1a) What is the perceived problem? What information do you have?

What is the biodiversity conservation problem? At the beginning it is important to define the scale, scope and context of the actual problem. This will require compilation and assessment of basic information on biodiversity status. You may realise that insufficient information is available to proceed with policy development, in which case your conclusion may be to invest in information gathering.

What are the biodiversity assets that need to be protected?

Assemble and assess baseline information about the location, ownership, status and condition of the target biodiversity issue. Assess the importance of any major information gaps and if necessary begin processes to overcome these.

What is the scale of the problem and the scale of the change required?

Early decisions are needed about the spatial scale at which an incentive is expected to be effective. Scale is significant for a number of reasons. First, the conservation status of a biodiversity asset varies with spatial scale. For example, a vegetation type that is rare at a catchment scale, thereby implying a high conservation status, may be common at a bioregional scale. Second, not all problems can be reasonably handled by an incentive scheme. A large scale problem which requires coordinated actions by all landholders may be the capacity of the organisation considering incentives or require supporting regulatory structures. Review the priorities for asset protection against the relevant sphere of influence. Some biodiversity issues are best addressed at regional scale and others at a local or national scale.

What is happening to these assets now?

It is important to have an understanding of the current management of the relevant assets and the activities currently damaging or threatening to damage them. If threats are identified, it is important to assess who is causing this threat and why, and if it is short-term or enduring. Where no threats are identified, a case may still remain for investing in increased biodiversity conservation. A decision will need to be made about whether to target incentives towards mitigating or removing threats to existing biodiversity assets or towards investment in new assets. Experience to date suggests that in most cases management of existing assets is likely to be lower cost and more effective than investment in new assets.

Who is involved in damaging the asset? Who would benefit from conservation?

Who are the players? Will they benefit from improving biodiversity conservation or only incur costs? It is critically important at this stage to distinguish between the public goods that may result from on-farm conservation and the land managers' duty of care to the land. Land managers should not be paid to meet their duty of care obligations. Where there are clear benefits to land managers from improving biodiversity conservation on their own properties the scale of incentive required is likely to be lower. At this stage, assemble all available information on the nature and scale of required management change, and the consequent costs and benefits to landholders or the wider community. This step will also assist in identifying whether there are other beneficiaries that should be directly consulted.

Set clear objectives for incentives

From the information assembled in this step you should be able to set clear biodiversity objectives for any incentive policy. These will include what the desired outcome is, the scale at which incentives, management change and outcomes are targeted, what management actions are targeted, and who will be targeted by the incentive policy. At this point you should have a clear outcome target against which you can evaluate that the suitability and effectiveness of any policy.

Photography: Allan Fox and Department of the Environment and Heritage

Grasslands with blue sky and clouds Moree, NSW

1b) What is the context of the problem?

Policies are rarely created in isolation. Rather they operate in a complex environment in which land ownership, regulatory measures and other incentives are already in place. It is important to have an understanding of these before developing new incentives or otherwise intervening. Questions that should be asked include:

- Are there other policies that already address the threat to this asset?
- If yes, how do these other policies work and have they been successful? Should you integrate with these approaches or could these harm your approach? Should/ could these policies be strengthened?
- Are there 'perverse policies' causing the problem? If these perverse policies were removed would the desired outcome be achieved?

1c) Should you intervene?

It should not be assumed that government intervention is the right answer for improving the management of biodiversity on private land. A basic criterion for government intervention requires that the generation of benefits to the community (including landholder benefits) outweigh the costs to government and to the landholders providing the service. Good government intervention is often described in terms of efficiency and effectiveness as described in the box below. Basically, efficiency and cost effectiveness means getting the highest value mix of biodiversity outcomes at the minimum of cost.

Efficiency and cost effectiveness in policy

Efficiency has two parts which are both important. First, technical efficiency means that the biophysical design is as good as it can be under current constraints. Second, efficiency requires targeting highest valued mix of biodiversity outcomes taking into account the full range of private and government, monetary and non-monetary costs of achieving those outcomes. That is, total benefits exceed the monetary and non-monetary costs. Efficiency is important because there are always competing uses for the available funds which should be allocated to achieve the highest benefit possible to the community.

Cost effectiveness refers to the achievement of the desired outcome at the minimum cost. Cost-effectiveness and efficiency are related in the sense that a new, more cost-effective policy may change the efficient allocation of resources. Watzold and Schwerdtner (2005) defined cost-effectiveness as when conservation policy x achieves the same conservation goal as y but with lower production, implementation and decision making costs. Cost-effectiveness considerations are often restricted to fiscal (or budgetary) cost-effectiveness but for completeness they should also take into account the non-fiscal costs imposed on other stakeholders in achieving outcomes.

Cost effectiveness considerations:

Cost of decision making:

- Cost of identifying and assembling the information necessary to decide whether and what form an incentive should take (Step 1 in incentive design); and
- Cost of designing an appropriate incentive (Step 2 in incentive design).

Cost of policy implementation:

a. Administration, monitoring and enforcement costs, including:

- Set-up and administration costs;
- Communicating the policy;
- Engaging with and contracting landowners including managing compliance; and
- Evaluation of policy against goals and for future policy design.

b. The cost of direct support to landholders or other stakeholders. These costs may be incurred as cash payments, materials grants or vouchers, management advice (including payment for specific advice from professionals such as accountants, farm management advisors or others), or through other direct mechanisms. Note that some schemes (such as purely informational schemes) may have little or no direct outlays to landholders or other stakeholders.

It should also be kept in mind that the taxes used to fund steps A and B also are also costly to collect and strictly these costs should also be included in any assessment.

Costs imposed on other stakeholders

Costs to non-government stakeholders (such as those running devolved grant programs) of engaging in the incentive scheme including:

- Administrative costs of engagement: such as obtaining information, completing and submitting applications, contracting, and compliance with monitoring requirements;
- Cost-sharing in undertaking management changes such as in-kind labour, materials or machinery inputs; and
- Opportunity costs of lost production.

How to design policy with efficiency and cost-effectiveness in mind?

Using efficiency and effectiveness as the basis for deciding whether or not to intervene, policy makers should ask the following questions:

- What outcomes could intervention achieve? What outcomes do you want? Are these outcomes measurable? If there are no definable outcomes then stop here!
- Do the benefits of intervention outweigh the costs of doing nothing (a best estimate is probably the most likely approach at this stage)?

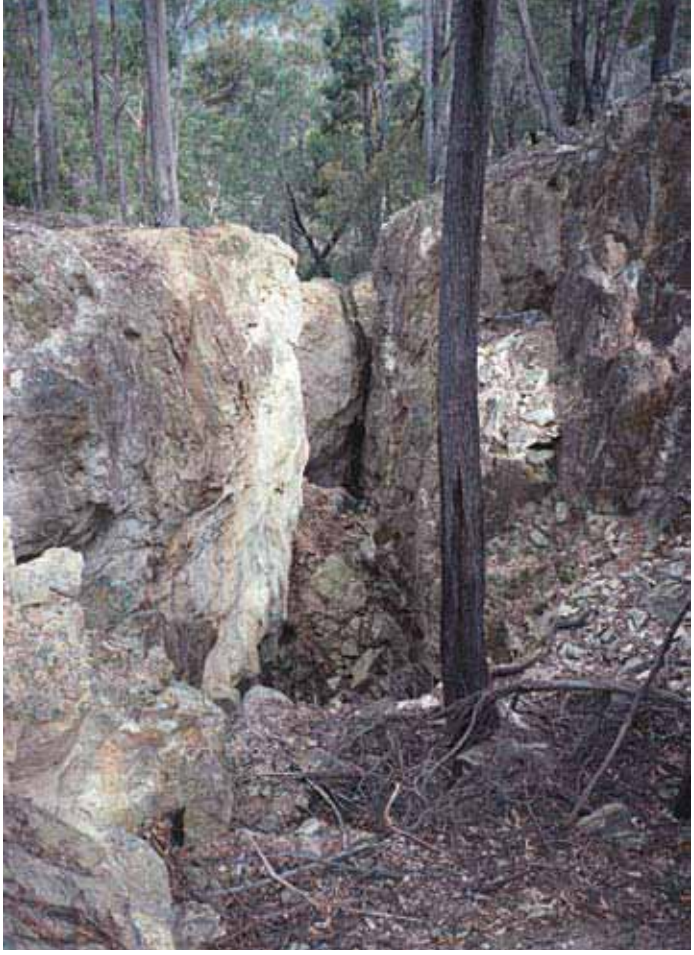
At this point you will likely need more information about the potential intervention options and their effectiveness in order to decide whether it is worthwhile to pursue an incentive-based or other policy option, or to do nothing. After gathering and assessing this information in the next steps it will be worthwhile revisiting this step to ensure any intervention is effective and cost-efficient.

1d) What are the broad intervention options?

Through steps 1a to 1c you will set out some clear goals about what form any appropriate policy response should take. This response may range from 'do nothing' through to incentive payments. The action will depend on the nature and extent of the desired change and the estimated efficiency. Potential actions are:

1. **Do nothing:** if the cost of managing the problem is greater than the cost of the impact from the problem it may be best to do nothing (at least in the short term—however, long term effects and the consequences of irreversible change need careful consideration);
2. **Remove perverse incentives:** questions asked in Step 1b may indicate a current policy is creating the problem, and if removed, would result in better management. Removing or altering a policy with perverse impacts may be a lot more efficient and cost effective, compared with introducing a new policy;
3. **Incentive based approaches:** incentive based approaches support and encourage voluntary actions by private landholders. They can be divided into three broad forms (*see Figure 2 [pg 12]*) that include:
    - **Information, advice and support incentives**—extension programs providing information about how to manage land to improve biodiversity conservation;
    - **Security oriented incentives**—covenanting programs designed to remove threats to biodiversity assets; and
    - **Financial assistance programs**—devolved grant programs targeting biodiversity assets, such as through fencing remnant vegetation.
4. **Regulatory approaches:** if large changes are required by all landholders, a regulation may be the most efficient option. Regulations are non-voluntary and sometimes impose a legally binding requirement on landholders, such as regulations designed to protect native vegetation. Consideration of compensation is important, where regulations clearly impinge on landholders' rights and reduce their future income earning capacity. Regulatory approaches (generally without compensation) may be considered where landholders do not hold rights—such as where landholders' actions are damaging biodiversity beyond their boundaries. For example, regulatory approaches are usually used to address invasive weed management issues.

Other approaches, such as relying on community peer pressure, may also be considered. It is important to note that actions do not have to occur in isolation, it may be more efficient to adopt a mix of intervention options.



Photography: The Department of the Environment and Heritage

Costain Panbula Goldfield

Deciding how to intervene is often difficult, with conflicting advice and poor information availability, particularly about the costs and benefits of intervention. Choosing an intervention strategy is an art rather than a science. Still, some guidelines about what form of intervention may be best, are noted below. You may also wish to preview the range of incentive measures available at this point to identify options.

What are community attitudes and landholder rights over the management change?

Incentives to improve management would not be appropriate where either the community believes that the management action should be undertaken as a normal part of land management activities (although cost-sharing to achieve rapid goals may be an option), or it should be undertaken under existing duty of care or ownership requirements.

Who needs to change management?

Regulatory approaches are preferred where all landholders need to change management significantly to achieve the community goals (keeping in mind the efficiency and cost-effectiveness considerations). Incentive approaches are preferred where small groups of landholders, or small changes by many landholders could achieve the desired outcome.

What is the form of the desired management change?

Regulatory approaches must be enforceable to be effective. They tend to be more effective when they are used to prevent an action that can easily be monitored, such as broad-scale land clearing. This is in contrast to where they are used to try to enforce a positive action, like weed control (though this is not impossible it is much more difficult). There is significant evidence that landholders are still failing to manage invasive weeds adequately, despite a long-standing, widely widely-supported regulatory framework around invasive weeds, there is significant evidence that landholders are failing to adequately manage the issue.

If the desired action is difficult to monitor, an incentive approach may face similar problems. However, incentive approaches have a number of significant advantages. First, incentives create a positive reward for undertaking the desired action. Second, incentive approaches limit the number of sites to be monitored to those receiving the incentive. Finally, incentive approaches provide a more direct way of measuring and monitoring the effectiveness of the desired action.

What is the likelihood of other interventions?

At the regional scale, the potential and likelihood of local, state or national interventions to achieve the same goals should be considered. Consideration should also be given to either combining proposed interventions or targeting un-addressed threats (taking into account cumulative efficiency and cost-effectiveness).

Step 2: Selecting the incentive.

The objective of this step is to select the best and most appropriate incentive for the problem.

The **outcomes** from this step are:

2a) the array of incentive mechanisms available is identified and ready to be filtered;

2b) incentive schemes are analysed against the targets and threats. The best way to address the threats and achieve the outcomes is considered and an input, process, output or mixed approach is chosen; and

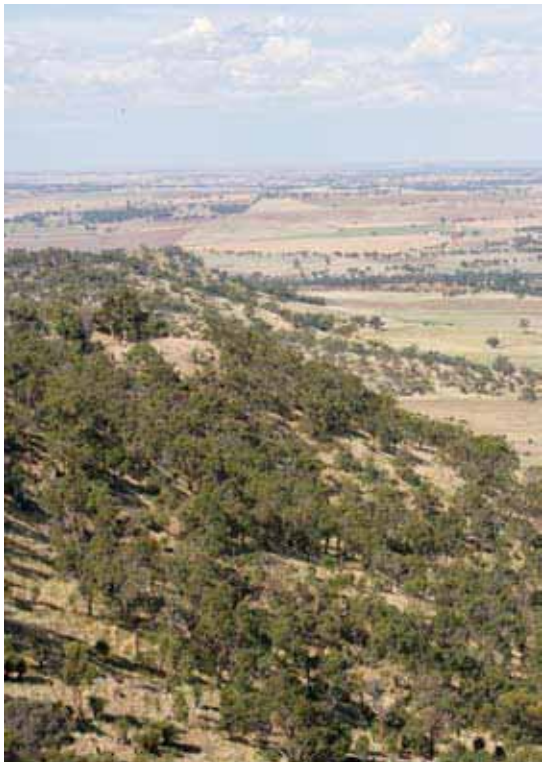
2c) the potential incentive schemes are further refined to a tailored selection based on the realties of the opportunities and constraints posed by the operating framework and the community in which the incentive scheme will be implemented.

This step involves choosing the right incentive for the problem, following on from the objectives identified in Step 1. It is about moving from the broad range of available incentives, to analysing which incentives for the specific problem, given the objectives and constraints faced.

2a) What incentives are available?

Incentive mechanisms vary from improving access to information, through to providing payments or cost-sharing arrangements in exchange for the provision of biodiversity conservation (Figure 2 [pg12])[2]. Table 1 (pg12) demonstrates the spectrum and diversity of conservation incentive mechanisms.

The options in Figure 2 and Table 1are part of a menu of incentives. From this menu, different individual incentives or combinations of incentives can be selected to tailor approaches to varying parts of the landscape or segments of the community. The approach to small property owners may differ from large property owners. Similarly, new participants to covenanting programs may require a joint grants program or an introductory information and advice incentive to learn about the management needs of their properties first.



Photography: Mark Mohell and Department of the Environment and Heritage

Avon Region

2 The case studies included in section 4 of this document provide an in depth description of at least one example of each incentive type.

Figure 2: The spectrum of incentives

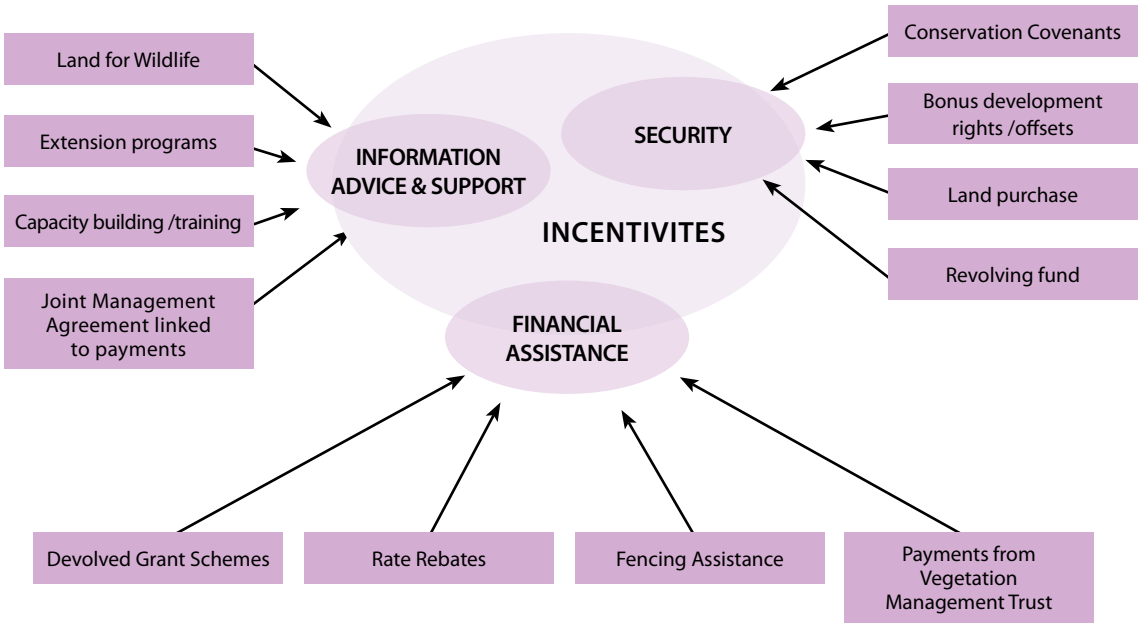


Table 1: The spectrum of biodiversity conservation incentives in Australia

HOW INCENTIVE OPERATES	MOTIVATION	TYPE OF INCENTIVE POLICY
Voluntary and Facilitative	**Information advice & support**	Management advice and assistance
		Capacity building in NGOs
		Third party independently assessed accreditation systems
	Security of protection	Conservation covenants
		Recognition and protection of important sites (EPBC Act)
Payment / Market based	**Financial assistance**	Rate rebates and concession
		Bonus development rights
		Grants (direct)
		Grants (devolved)
		Ongoing management payments (stewardship schemes)
		Short term competitively allocated payments (auctions and tenders)
		Tax incentives for landholders
		Tax incentives for NGOs
		Tax incentives for conservation groups
		Mitigation banking and tradable rights
		Facilitating change of ownership (e.g. revolving funds)
		Land acquisition

2b) What incentives could work?

With so many incentive schemes available, selecting a scheme can seem overwhelming. It is best to start by applying the objectives and key threats to the assets analysed in Step 1a, and then filter the selection of incentive mechanisms according to those that best targets these threats. A key consideration (early in this step) is the relative scales at which different instruments apply and the scale of the policy outcomes desired —both at the individual incentive level and the overall biodiversity outcome required. Applying a financial payments scheme to a situation where small changes to management are constrained by a lack of knowledge is clearly overkill because knowledge rather than cost is the limiting factor. Similarly, implementing an extension scheme with the goal of achieving corridors across a landscape that would require extensive revegetation is unlikely to be remotely effective because cost is likely to be the limiting factors rather than knowledge. At this point in incentive development, it is critical to maintain a clear focus on addressing the threats and constraints to biodiversity conservation per Step 1b.

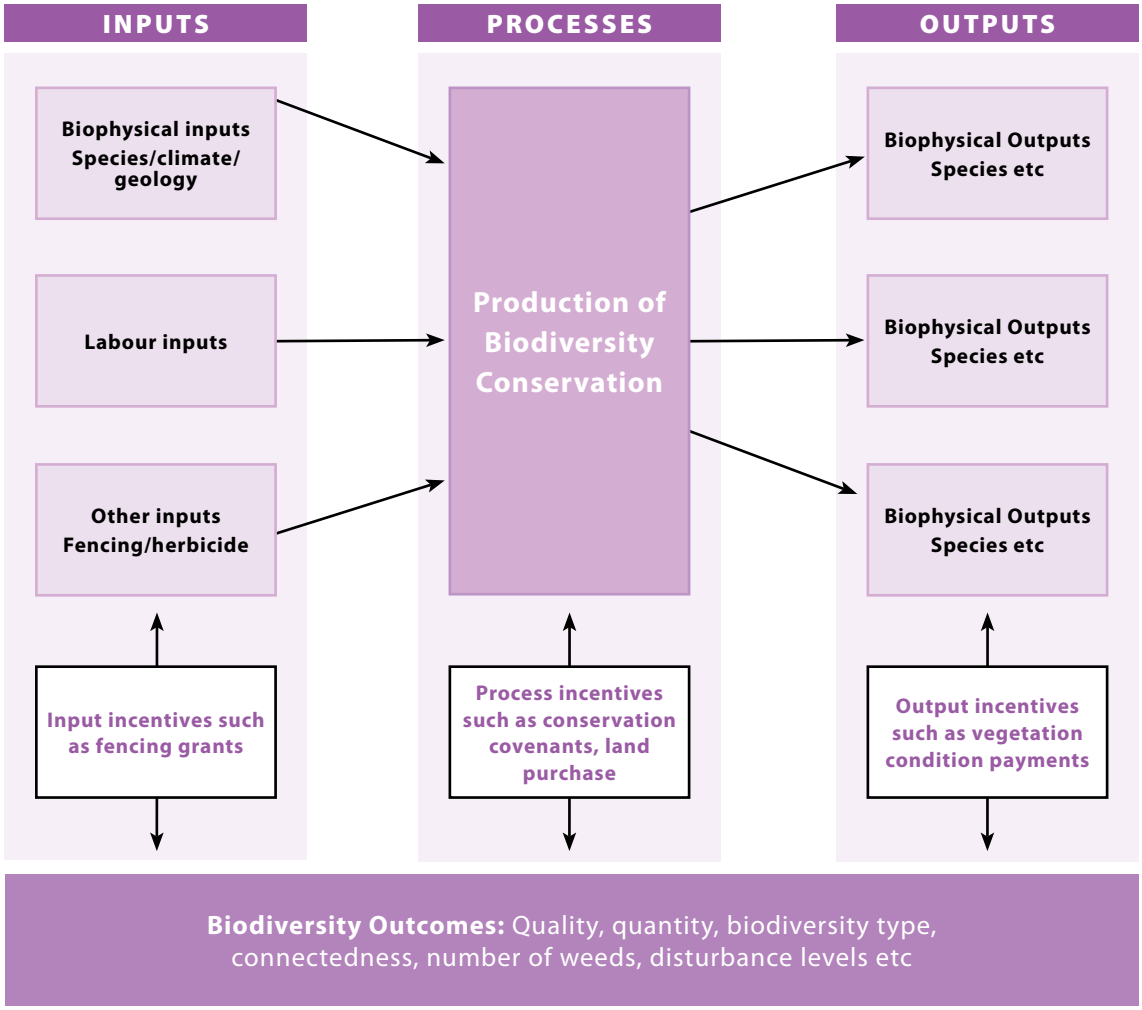
To aid in the selection of a scheme, consider where it will be most practicable and effective to target the incentive. The specific biodiversity goal of the incentive measure can seldom be directly targeted because usually it is very hard to measure biodiversity directly. In rare cases, direct incentives for specific components may be possible, such as bonuses for endangered species breeding success. In most cases, the incentive measure will be less direct. Incentive schemes may be targeted towards inputs into conserving biodiversity (fencing), towards protecting the asset generating the biodiversity outcome (conservation covenants) or towards outputs (improving vegetation condition). Mixed incentives can also be designed that target both inputs and outputs (a management agreement tied to a conservation covenant or a competitive payment scheme with funding eligibility tied to inputs but payments based on outputs).

Photography: Jenny Tomkins and Department of the Environment and Heritage

Tingle tree with coolamon scar in bush in Valley of the Giants WA

In none of these cases can we be completely sure that we will achieve the biodiversity outcome that we desire. Much care is needed in deciding at what point to apply the incentive along the causal chain that links inputs through natural processes to biodiversity outcomes. This is because people and natural processes respond differently depending on the point at whish the incentive is applied. In general the more tightly the incentive can be targeted towards achieving biophysical outcomes the better. Figure 3 demonstrates this causal chain using the input, process and output perspective along with examples of incentives applicable at each stage. It should be noted that many of the incentive options in Table 1 can take multiple forms and so do not neatly divide the categories in Figure 3 (pg 14). One example is competitively allocated payments which can target inputs (revegetation assistance), processes (conservation covenants), or outputs (achievement of specified habitat structure).

Figure 3: A production chain perspective on incentive approaches



It is particularly useful to revisit the threats to biodiversity and the policy context when deciding on the best incentive option. So, if the primary threat to biodiversity is grazing but there is little grazing value within the actual biodiversity asset, then a fencing grant policy (input based) may be highly effective. Similarly, if the main threat is inappropriate management of valued native pastures, then an extension campaign to inform landowners about how to manage their asset better, may be more appropriate (through an input incentive).

The outcome of this step will have analysed potential incentive approaches against the targets and threats previously identified and concluded the best way to address these using an input, process, output or mixed approach is chosen.

2c) Further refining the incentive scheme—which one is best?

The range of incentive options will have been narrowed down through Step 2b but a choice will still need to be made between the remaining options. Each of these will achieve the desired outcome, though in differing ways and at different costs. Criteria for choosing from among the remaining options are classified as organisational constraints and opportunities and community characteristics[3].

3 Note these may be overlapping and interrelated.

Organisational constraints

Organisational constraints restrict what the organisation implementing and administering an incentive scheme can do. Key organisational constraints and their implications for incentive selection are:

Budget: to be efficient the incentive scheme should be selected to maximise the on-ground outcomes according to the budget available. In the selection of an instrument, policy makers should consider the cost of the incentive payments (if any) as well as the day to day running costs such as legal fees, printing costs etc. The cost to refine, design, monitor and evaluate the instrument should also be considered. Options should be removed from further consideration if the scale of potential funding is incompatible with that needed for effective operation.

Institutional constraints: if new legislation or legislative change is required this may not be possible at the level or time scale at which the incentive is being considered. However, incentive schemes can be refined and evolve as institutions change, see for example the implementation and evolution of the Hunter River Salinity Trading Scheme. The complementarity of the incentive scheme with the current institutions should also be assessed. Creating an incentive scheme in conflict with current institutions is not usually recommended. Further, skills and networks contained in current institutions could be used in the proposed incentive scheme.

Another consideration may be the conditions put on the incentive scheme. There may be requirements on the amount of dollars that are spent on ground. Further, there may be conditions on when the money must be spent (if money needs to be spent within highly constrained time-frames this would restrict the ability to pay on outputs that take time to produce).

Available skills: the level of complexity of the incentive chosen will be restricted by the capacity of the staff directly involved in designing, implementing and administering it. Many incentive schemes have trouble recruiting people with the right skills and experience such as legal expertise, GIS skills, or people with good local knowledge (*see case studies in Section 5*).

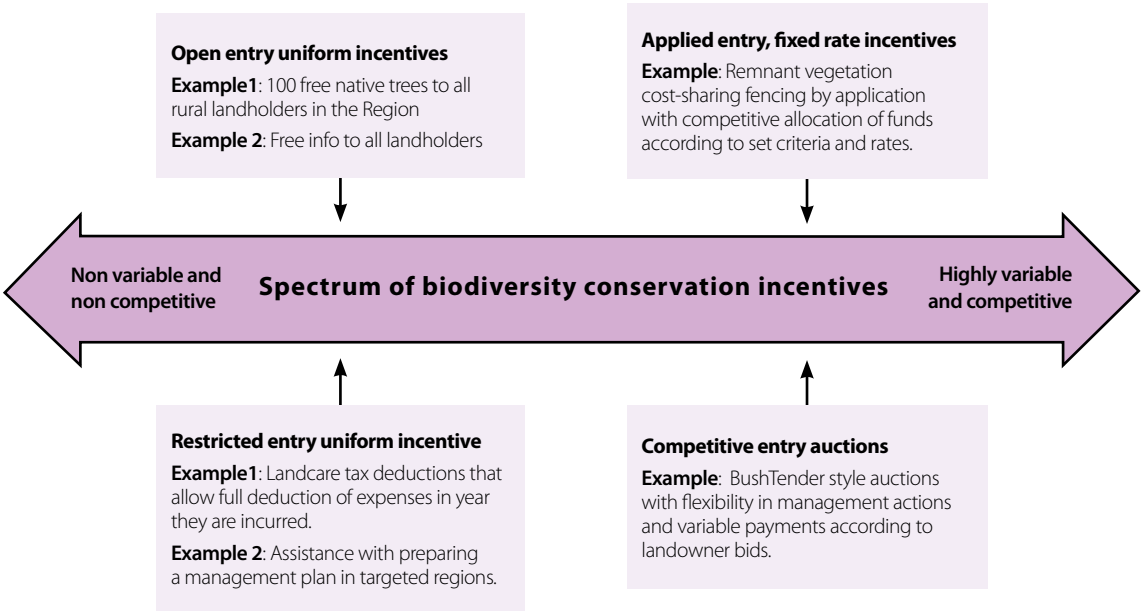
Target community characteristics

Understanding the characteristics of the community (the broad stakeholders) is imperative to the potential success of an incentive. The type of characteristics that should be taken into account when selecting an incentive include:

Heterogeneity of biodiversity assets, management actions and costs: it is likely that there are differences between properties in the quality of biodiversity and the management actions and the costs to conserve biodiversity. These differences can be harnessed better by some incentives to achieve the desired outcome at lower cost to government and landholders. The spectrum of incentive types according to the level of heterogeneity is presented in Figure 4 (pg 16).

One way to harness these differences is to think about the way in which different incentives operate. Incentives can vary from an automatic entitlement (a free native tree or information program to all residents in an area) or a payment (automatic rebate for areas of native vegetation or protection of conservation area regardless of quality), through to a competitive and conditional instrument (competitive tenders for fencing subsidies, carbon markets or strategic acquisition of land). Entitlement incentives are available to everyone in a designated area (i.e. they are universal) and are unconditional. Conditional incentives are generally designed to allocate limited funds, usually at a rate based on the degree to which applications meet evaluation criteria. Competitive instruments also take into account the relative cost-effectiveness of the proposed activities. The selection between these approaches represents a number of tradeoffs. Universal open-entry incentives can be administratively cheap but poorly targeted, while auctions may be more expensive to design and run but well targeted.

Figure 4: Variability and competition in incentive design



Acceptability of policy: an incentive scheme will only be successful if it is accepted by the community (all stakeholders directly and indirectly affected). Researching the issue in step 1 should give you a good idea of what is acceptable. Will a system of payments for biodiversity be accepted by the community or is biodiversity conservation considered to be something that should already be done? This may be particularly important if most landholders are currently not damaging the resource but legally could do so.

Acceptability of a policy will also be influenced by the perception of equity. Other issues include the perceived fairness of positive or negative impacts, the scale of wealth impacts from incentives (will some individuals receive large payments?), and the degree to which communities feel coerced to change management.

Landholder capacity: Step 1 will have identified some of the impacts of land management changes on landholders, but do they have the skills, finances, time and labour capacity to undertake these? There is no point developing an incentive scheme that requires significant landholder labour if this is constrained by their ability to undertake the required tasks. An awareness of landholder labour effort at different times of the year will help indicate periods when actions can be undertaken and when they cannot.

Landholder willingness to engage: acceptability will be influenced by landholder experiences with other policies in the past. Positive experiences should be built on, negative experiences should be avoided. Other factors that may influence the engagement by landholders include the age structure, education, and perceptions of future expectations resulting from complying with the policy.

An important factor rarely considered is the potential cost of policies to landholders. Landholder costs are incurred through the application to incentive schemes (filling out forms and accommodating site visits), but also in conducting the work. These costs can be a major disincentive to the landholder.

Step 3: Refining and implementing the incentive.

The **objective** of this step is to deliver a practical, working incentive in the field.

The **outcomes** of this step include:

- Refine the incentive design;
- Design an implementation plan;
- Design of a monitoring and evaluation plan;
- Identification of the necessary support structures, materials and resources for implementation;
- Implement the incentive; and
- Begin to achieve the management changes necessary for improved biodiversity conservation.

The best incentive for the problem has now been chosen subject to a range of selection constraints. Step 3 is about refining the design of the incentive policy and implementing the incentive scheme on-ground. At this point, and when making pragmatic trade-offs in practical incentive delivery, it is important to regularly revisit the threats and objectives identified in Step 1 in order to ensure that the policy remains well targeted.

3a) Refine incentive design and plan for implementation

The selected incentive, or group of incentives, must now be refined for practical delivery at the scale and in the context desired. More precise design and operational issues will now need to be considered (see below). It is useful to summarise the planning for this step in the form of an implementation plan, both as a reference for future actions and a record of implementation decisions. Questions for this step are:

- **Refining the final form of the incentive:**
  - Will you target specific landholders or make it open to all? Are rules needed to target the incentive to places or issues?
  - How will landholders be engaged—will landholders have to submit an expression of interest or will the incentive be implemented on a first come first served basis?
  - Will you need to distinguish between different proposals, for example as part of a competitive grants program or tender mechanism? If so, how will you measure the relative effectiveness of alternative proposals? What proxies will you use for measures? Note that if you get the measurements or the proxies wrong you will not be measuring if you achieved your desired outcome.
  - Are there underlying duty of care issues or other regulatory requirements that will need to be taken account of in assessing eligibility?
  - Are there any other refinement issues such as whether to make payments up-front, after implementation, or a split payment?

Photography: Allan Fox and the Department of the Environment and Heritage

Kathleen Spring

- **Identifying and creating the necessary support structures needed to run the incentive:**
  - Are required legislative changes in progress (if any)?
  - What administration structures are needed (staff numbers, skills, resources)?
  - What resources will be needed (legal expertise to support contracts or covenants, vehicles and maps to support management advice)? Should these be outsourced?
  - What legal support is needed? Do you have a pro-forma for contracts? Do you need to seek advice on contract development? How will these be enforced?
  - What are the potential training needs of staff? How will this be met (outsourced, in-house training, other options)?
- **What will be the timelines for implementation?**
- **Draw up a communication plan for engaging with stakeholders (this may extend beyond landholders depending on the nature of the management change desired and its mode of implementation).**
- **Draw up a plan for monitoring and evaluation (see also Step 4 here):**
  - What performance criteria and objectives will you use?
  - What data must be collected (is it already collected for other purposes)?
  - Are there certain things that you need to report on?
  - Is the data collection consistent with nationally agreed indicators?

3b) Put implementation plan into action

With the incentive mechanism designed, rules formed and operating frameworks established, it is nearly time to implement. Before this the policy maker needs to:

- Create necessary administrative structures, application forms, reporting and evaluation templates, identify staff roles and responsibilities;
- Negotiate any external service agreements required.
- If necessary, pre-test the incentive before on-ground implementation (eg lab based workshops such as those conducted in experimental economics);
- Recruit and train staff;
- Implement communication plan;
- Start collecting information for monitoring and evaluation;
- Execute other stages in implementation plan; and
- Review and revise strategies as needed to ensure incentive effectively implemented.

Step 4: Monitoring, compliance and evaluation.

The objective of this step is to be able to identify whether the biodiversity goals set in step 1 have been achieved and whether the incentive measures performed as expected (and if not, why not?).

The outcomes from this step include:

- An assessment of the incentive performance against criteria such as compliance requirements, timing, on-ground implementation;
- An assessment of the incentive measure performance against objectives (set in Step 1 and refined in Step 3a);
- Review of objectives, identification of lessons and improvements for future schemes or other programs.

Effective monitoring and evaluation is important to identify whether the initial policy goals have been met and to capture lessons for improving policy. There are three components to this step:

A. Monitoring: monitoring is about:

i) Assessing if the biodiversity goals set in the first step were achieved; and

ii) Assessing whether the incentive measure met other relevant performance criteria that were set internally (such as targets for time to process applications and so on).

B. Compliance: evaluating legal compliance is important both at the organisational reporting level and for any legal agreements such as covenants or payments;

C. Evaluation: evaluation is conducted to identify lessons for future use internally or in other programs. This is likely to be substantially related to monitoring but will include other lessons from areas without explicit performance criteria.

Monitoring and evaluation with an assessment of compliance should be done for all incentive schemes. The level of monitoring and evaluation will vary depending on the budget; nature of the incentive measure; goals and targets set; and the stakeholders involved.

Following are a number of steps and questions that guide the implementation of a successful monitoring and evaluation framework. Many of these issues should be resolved before the incentive scheme is implemented as they may affect whether or not a stakeholder will engage.

4a) Monitoring

When, where and what will you monitor?

Issues such as linkages to regional, state and national priorities and targets should be considered. Methods and data should be consistent with nationally agreed indicators and mechanisms where possible. Specific indicators for evaluation against the overall objectives and targets as set out in Step 1 and refined in Step 3a will also need to be identified and implemented here.

Photography: The Department of the Environment and Heritage

Bushy Island

Who will do the monitoring?

- Will you get landholders to provide information (how do you authenticate and ensure quality of data)? Is training required?
- Will on site visitation be conducted by project staff (can be costly)?

4b) How will you assess compliance?

- Were contracts honoured? Were the incentive efforts (financial or other) used for the purpose intended? If not, why not, do you need to change the interaction with the stakeholders?
- Should you enforce the incentive obligations if non-compliance is detected? How might you do this (informal through discussion and encouragement or formally through the legal process – this will depend on the type of incentive);
- Did the incentive measure meet the requirements imposed by the funding body or internal auditing and probity requirements? If not, why not, and how can this be improved?
- Have external reporting requirements been met?

4c) Evaluation for continuous improvement in performance

- Were the objectives set the right objectives and were they met? What was the uptake?
- What were the overall and distribution of costs and benefits of the incentive?
- Did the predicted costs and benefits differ from the actual? Did some components differ more than others, if so why?
- How well did the administrative arrangements work?
- Were stakeholders (including the funder) satisfied with the outcomes?
- Where could improvements have been made?
- What were the key lessons learned?
- How should you communicate this information to other interested parties?

4. Benchmark criteria for incentive selection, design and implementation

The steps in the framework can be summarised to provide a set of qualitative criteria. Incentive design will follow best practice benchmarks if the following steps and criteria have been considered in selecting and designing an incentive.

Table 2: Steps in the best practice incentive design and implementation framework

Step	Criteria
Step 1	**Defining the problem**
1a	What is the problem? What information do you have about the problem?
1b	What is the context of the problem—what are the existing policies to manage the asset and their impacts?
1c	Should you intervene? What are the effectiveness and cost-efficiency of potential interventions (in conjunction with Steps 2 and 3a)?
1d	What are the broad intervention options and likely stakeholder attitudes towards these options? Are incentives the best option?
Step 2	**Selecting the right incentive**
2a	What incentives are available?—identify range of potential incentives
2b	What incentives could work?—short-list of suitable incentives likely to be effective given scale, context and other issues from Step 1.
2c	Which incentive is best?—Select best incentive according to: i) Organisational constraints and strengths ii) Target community characteristics
Step 3	**Refining and implementing the incentive**
3a	Refine incentive design and plan for implementation i) Define final form of incentive, review and revise performance targets and objectives, define nature of engagement with landholders ii) Identify necessary legal changes, staff, support structures (including administrative) and resource needs iii) Identify monitoring and evaluation needs iv) Draw up implementation plan detailing steps and tasks.
3b	Put implementation plan into action i) Create administrative and support structures ii) Recruit necessary staff and external resources iii) Implement communication plan iv) Undertake pre-tests (if required) and training v) Commence incentive operation vi) Commence data collection for monitoring and evaluation vii) Implement any other steps of plan
Step 4	**Monitoring, compliance and evaluation**
4a	Monitor incentive uptake and effectiveness
4b	Assess compliance with contractual, internal and external requirements
4c	Evaluation for continuous improvement in selection, design and application

5. Case Studies

Goal of the case studies

The best practice incentive design and implementation framework has been informed by economic, social and public policy theory and by lessons drawn from the practical design and implementation of incentives in Australia and internationally. A 'one-size fits all' approach to guidelines for incentive selection, design and implementation will not work. Instead, the guidelines emphasise understanding of the local context, clear problem definition and identification of likely opportunities to target incentives towards constraints (Figures 2, 3 and 4 [pg 12,14 & 16]). Pragmatic trade-offs will often need to be made in practical incentive design and implementation because of the skills, resources and time available to policy makers.

Ten case studies were investigated to illustrate the practical design, implementation and management of incentives in Australia. These case studies are intended illuminate the practical design tradeoffs commonly made in incentive design and delivery rather than to evaluate these policies against the best practice framework. Our aim is to illustrate some of the design steps and features that proved most important in achieving robust and effective incentive tools. Therefore, the case studies focus on the positive lessons that can be learnt to aid practical incentive design and delivery rather than on identifying fault with incentives because they did not fully implement the best practice approach.

The ten case studies were selected to cover the spectrum of potential incentive mechanisms (Figure 2 and Table 1 [pg12]) including information, advice and support, financial incentives and security. The case studies encompass the wide range of potential implementation vehicles including local government, catchment management authorities, non-government organisations and state government. As this guide is explicitly directed towards state, regional and local incentives, Australian Government level tax incentives are excluded.

Photography: Trevor Preston and the Department of the Environment and Heritage

Eurobin Creek 3

Overview of case study findings

The presentation of the case studies does not strictly follow the framework. Instead each case study presents a unique discussion of the key lessons learned for policy design and implementation. Table 3 (pg 26) summarises the ten case studies analysed in this report.

1: Defining the biodiversity conservation problem/ Setting goals and targets

A key step in any policy design is a clear understanding and definition of the problem in order to clearly define intervention objectives. This can be broadly demonstrated by identifying the biophysical problem and outlining the social and economic context.

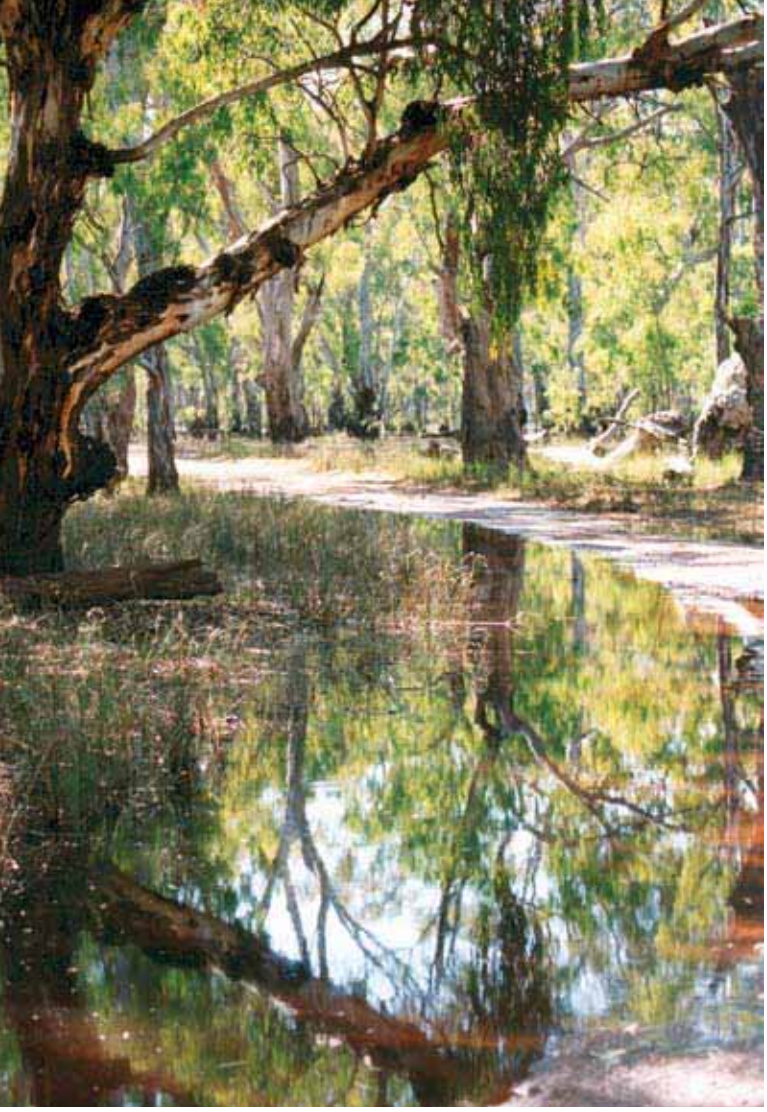
A number of case studies emphasised the importance of prior research in understanding the scale and extent of the biophysical issues that drove the selection and design of the incentive. Specific examples include:

- Information about declining bird populations in and around the ACT set the habitat priorities that drove the Greening Australia 'Vegetation Incentive Project' (VIP) devolved grants program;
- Information about the impact of grazing on wetlands set the emphasis on facilitating improved grazing management that drove the Murrumbidgee CMA Wetland Stewardship program; and
- Information available about bioregion conservation status and inclusion into the national reserve scheme was used by Australian Bush Heritage to target effort (effort concentrated in bioregions not included in the national reserve).

The importance of understanding the social and economic context was also emphasised as significant to the selection and design of incentives. The BushTender competitive tender approach in Victoria was designed to overcome gaps in the information held by landowners and government. Similarly, the South Creek Bubble License and associated offset scheme was built around an understanding of the main economic trade-offs in addressing the nutrient problem in the region.

These findings are consistent with other conservation planning tools to inform policy in Australia and internationally (such as Groves *et al* 2000)[4]. Similar approaches within the case studies examined led to clear spatial or management prioritisation.

4 For example, The Nature Conservancy, a major non-profit conservation organisation in the US has developed a handbook for conservation planning called 'Designing a Geography of Hope' (Groves *et al* 2000).



Photography: Trevor Ierino and the Department of the Environment and Heritage

Barmah Forest in Flood1

2: Selecting the incentive in accordance with constraints and opportunities (organisational and community characteristics)

Nearly all of the case studies demonstrated the necessity of making pragmatic deviations or trade-offs when compared to the best practice approach. While the nature of these trade-offs was diverse, a feature of the case study findings was the importance organisational constraints in supporting incentive development, implementation and management. In many cases incentives were designed around existing approaches that had worked, or to leverage the strengths of organisations rather than exploring all potential options. Greening Australia's VIP devolved grant program built on the success of existing successful native seedling propagation and volunteer programs. Similarly, the Johnstone Shire's bonus development rights scheme is built around its existing development approval requirements, Brisbane City Councils cash payments are based on existing land rate frameworks, and the Australian Bush Heritage fund focuses on under-reserved areas facilitates access to Australian Government funding to aid in land purchase.

The case studies analysed tended to be focused on individual programs in isolation from each other. Yet in many instances these programs complement or work with other incentive programs. For example, Land for Wildlife do not provide conservation covenants but have strong ties to covenanting organisations so can provide the link where it is required by participating landholders. While few insights were developed into how such programs work together, it is important to identify whether new incentive programs will complement or conflict with existing programs. This is particularly important for larger scale proposals that may encompass many successful smaller scale incentives.

3: Designing and implementing the incentive mechanism

Across all case studies there was an emphasis on finding ways to reduce the information and administrative costs of incentive program implementation and management. The objective here is to maximise the environmental outcome for the lowest possible cost. Most case studies reported identified pragmatic strategies to reduce the costs involved in on-ground prioritisation and site selection, and in finding ways to provide effective individual support to landholders. Practical examples that emerged include:

- Land for Wildlife's development of a uniform information kit which is supplied to all new applicants; and
- Brisbane City Council's incorporation of a minimum land size for acceptance into their Conservation Partnerships Program.

These strategies illustrate the dilemma apparent in Figure 4 (pg 16) and involve trading off some degree of targeting and differentiation against the costs that increased targeting would incur.

Other elements emphasised in this step included managing the ongoing costs of programs. Australian Bush Heritage noted the importance of identifying properties requiring minimal ongoing management; the Victorian Trust for Nature emphasised the risks involved in purchasing rural properties with consequent slower turn-over and higher management requirements compared to less demanding blocks nearer to Melbourne; and the National Trust emphasised the importance of management agreements in achieving ongoing protection of biodiversity assets.

Despite the emphasis on pragmatic trade-offs to best achieve the desired objectives within a resource constrained setting there was little evidence in the case studies of formal planning including: implementation plans; communication plans; and formal monitoring and evaluation plans. In most cases the refinement and implementation of the scheme seemed to be driven by the initial funding proposal with adaptations as necessitated by failures or opportunities. This may work for smaller scale incentives that require few new structures and less formal support structures, but is clearly inappropriate for large scale or complex new incentive approaches.

Exceptions with clear implementation plans included: the BushTender competitive tender, which had a clear communication, implementation and evaluation structure; and the staged development and implementation of the South Creek Bubble License scheme to include offset provisions. It should be noted that some schemes, particularly ongoing security oriented programs involving covenanting and revolving funds, had evolved into their present form over many years with consequent formal and informal structures effectively serving the purpose of an implementation plan.

4: Monitoring, compliance and evaluation

Monitoring is an important component of many of the incentive schemes and can be divided between compliance monitoring and monitoring for future evaluation. Effective monitoring was constrained in many of the incentive programs for a variety of reasons, of which the duration of funding and overall funding limitations appeared to be the most important. The Murrumbidgee Wetland Stewardship Scheme noted the importance of monitoring but indicated the impracticality of ongoing monitoring under a three year funding program.

While most of the incentive programs collected data on at least one measure of the magnitude of outcomes achieved, few had conducted a formal evaluation of the program to assess the overall effectiveness of the incentive measure

Photography: John Baker and the Department of the Environment and Heritage

Coral Gum

against stated performance criteria or compared to alternative approaches. Nor was there a formal approach to identify opportunities for refinement or development of alternative incentives. One exception is Brisbane City Council's Conservation Partnerships Program. Its recent review provided information on the key steps in the review process and a number of important conclusions for refining the program and developing complementary programs. The BushTender pilot has also been comprehensively reviewed with the results feeding into further applications of competitive tenders in Victoria.

The lessons from reviews in the international arena have also proven valuable in refining incentive measure design, particularly for improving environmental outcomes and cost-effectiveness. The United States Conservation Reserve Program (CRP) has been subjected to regular review and revision throughout its history. Legislative and internal reviews have modified the Environmental Benefits Index (EBI)—used to evaluate the environmental contributions of alternative management actions. One significant review result was a restructuring of incentives to emphasise land that contributed to water quality and wildlife habitat (USEPA 2001). Other revisions were developed to introduce provisions minimising landholder activities damaging environmental assets ('Sodbuster' and 'Swampbuster' provisions seeking to protect untilled land and wetlands respectively). Finally, throughout the history of the CRP, additional programs have been introduced focusing on specific environmental assets that are considered to be poorly reflected in the CRP. These include the Wetlands Reserve Program (WRP) and Wildlife Habitat Incentives Program (WHIP) amongst others.

Table 3: Case Studies[5]

Motivator	Mechanism	Scheme name	Level of Implementation	Location focus for case study
Information/ people	Information and support	Land for Wildlife	State Government	Victoria
Security	Covenant	National Trust of Australia	Private non profit national	WA
Finance	Revolving Fund	Trust For Nature revolving Fund	Private non profit (Vic)	Victoria
	Land purchase	Australian Bush Heritage Fund	Private not for profit operating nationally	National
	Bonus Development rights	Development rights	Local Government (Johnston Shire Council (Qld)	Qld
	Rate rebate	Cash Grants linked to rates	Local government (Brisbane City Council)	Brisbane, Qld
	Competitive payments—auction	Bush Tender	State Govt	Victoria
	Devolved Grant—flat rate payments	Greening Australia Vegetation Investment Project	Private	ACT
	Offset	South Creek Bubble Licence Scheme	State Government (NSW EPA)	NSW
	Stewardship Payments	Wetland stewardship payments	State government through CMA (Murrumbidgee, NSW)	NSW

5 Whilst the case studies have been grouped into discrete categories, in real life this is not the case. There are many overlaps between the motivators of different policies. This overlap is represented by the striped column in this Table.

Case 1. Information and support—Land for Wildlife (LfW), Victoria.

Details	
Scheme name:	Land for Wildlife
Scheme type/motivator:	Information and support
Scheme manager:	Victorian Department of Sustainability and Environment
Scheme location:	National
Case study location:	Victoria
Concept:	Reduce the cost to landholders of obtaining relevant biodiversity management information thereby increasing landholder intrinsic motivations for conservation management.
Further information:	http://www.dse.vic.gov.au/dse/nrenpa.nsf

What is the Land for Wildlife (LfW) incentive scheme?

Land for Wildlife (LfW) in Victoria is a state government program supporting landholders or managers who make a personal commitment to provide habitat for native wildlife on their land through information and recognition. LfW is free and voluntary and consequently has no formalised contracts. Land included in the LfW scheme is not altered in any legal way (tenure does not change nor do LfW contracts regulate activities). Over the 24 years of operation, LfW have registered 6,000 properties resulting in 162,743 hectares under conservation management. LfW have done this at an annual cost of approximately $310,000.

The Victorian LfW scheme is an information and support based incentive scheme based on three drivers. First, it appeals to the intrinsic or non-financial motivations of landholders, recognising that many landholders conserve biodiversity on their properties for non-financial private benefits, such as places of beauty and recreation space. Second, LfW draws on the status motivation of landholders through a structured membership process (outlined below) with external recognition via a sign and holding of field days and open-days on LfW properties. LfW also recognises that the appropriate information about the biodiversity and how to look after it is hard to come by for private landholders. The difficulty of accessing appropriate information is one major cause of poor biodiversity management. LfW therefore operates to encourage and support private actions by reducing the cost to conduct conservation activities and increasing the confidence in the actions undertaken and the nature of the resultant biodiversity and other benefits to landholders.

Properties eligible to be registered with LfW include farmland and other rural landholders. Properties should then be:

- Managed in a way which clearly pursues the maintenance and enhancement of native flora and fauna; or
- Managed in a way which attempts to integrate nature conservation with other land management objectives.

There are two categories of LfW membership—fully registered and 'Working Toward Registration'. The full range of LfW services are available to both categories with the exception that fully registered properties are eligible to display a LfW sign and receive a certificate.

Photography: Trevor Preston and the Department of the Environment and Heritage

Echidna

Services are provided to landholders on a first come first served basis. Services provided by LfW include (DSE 2005):

- An on site visit to provide advice and answer questions;
- Advice about ways in which the landholder can contribute to biodiversity conservation;
- Assistance in the development of management plans;
- Invitations to field days, neighbourhood days, open-properties and information sessions;
- A regular *Land for Wildlife* newsletter and *Land for Wildlife* Notes with detailed information on specific topics; and
- A *Land for Wildlife* sign if the property is fully registered.

Whilst the Lf W incentive scheme is generally taken up by the more conservation minded landholder, the spill-over benefits of the scheme are maximised by capitalising on a common landholder way of learning and gathering information—looking over the fence. Landholders who are a part of the scheme are given a sign for the front gate and are encouraged to talk to neighbours about the scheme. A recruitment focus of the project is commercially successful farmers.

Key lessons and observations

Because of the length of time that LfW has been in operation (24 years) it was not possible to review the process of establishment against all of the framework steps. However, the current operation of the LfW scheme demonstrates a number of practical lessons in the operation of an information based incentive scheme. Lessons are discussed below and are focussed around targeting the incentive scheme to address the cause of the undersupply of biodiversity; and designing the incentive scheme to operate with some tight organisational constraints.

Design policy to address specific causes of biodiversity undersupply and leverage motivations

The LfW scheme is targeted towards landholders who have clear motivations for conservation (that may be non-financial) but require information about appropriate management tools and techniques to help them reach their goals. Information provided under LfW specifically targets the biodiversity management needs of participants by region and broad habitat type. LfW resources are not invested in engaging with landholders who do not have a strong motivation towards conservation in the first place.

Understand and work within organisational constraints

Like a lot of incentive schemes the overall operation of LfW is constrained by the small staff and budget available. LfW makes a number of practical implementation and operational tradeoffs to maximise their impact. These include:

- LfW do not actively seek out land for habitat conservation. Instead, officers assess applications put forward by landholders on a first come first served basis. Whilst this reduces the ability of LfW staff to strategically target specific areas or actions, it means that the landholders that are engaged by LfW staff are highly motivated;
- An internal review of the scheme identified other conservation schemes that LfW could partner with to maximise impact. ,LfW now regularly work with Green Corps (to assist in any on ground works that may need to be performed) and Trust for Nature if there is a need to covenant;
- To minimise the transaction cost of site visits LfW have developed a uniform information kit that provides a range of information that will answer most questions and is applicable to most sites. This information kit provides:
  - General information about birds, weeds, vegetation species and other relevant factors for the area;
  - Analysis of an aerial photo to show landholders how they fit into a greater connected system—this helps with prioritising landholder effort and strategically identifying information needs;
  - Assistance with a management plan—this may include actions that need to be taken before they can become registered or ongoing management actions to maintain registration; and
  - Identification of areas for funding assistance or work assistance.
- To further reduce the time and effort cost of site visits LfW has developed a standard manual for all site assessors. This manual enables consistency of information given to landholders as well as a standard way to evaluate properties for registration or to categorise as 'working towards'. This manual also outlines what information about the property is lacking (and therefore may need to be obtained).

Photography: Greening Australia and Department of the Environment and Heritage

Healthy bushland near Perth WA

Case 2. Biodiversity Covenants—The National Trust of Australia in Western Australia (WA).

Details	
Scheme name:	National Trust of Australia (WA)
Scheme type/motivator:	Covenant/Security
Scheme manager:	National Trust of Australia (WA)
Scheme location:	National
Case study location:	Western Australia (WA)
Concept:	Increase the legal security of biodiversity protection through conservation covenants over privately owned land.
Further information:	http://www.ntwa.com.au/

What is the National Trust of Australia (NTA) (WA) Covenant scheme?

A covenant is a voluntary, legally binding agreement that is permanently registered on the land title. It is made between a landholder and an organisation, in this case the organisation is The National Trust (WA) and the voluntary agreement restricts activities that could potentially damage bushland.

In WA, conservation covenants derive from the *National Trust of Australia (WA) Act, Transfer of Land Act and the Soil and Land Conservation Act*. Regardless of how they are derived, all these covenants have the force of statute, and should be distinguished from common law covenants. Unlike common law covenants and planning schemes that can be amended, conservation covenants are permanent.

The covenant is registered on the property title and binds all future owners. Covenants provide a legal guarantee to the landowner that their good work and the conservation values they cherish will be protected into the future thus **increasing the security of biodiversity conservation**. Covenants thus appeal to highly committed landowners wishing to provide a legacy on their land. From the public perspective, covenanting private land compliments the National Reserve System, providing lasting protection of nature conservation values on private land.

Whilst the NTA (WA) covenants are directed to conservation-minded landholders, a number of benefits are offered to landholders to encourage engagement. These benefits include:

- The payment of legal costs of gaining a covenant, unless the covenant is sought as a condition to fulfil subdivision approvals (the NTA does not provide financial assistance for fencing or ongoing management);
- Free land management advice as well as assistance with grant applications, and free membership of the National Trust of Australia;
- Assistance with land sale through links with the real estate industry of WA and other organisations motivated to purchase and manage conservation land; and
- Assistance with revaluation of covenanted land for local government land rate reductions.

Key lessons and observations

Implementing the covenanting scheme provides some good lessons on the targeting and operation of an incentive scheme under tight organisational constraints. Accessibility of instruments is also a key lesson from considering the broader context of this case study.

Access to legally binding instruments such as covenants

Conservation covenants are available in all Australian States. However, at present they always operate under one or more state level programs, such as the Trust for Nature (Victoria) or the Nature Conservation Trust of NSW. While local and regional authorities can usually access covenants through these processes the additional layer of administration can make use of covenants more difficult.

Be very clear about what your scheme is trying to achieve and achieve these targets first, only then go after additional projects

The NTA (WA) has limited capacity (time, budget and staff) to provide covenanting support and processes to a wide range of landholders. To maximise the value of these resources the NTA (WA) limits the provision of covenanting services to land of high conservation significance. Criteria used to prioritise conservation significance include:

- Contain habitat for threatened plants or animals, or be one of the last remaining patches of bush in the area;
- Form part of an important wildlife corridor, or act as a buffer to protect a neighbouring National Park or reserve; and
- Other factors taken into account include the degree of disturbance; the diversity of native flora and fauna; whether there are rare and endangered species; its value as a buffer or wildlife corridor; the size and shape of the area; the presence of weeds or vermin; and the management required to maintain the ecological integrity of the site.

Photography: Colin Totterdell and the Department of the Environment and Heritage

Casuarina strand

Management agreements are useful aids to restrictive covenants because they enhance covenant flexibility and encourage proactive land management

The NTA (WA) covenants for the protection of biodiversity, heritage and landscape values are categorised as restrictive covenants. A restrictive covenant specifies what a landholder cannot do but does not provide direction of proactive land management activities. For example, the NTA (WA) covenants may include statements, such as 'you must not clear vegetation', or 'you must not put a dwelling in the bush'. A restrictive covenant may have negative implications for landholder engagement and encouragement.

To manage any negativity as a result of the restrictive covenant, the NTA (WA) remains flexible in the design of the covenant and includes a 'management plan' signed by both parties (the Trust and the landholder). This flexibility allows the Trust to design covenants and management plans to reflect the individual motivations and needs of the owner and the conservation requirements of the land. A deed accompanies the management agreement. It enhances security to the Trust and surety of future management to the landholder.

Photography: D. Zeigeler and the Department of the Environment and Heritage

Brushy River Area; dry sclerophyll forest

Permanent protection via covenants is restrictive to landholders

While covenants are appealing because they offer permanent protection over biodiversity on private land, their permanent nature can also be a disincentive for landowners. The flexibility provisions within the covenanting and management framework seek to minimise the impacts of the 'permanence' disincentive. It is important to note, however, that a flexible covenant should not be weak. There is a risk that a flexible covenant may be weak and not satisfy landholders motivated by a long term conservation aim. That is, covenants that are too flexible could attract the wrong kind of landholders and reduce the ratio of benefits to costs.

Permanent covenants still incur future costs to government or managing authorities

The identification, extension information and renegotiation of management plans with new land owners is particularly costly for the NATA (WA). There are two reasons for this. First, any new landowners must be educated about their rights and responsibilities under the perpetual and binding covenant. Second, as the property changes hand, the management plan needs to be renegotiated with the new landholders. Both of these activities place costs on the NTA (WA).

Despite there being a requirement on covenants that new landholders sign the deed, this has often been ignored during the transfer of ownership. As a result the NTA (WA) is not always informed of the sale. Hence the NTA (WA) incurs unforseen costs in identifying and engaging with new landholders. The final source of costs to the NTA (WA) is those following a sale. Management plan renegotiation costs are particularly important because these are attached to the covenant but not attached to title and therefore not fully binding on new landholders. Therefore they often need to be renegotiated with new landowners. To manage these costs, the National Trust is investigating options, including a caveat on properties which require landholders to inform the National Trust when the property is on the market. This would allow the National Trust to negotiate a management agreement with the new owners as a part of sale arrangements.

Case 3. Revolving fund—Trust for Nature (TfN).

Details	
Scheme name:	Trust For Nature
Scheme type/motivator:	Revolving fund /payments through land purchase
Scheme manager:	Trust for Nature (TfN) (Victoria)
Scheme location:	National
Case study location:	Victoria
Concept:	Security of biodiversity conservation can be increased by bringing conservation oriented buyers and sellers together, particularly in areas with high private demand for amenity properties close to Melbourne. The revolving fund purchases properties with high biodiversity conservation value, covenants the biodiversity assets, and re-sells. Capital recovered from the resale then contributes to the purchase and covenanting of other properties of high biodiversity value.
Further information:	http://www.tfn.org.au/

What is a revolving fund incentive scheme?

The Trust for Nature (TfN) (Victoria) is a non-profit organisation which works to protect remnant bushland. TfN was established as a body corporate by the *Victorian Conservation Trust Act in 1972*. TfN has a number of roles in biodiversity conservation including facilitating conservation covenants for the protection of Victoria's threatened, privately owned bush and acting as an agent for donations of land or money for conservation. In 1989, TfN created a revolving fund to acquire bushland of high biodiversity conservation value, place a covenant on it and re-sell.

The TfN revolving fund brings together buyers with an interest in biodiversity conservation with sellers of suitable properties, typically bush blocks. The revolving fund leverages the strong demand for bush blocks in the Melbourne amenity belt (up to 2 hours drive from Melbourne). The purchase protects land of conservation significance until interested purchasers are found. Long term, security of protection is achieved through a conservation covenant on to the land title. Selling the covenanted land reduces the costs to TfN of protecting the biodiversity assets, as the new landholder takes responsibility for management under the terms of the covenant.

To date, TfN's revolving fund has protected about 3,500 hectares.

Key lessons and observations

The TfN demonstrates targeting of incentives towards key threats to biodiversity management, pragmatic tradeoffs in resource allocation and synergistic development with other TfN programs.

A good understanding of the problem and a clear goal helps in the selection of an incentive scheme type

The revolving fund concept emerged from a range of observations. First, whilst it is difficult to secure biodiversity protection on private land it is also very expensive to protect this biodiversity by purchasing and then incurring the management cost. Second, many conservation minded people are afraid to sell their land in the open market because of the risk that the next owner will not look after the land. Third, there are many conservation minded people looking for well conserved biodiversity to manage but it is costly to seek out the sellers of this land.

TfN was developed specifically to take advantage of the opportunity to increase the security of biodiversity protection via covenants at the point of sale, as well as to remove the capacity of new owners to damage previously well looked after bush. TfN does this by matching up the conservation orientated buyers and sellers and placing covenants on unprotected biodiversity at the point of sale.

A revolving fund is reliant on a sufficient pool of conservation oriented buyers who are prepared to undertake the responsibility of future land management. TfN observed that there were many buyers interested in bush block properties within a 2 hour drive of Melbourne. TfN therefore focuses on these properties as they turn over quickly (allowing rapid capital recovery and reuse) and it is easy to find buyers. The focus on the amenity belt is also consistent with major threats to biodiversity from development and hence TfN's operations in this area protects threatened biodiversity.

TfN also purchase and covenant agricultural land to maintain a diverse property and biodiversity protection portfolio even though there are some major operational problems with including agricultural land in a revolving fund. Agricultural land requires multi-use covenants which are often more legally difficult to write and enforce, and it is often more difficult to find buyers for this land (incurring larger on-going management costs while owned by TfN). Despite these problems TfN believe that when the biodiversity conservation value of agricultural land is high, it is still worth including in the revolving fund. TfN manage the agricultural land in their portfolio by accepting a slow turn over and potential loss on these properties that is balanced by the quick and profitable turn over of the 'tree change' blocks.

It is important to be flexible and opportunistic in land purchases

TfN objectives target a range of high conservation value regions and ecosystems. It is important for the fund manager to retain flexibility wherever possible to react to the opportunistic nature of the property market. Strategies that incorporate such flexibility include a flexible approach to prioritising purchases, scope to facilitate covenants and sales through the revolving fund without actual purchase (where the existing owner is not seeking an urgent sale and desires positive conservation outcomes). TfN is also able to accept donations of land which can then be covenanted and on-sold, thus increasing the size of the revolving fund.

Select, design and implement the incentive scheme making the most of the constraints that are faced and that the scheme has to work within

The operation of TfN also highlighted a number of constraints that have to be thought about in the selection and implementation of this type of incentive mechanism. Constraints faced by TfN and, in some cases, the approach to manage these constraints include:

- Revolving fund finances are limited and this has proven particularly constraining in an environment of rising property prices. In some cases TfN cannot afford to pay the full market value of a property. Sometimes they are able to purchase land below market rates with the difference effectively a partial donation. TfN has also negotiated 'rights of first refusal' and purchase options with landowners where outright purchase is not possible at present.
- The costs of land purchase and management mean that TfN can only have a limited number of properties on hand at any one time. However, TfN also act as a broker, advertising other suitable properties through their revolving fund program (including properties which have previously been covenanted) in order to increase program leverage.
- Identification of suitable blocks is generally constrained by the skills of TfN staff and volunteers and it is very difficult for a not-for-

Photography: Allan Fox and the Department of the Environment and Heritage

Common, Townsville

profit organisation to attract skilled people (strong GIS skills are needed to aid in targeting and real estate skills in selling). TfN noted the importance of pro bono legal assistance in facilitating revolving fund purchases and sales.

- Occasionally landholders of targeted properties have held out for higher prices or played TfN off against other buyers such as commercial forestry interests. TfN manage this by being open and strict about not paying beyond market value and do not engage in bidding wars.
- TfN noted that Land Tax can be a significant additional disadvantage on a non-income generating property with additional conservation management encumbrances. This is a particular disincentive where many 'tree change' buyers purchase TfN properties as their third or fourth property with the primary aim of contributing towards biodiversity conservation.

Understand and manage the impacts of pragmatic tradeoffs in applying purchase criteria

TfN apply a formal covenanting targeting selection method based on the Nature Conservancy of America decision support tools. This formal selection approach incorporating biodiversity significance and threat measures is supported more informal approach to selecting properties based on loose criteria that seek to maximise the future market potential of the property (and thus sustain the revolving fund). These criteria include: good quality bush (of high conservation value); has a house on it; and located close to a city (between Melbourne and Geelong), and landscape context (is it located next to public land or other protected areas). Local experience of staff with good relations with real estate agents and landholders are important in identifying suitable properties for purchase and adequately assessing the market attributes of the property

Revolving fund has significant synergies to other TfN activities

TfN's core business is facilitating conservation covenants to increase the security of protection for biodiversity assets. The revolving fund has developed important synergies by facilitating use of conservation covenants at the point of sale. This is particularly important where the previous owners have been unwilling to covenant the land, and new purchasers are more likely to make changes that would damage the biodiversity asset. The revolving fund also complements TfN covenanting activities by facilitating an active market in properties with covenants designed to protect biodiversity assets.

Case 4. Land purchase—Australian Bush Heritage Fund.

Details	
Scheme name:	Australian Bush Heritage Fund
Scheme type/motivator:	Land purchase/ payment through purchase
Scheme manager:	Australian Bush Heritage Fund (ABH)
Scheme location:	National
Case study location:	National
Concept:	Properties carrying native vegetation in good condition that is not well represented in the national reserve scheme are purchased and managed by the ABH. Funding for acquisition is generated through donations of cash or property as well as grants from government and philanthropic bodies.
Further information:	http://www.bushheritage.asn.au/

What is the Australian Bush Heritage Fund incentive?

The Australian Bush Heritage Fund (ABH) is a national, independent, not-for-profit organisation that was formed in 1990 to help in the protection of Australia's unique biodiversity. ABH recognises that private ownership tends to encourage land to be primarily managed for activities crops, livestock or forestry rather than biodiversity conservation. ABH therefore acquires and manages land for biodiversity conservation.

ABH is distinctly different from the other incentive case studies because it focuses on a change to land ownership as the conduit for improved security of biodiversity assets rather than changing the management or security of conservation under existing ownership. Purchases are targeted towards land types that are poorly conserved within the national reserve system (NRS). With these objectives in mind, ABH focuses its purchasing effort in five different regions in Australia:

- The South West Botanical Province of Western Australia;
- The Midlands and Ranges of Tasmania;
- Grassy box woodlands of South Eastern Australia;
- The Gulf to the Channel Country in Queensland and the Northern Territory; and
- The Queensland Uplands and Brigalow Belt.

The primary funding sources for ABH are donations, bequests, philanthropic contributions, and government grants. ABH aims to acquire or otherwise protect seven million hectares of 'good condition' bushland that is under-represented in the NRS by 2025. It currently owns, or is in the process of buying, 21 reserves throughout Australia, with nearly 700,000 hectares of land currently protected.

Key lessons and observations

The ABH case study demonstrates an incentive scheme that was designed to fill the a perceived gap in current biodiversity management policies.

Understand the problem and set clear targets

- The Australian Government's NRS gives an indication of where the gaps of protected land lie. ABH uses this to target effort on conserving land that is not within or is currently under

represented in NRS. Use of the existing NRS data reduces prioritisation costs to ABH.

- In some cases, NRS has also provided matching funding which extended the capacity of the ABH to purchase land. In this case the NRS matching funding has leveraged private sector (not for profit) investment in biodiversity conservation.
- ABH purchases and retains land indefinitely, and as a result it incurs significant ongoing management costs. To reduce these costs, ABH targets land that is in relatively good condition. Consequently, it is important that their assessment tools are able to robustly estimate the scale of future management inputs required. ABH has rejected high conservation significance land which, while fulfilling the criteria of poor reserve representation and habitat for threatened species, was in poor condition and likely to incur onerous future land management costs.

Understand the target community and leverage outcomes by working with other landholders

- ABH uses the acquired land as an "anchor in the landscape" around which neighbours are encouraged to practice compatible or sympathetic land management. ABH provides some incentives to neighbours of reserves where it will aid reserve management, such as financial assistance for fencing. This approach is modelled on the Nature Conservancy approach in the United States.

Organisational constraints means it is important to develop a flexible scheme

- Donations comprise a major source of ABH funds, but some are 'conditional' imposing constraints on the future use of the funds or land. Some land is donated with the condition that it must remain with ABH. Some donated land may not fit ABH reserve criteria: there might already be a lot of this land type represented in the reserve system and therefore not a high priority, or it may require substantial future management input. ABH strongly encourages donors to discuss their bequest or donation in advance in order to achieve an understanding of the aims and constraints ABH operates under and the available ways to maximise biodiversity conservation. ABH retains the right to refuse donations or bequests where effort to manage this land would take resources from the management of higher priority land.
- ABH can also operate as a revolving fund, for example where donated land is covenanted and on-sold with the money raised from sales used to purchase land elsewhere that better meets ABH goals.

Photography: Allan Fox and Department of the Environment and Heritage

Wandoo trees on Albany Highway, WA

Photography: D. Zeigeler and the Department of the Environment and Heritage

- Strategic acquisitions can lead to increased land prices in target regions. While ABH has had few problems with rising prices due to conservation purchases, it is recognised that this could become a problem. ABH manage potential impacts by setting clear purchase goals, engaging in proactive negotiation and communication, and negotiating or purchasing 'first options' buy targeted properties.

Design an incentive that will achieve your goals

- Good incentives are designed to achieve outcomes in a specific context and for specific goals. Purchase of leases offers a practical alternative where conservation covenants cannot be implemented. Land purchase also offers complete management freedom in freehold title settings. The purchase model is better able to achieve ABH's current goals than other options.

Monitoring, reporting and evaluation is critical

- Monitoring over the long term is essential to success:
  - To demonstrate to supporters that the money is being well invested;
  - To identify the achievement of organisational goals such as biodiversity protection and organisational performance objectives; and
- Information collected for evaluation include:
  - Area reserved relative to deficits in NRS;
  - Activities conducted including number of hectares burnt or managed for weeds, number of feral animals caught or removed, and length of fencing installed; and
  - Monitoring of outcomes—ABH are in the process of developing a system of measuring ecological condition in comparison to benchmarks established in least modified parts of the landscape.
- The importance of developing models relating management options to ecological responses was also stressed. With this modelling you can work out the best management strategy to use to achieve the end goal.

Case 5. Bonus Development Rights—Johnstone Shire Council, Qld.

Details	
Scheme name:	Bonus Development Rights (BDR)
Scheme type/motivator:	Additional development rights for properties in conservation zone
Scheme manager:	Johnstone Shire Council (JSC)
Scheme location:	Johnstone Shire, Qld
Case study location:	Johnstone Shire, Qld
Concept:	BDR grant additional development rights to landholders in return for conservation covenants over on-site biodiversity assets.
Further information:	http://www.jsc.qld.gov.au/

What is the Bonus Development Rights Scheme?

The BDR scheme is designed to reward landowners for protecting biodiversity assets by granting them additional development rights in return for guaranteed protection of biodiversity assets. These rights are intended to allow development that is compatible with the conservation value of the land.

Development rights may include rezoning, increased density of development on certain parts of the property, or additional concessions on land that is zoned as rural conservation. The program also offers land management assistance to landholders, especially with weed management.

Protection of biodiversity assets is achieved by placing a conservation covenant over high priority biodiversity assets. BDR only apply to land that is not already protected through the *Vegetation Management Act (1999)*.

BDRs are designed to reward landholders for improving the security of protection of biodiversity assets and actively considering their management needs within development proposals. A goal of the incentive is to reward landholders for identifying and protecting endangered habitat where existing laws may create a reluctance to inform the local council or even active destruction of the asset to prevent it being discovered.

Some examples of the BDR scheme include:

- For subdivision—one bonus (additional) block can be subdivided per five ha of habitat put into conservation, up to a maximum of four blocks.
- For an additional house—one additional house can be built per five ha of habitat protected, to a maximum of four houses.
- Allowing for more intense development such as backpackers or eco-tourism type development in low density settings. An example in the high demand Mission Beach area is conservation of 90 per cent of a critical habitat rural block with development of an eco-tourism type accommodation facility on the remaining 10 per cent (of which a quarter of has actually been used for development).

In 2005, the Johnstone Shire Council (JSC) recorded 16 properties engaged with the BDR process and 400 hectares protected as a result of the bonus development rights scheme.

Key lessons and observations

The JSC bonus development rights scheme is particularly good at demonstrating the crafting of an incentive scheme to fill in the gaps of current schemes as well as utilising existing relationships with the target community.

Invest effort in understanding the problem, observing previous approaches, and analysing why these have not worked can help with incentive selection and design

Previous land management agreements that were implemented to aid in managing the biodiversity impacts of development actions in the Johnstone Shire were observed to be too weak to be legally binding. Despite the biodiversity impacts of development it was very difficult to prevent complying activities and development generated economic benefits within the shire. Covenants were seen to be a way to legally 'tighten up' agreements with landholders to ensure security of protection of the biodiversity asset.

Design your incentive to maintain good relations with landholders—understand and work within target community constraints

Covenants under the BDR are incorporate clear provisions to protect biodiversity assets but also retain sufficient flexibility to meet landholder needs. Additional clauses can be negotiated in certain circumstances that may allow sustainable forest use such as viewing platforms. These are particularly important where a landholder may want to capitalise on the ecotourism values of the biodiversity asset.

Negotiations are carried out property-by-property. The covenants are restrictive in the language used and include substantial sanctions for the breach of agreements. Restrictions include the complete protection of native flora or fauna, and the restriction of domestic dogs and cats to the building envelope. Council may, however, permit, in writing, other activities in the covenant area from time to time. Therefore, if the landowner wants to change the proposed activities within the covenant zone after the agreement has been signed, there is flexibility for them to negotiate with council.

Good relations with landholders (covenanted and others) can significantly reduce the transaction costs of a scheme

When investigating the possibility of a BDR scheme the JSC conducted an audit of stakeholders. It became clear that they expected habitat conservation be a priority. Having community support reduces the potential political costs of introducing such a scheme. It also reduces monitoring costs if neighbours report observed contract breaches to the Council. Some independent site audits should also be conducted to ensure that the environmental benefits from the scheme are occurring.

Design the incentive to complement existing approaches

The JSC BDR scheme has been designed to integrate with existing approaches within the shire, state and nationally through:

- Potential developers voluntarily engage in the program through the existing development process (no new processes are required);
- Eligibility is refined via Regional Ecosystems Mapping guidelines to identify land protected through the *Vegetation Management Act (1999)*. If the habitat is already protected JSC will not covenant it;
- BDR eligibility within the scheme is supported by existing mapping that identifies vegetation of highest conservation value; and
- Individual negotiation of management agreements and covenants linked to the development process ensures that the state assets are in fact protected.

Case 6. Rate rebate—Brisbane City Council (BCC).

Details	
Scheme name:	Conservation Partnerships Program
Scheme type/motivator:	Rate rebate (cash grants linked to rates)/payments
Scheme manager:	Brisbane City Council (BCC)
Scheme location:	Brisbane, Qld
Case study location:	Brisbane, Qld
Concept:	Landowners entering a management agreement with council (that may include a conservation covenant) receive a cash payment linked to their rates.
Further information:	http://www.brisbane.qld.gov.au

What is the Brisbane City Council (BCC) Conservation Partnerships Program?

The BCC uses various regulatory and non-regulatory measures aimed at conserving significant biodiversity in Brisbane, Queensland. These include town planning, bushland acquisition (funded through an environmental levy on all rate payers), development planning and assessment processes, and partnerships with private landholders for wildlife conservation. Under the Conservation Partnerships Program, private landowners of native bushland (larger than half a hectare) who enter management agreements with BCC are eligible for cash grants linked to their rates. Cash grants are also linked to a broader set of conservation measures that landholders can engage in and be rewarded for (through support and recognition and/or financial payment):

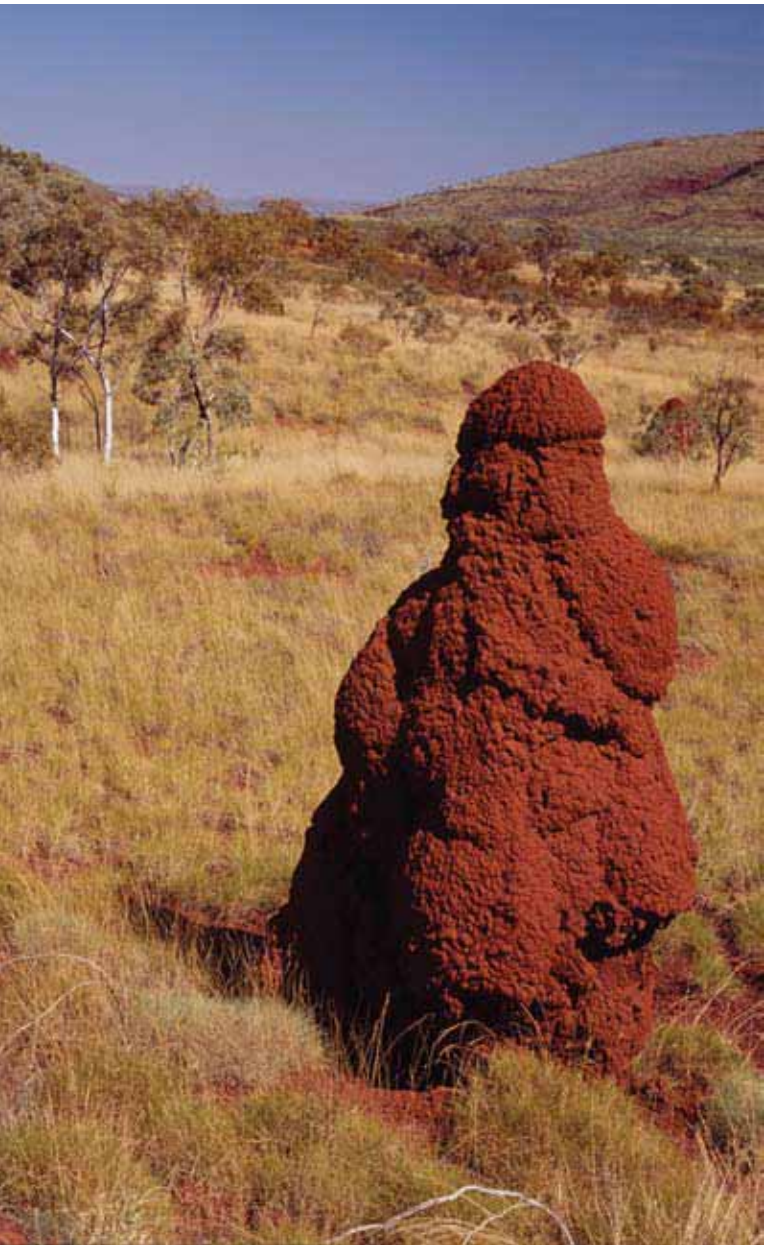
1. Land for Wildlife[6];

2. General voluntary conservation agreement. This is a voluntary management agreement with the owner. The agreement does not bind the title of the land and therefore ceases when the property is sold. The agreement is legally binding and requires the landholder agree to relinquishing development rights for the tenure of their ownership. The reward for this level of agreement is a rate rebate of up to 35 per cent of general rates up to a maximum of $1000; and

3. Higher voluntary conservation agreements requiring a permanent reclassification of the property to a 'Conservation Area' under Brisbane City Planning. A higher VCA also involves a legally binding management agreement placed on the land which is only valid until resale. The reward for this level of agreement is a rate rebate of up to 50 per cent up to a maximum of $1500. Landholders under this agreement are also eligible for additional payments of up to $1000 to aid in implementing their property management plan.

The goal of the Conservation Partnerships Program is to form voluntary partnerships with private landholders who are committed to the protection of biodiversity on their properties. This goal reflects BCC's awareness that a large proportion of biodiversity is on private land, requires active management, and that it likely cost effective to have private landholders manage this land rather than acquire land for the public estate.

6 See the Land for Wildlife case study for more detail



Photography: Trevor Preston and the Department of the Environment and Heritage

Hamersley hummock grasslands—savanah —anthills

BCC have recently conducted a comprehensive review of their approach. The review process and the conclusions from the review are the primary focus of the lessons drawn from this case.

Key lessons and observations

The BCC review has contributed to an improvement in the design of the incentive scheme. The review process assessed:

1. Whether the original goals remained relevant?
2. The effectiveness of existing approaches—did they achieve the stated goals?
3. Identified whether new information or approaches are available. Reset goals and targets based on the new information; and
4. Whether and how the approach should be updated or redesigned based on new information or needs.

Reassess original goals

Biodiversity conservation clearly remains an issue within the BCC region, particularly given the high rate of recent development. The rate rebate was initially targeted towards high value remnant vegetation located in a number of predetermined corridors, or that retained strategic vegetation linkages in developing areas. The emphasis remains on intact native vegetation with particular focus on special areas and corridors.

Review of current approach against updated understanding of targets

The approach was regarded as successful in terms of the number of participants recruited and cost of biodiversity management compared to alternative programs such as land purchase.[7] Despite the programs success the review indicated that the program would take a minimum of 20 to 30 years to achieve higher level biodiversity goals, given that there are approximately 5,000 properties within target regions and existing resources have recruited less than 300 over the past ten years. BCC realised that to enact change in a shorter time frame a new or significantly expanded approach was required.

7 The review was undertaken by Maher and Nichols in 2003 for Brisbane City Council.

Assessment of new information or approaches

BCC has participated in the development of a common nature conservation classification system (CNCCS) in collaboration with all South-East Queensland subregional councils. The improved biophysical information allowed BCC to re-map their region using the CNCCS in order to improve targeting for biodiversity management within the region. This enabled the BCC to identify and prioritise areas of highest conservation significance. Mapping also improved the details about the target participants for the program and identified approximately 5,000 target properties across the region. Of these 200 have an existing LfW agreement, 44 have general VCA's, and one landholder has the higher VCA.

In an attempt to improve the targeting and uptake of conservation incentives, BCC surveyed potential partners through telephone surveys and a focus group. The telephone survey revealed:

- A surprisingly low level of awareness of existing programs;
- Liked personal contact and preferred a visit rather than more pamphlets;
- Required conservation programs be integrated with other council initiatives such as weed control programs in neighbouring reserves;
- Required technical information about land management as well as financial support;
- Wanted to feel like they still had control of the property management;
- Wanted a degree of flexibility; and
- Some mistrust of Council and land management restrictions.

Redesign the scheme based on this review

As a direct outcome from this extensive review, BCC have developed a more complete spectrum of incentive schemes to landholders. It ranges from lower levels of engagement (such as LfW) through to more permanent but also higher levels of incentives (such as conservation covenants backed by stewardship payments). A key feature of the redesign was the inclusion of a way for landholders to engage with conservation schemes without requiring large commitments. It was considered that this would give landholders the opportunity to learn about the scheme, build trust, and then engage in the longer term conservation arrangements. BCC is now in the process of refining and implementing this targeted spectrum of options for landholders.

Photography: Greening Australia and Department of the Environment and Heritage

Chapman Riverbank

Case 7. Competitive payments—BushTender.

Details	
Scheme name:	BushTender
Scheme type/motivator:	Differentiated competitive payments
Scheme manager:	Victorian Department of Sustainability and Environment
Scheme location:	Victoria
Case study location:	Victoria
Concept:	Bushtender is designed to make payments for improved biodiversity conservation outcomes. Landholders submit a bid setting out the proposed management actions and the payment required. Relative contributions of bids were assessed according to a standard metric (habitat hectares) and a fixed budget allocated to those landholders that represented the best value for money.
Further information:	http://www.dse.vic.gov.au/dse

What is BushTender?

The BushTender incentive scheme is a competitive auction or tender-based payment mechanism for improved biodiversity conservation. BushTender is designed to incorporate the following:

- Robust and replicable quantification of the biodiversity conservation contribution of alternative proposals. The Habitat Hectares metric was developed to estimate the biodiversity outcome of a set of proposed management action compared to a benchmark. The benchmark allows comparison of competing bids;
- Revelation of the true costs of biodiversity conservation through the use of a competitive tender mechanism. The mechanism allows landowners to specify the price at which they are willing to implement a set of proposed management changes. Combined with the biodiversity measure provided by Habitat Hectares (price divided by change to habitat hectares), it allows the cost-effectiveness of options to be compared and funds allocated to those achieving the greatest value for money; and
- Other important aspects of BushTender include: the support provided to potential participants in developing and submitting bids (via site visits); flexibility in the range of acceptable management actions; and the potential for payments to be made over several years with site inspections to ensure acceptable outcomes.

The BushTender mechanism has been trialled extensively in Victoria. This case study focuses on the application to Box Ironbark ecological communities on private land in the North East and North Central regions of Victoria (Stoneham *et al.* 2002a). Box Ironbark ecological communities are an under-reserved priority community with significant habitat occurring on private land. These ecological communities have previously been targeted unsuccessfully through voluntary management agreements and fixed price grants.

There are many different approaches available to manage remnant Box Ironbark (from reduced grazing to fencing, with or without extensive weed management). The flexibility and support measures incorporated in the BushTender approach not only overcame the low participation in previous schemes but also achieved a significant improvement in the cost-effectiveness of the outcomes achieved. Using the BushTender model the Victorian Government was obtain similar outcomes using $400,000 of incentive payments as they could achieve using $2.7 million in a non-competitive framework (Stoneham *et al.* 2002:4).

Key lessons and observations

The BushTender scheme is the best known of a relatively new class of instruments known as market based instruments (MBIs). It is the mechanism for allocating funds, the competitive auction, rather than the process of making the payments, which makes the BushTender scheme of interest. In this case study we have concentrated on the initial analysis of the problem and the subsequent design of the scheme.

Analyse the problem—why does the market fail to provide biodiversity conservation?

Previous voluntary management arrangements and fixed price grant failed to effectively engage with landholders. This was because they were based on rigid management requirements and payment guidelines; failed to inform landholders of actions that they should take; allowed little management flexibility in undertaking and incorporating these activities into property management; and poorly linked the reward to biodiversity outcomes. As a result, incentive uptake and management performance was poor.

The BushTender approach was designed to overcome the key reasons for poor performance of past incentive arrangements. The problem causing poor biodiversity management was viewed as an economic rather than an environmental problem. This thinking led to an explicit understanding of the market failures that would need to be overcome in order to design an effective incentive approach. The key market failure identified in this situation was asymmetric information:

- Landholders did not know what the value of the biodiversity was on their site and what actions would be the most effective in the management of this biodiversity; and
- Government did not know who had what biodiversity on their properties and what would be a realistic payment for different management actions to improve biodiversity conservation (in part because they did not understand how these actions would, or would not fit into farm management).

Viewed from an economic perspective, the relatively rigid, fixed-price schemes previously offered were failing to inform landholders of actions that they should take, allow management flexibility in undertaking, and incorporating these activities into property management, and did not allow landholders to signal their costs of integrating rigid requirements into broader farm management biodiversity outcome.

BushTender design process

The steps in the design and implementation of BushTender were:

a. Development of a metric to compare biodiversity contribution of alternative offers;

b. Publicity about the auction calling for expressions of interest;

c. Interested landholders were visited by agency staff to assess quality and significance and potential land management options;

d. Landholder and agency staff prepared a draft management plan identifying land management actions they were interested in undertaking;

e. DSE finalised and provided the management plan to landholders;

f. Landholder submitted bid;

g. Assessment of bids;

h. Notification and contracting; and

i. Implementation and ongoing monitoring.

Significant effort was needed in the development of a measurement metric, landholder communication and engagement, and contract design to address landholder and government needs. For further information on auction design see Stoneham *et al.* (2002).

Metric development:

A metric is a standardised and repeatable way of estimating the conservation value of a site. The metric for BushTender was developed by a team of ecologists building on a substantial body of pre-existing work to identify easily measurable representations of ecosystem health. The ability to use pre-existing work can greatly reduce the design costs. However, it is important that shortcomings in pre-exiting work are addressed or the effectiveness of the metric will be reduced. This is particularly important where previous work has been for a purpose or priorities other than those of the proposed incentive scheme.

Communication and engagement with landholders:

The form and nature of communication with stakeholders is also significant to the efficiency and cost effectiveness of the incentive scheme. The BushTender process involved:

- Use of non-departmental and regionally based staff as extension officers;
- Extension staff required training on the auction concept. This was particularly important regarding what they could and could not say to landholders, such as what price they thought the landholder should bid. This would have reduced the efficiency of the mechanism and would have introduced both bias and potential fraud;
- Landholders were informed of the type of actions that would best conserve biodiversity on their property (which took into account the nature of the asset and the threats to that asset); and
- Landholders were informed about the biodiversity values of their land.

Contract design:

BushTender contracts were linked to the completion of specified management activities. In other situations the most appropriate contract form (input, output or mixed contracts) depends on the desired service, the ability to monitor and enforce contracts, and the nature of the risks imposed on landholders together with their response to those risks. Contract design should be reviewed each time an auction is considered. Design may also be informed from testing the mechanism, for example through laboratory or workshop based experimental economics.

Review, monitoring and evaluation are essential tools in the refinement of the incentive mechanism and to track environmental outcomes

Internal review and evaluation

BushTender was pre-tested twice using experimental economics to see the effect of different levels of information on outcomes before the BushTender pilot went ahead. The review and evaluation was used to inform and improve the design and implementation of the instrument.

Monitoring and evaluation

Contract compliance, biophysical outcomes and the effectiveness of the instrument are tracked by monitoring and evaluation. Contract compliance was evaluated through random inspections (1/3 were inspected each year to assess the implementation of on ground works against the contract).

Evaluation of the BushTender incentive scheme has been rigorous. External review has assessed the cost effectiveness of this approach against the previous policy approached. Applications honoured under the previous fixed rate grant scheme were assessed in the BushTender framework, with only one application assessed as being good value for money.

Case 8. Devolved grant flat rate payment: Greening Australia Vegetation Investment Project (VIP).

Details	
Scheme name:	Greening Australia Vegetation Investment Project (VIP)
Scheme type/motivator:	Fixed payment through devolved grant/payments
Scheme manager:	Greening Australia
Scheme location:	ACT/South East NSW
Case study location:	ACT/South East NSW
Concept:	Provide fixed-rate payments to landholders to assist in the protection and revegetation of strategic habitat in the south east of NSW. This scheme is targeted towards work that will provide habitat for birds.
Further information:	http://www.greeningaustralia.org.au/GA/NAT/

What is Greening Australia's (GA) devolved grant incentive scheme?

In a devolved grant scheme government devolves grant allocation and administration to a third party, usually a regional organisation. Finance for GA's devolved grant was provided by the Natural Heritage Trust (NHT).

In 1999, funding from NHT was received by GA to initiate the vegetation investment project (VIP) focusing on the protection and revegetation of diverse native vegetation on private land in and around the Australian Capital Territory (ACT). Prior to the commencement of the VIP, a number of research organisations (including the CSIRO and community bird watching groups) had identified bird habitat and species decline as a major biodiversity issue in the region. This prior work also included the identification and prioritisation of areas for rehabilitation.

The aims of the incentive scheme were:

1. Buffer, link and revitalise remnant vegetation in high priority areas; and
2. Provide the backbone for the strategic development of broad-scale revegetation in adjacent rural residential areas.

The VIP project targeted the conservation and enhancement of a range of remnant vegetation including woodlands, grassy woodlands or scattered tree communities and grassland communities in three focus regions in and around the Australian Capital Territory (ACT).

The incentive scheme provided assistance for tree planting through the provision of seedlings or financial support for fencing materials (up to $1,200 per km of fencing) as well as subsidies for herbicide for weed control. Landholders were invited to submit applications for proposed works, and finance was allocated if landholders fulfilled the criteria. The allocation of funding for this incentive scheme was not competitive.

This project involved 55 land managers in the protection of 102 ha of remnant vegetation and re-establishing 249 ha of native vegetation to link the Murrumbidgee River corridor to Hall (northern ACT). The landholder received a once off payment with which to undertake revegetation and fencing, with the help of volunteers.

Key lessons and observations

The GA incentive scheme capitalised on previous biophysical research as well as organisational and community capacities built during previous projects. The development of an incentive scheme to best leverage existing capabilities is one key lesson from this case study.

Biophysical information is important to understanding the problem and incentive selection, design and implementation

At the commencement of the VIP, GA contracted CSIRO Wildlife and Ecology to develop revegetation guidelines. Bird surveys were conducted across 72 woodland remnants of varying age, condition and isolation within the region of interest. The CSIRO study revealed that 23 of the 25 species of insectivorous woodland birds present were dependent on a vegetation patch size of at least 10 hectares. Further, these patches needed to be within 500 metres to 1 kilometre of each other, and needed to include complex habitat—fallen timber for nesting and shelter and diverse plant species (trees of different ages as well as shrubs).

This background analysis provided a number of straight forward guidelines for project managers to use to target, assess and prioritise conservation application and effort. GA noted that the targets initially set by the project constrained where payments could be made. So while some landholders were interested in the project, they could not be funded (even though they would have made significant contributions towards the project) because they lived outside the location coverage for the VIP as per the developed guidelines. While this limited participation it meant that effort only occurred in the most strategically valuable areas (already identified in the first step) hence increasing the overall efficiency of the scheme.

This initial analysis also identified a number of indicator species by which the success of the project could be judged. Two species were selected to be medium and long-term indicators of success. Long-term success would be achieved when the locally threatened Hooded Robin returned to a 'common' species. The Hooded Robin, which needs a very large, complex patch of 100 ha to maintain its lifecycle, was the Focal Species for the project. The Rufous Whistler was chosen as a medium-term indicator species because it is less sensitive to habitat changes than the Hooded Robin.

Photography: The Department of the Environment and Heritage

Photography: Trevor Preston and the Department of the Environment and Heritage

Mallee/bluebush

Understand and build on previous work and existing relationships such as volunteer networks to maximise scheme effectiveness

The GA approach was quite effective because they designed and implemented the incentive scheme to capitalise on existing skill sets and good relationships with the targeted landholders. GA noted that one reason for choosing this approach was that they already had the project management skills acquired from similar projects. These projects had also established a good rapport with the landholders. To effectively conduct the project, GA only had to build capacity in GIS and monitoring.

GA also already had the necessary quantity and variety of seedlings in stock for this program. They also had the relevant knowledge of planting seedlings to pass on to the landholders. The application form was straightforward (1–2 pages) as was the assessment process, which enabled almost immediate commencement of the project (funds and capital) on the ground. This was very satisfying to landholders and probably influenced the high take up rate. GA noted that landholders tend to engage when they are ready to proceed, so having the funding and the capital ready when the landholder is ready worked in their favour.

Other observations:

Other observations made from the GA incentive scheme that could help guide similar incentive schemes include:

- Whilst volunteers were available to assist with planting, it was observed that landholders tended to look after plants better if they were heavily involved in the planting;
- Negotiation of location of plantings on a property is important to achieving outcomes including opportunities to link plantings across neighbouring properties. Negotiation also often resulted in more conservation being undertaken than submitted in the original application;
- NHT as an overall funding source provided some constraints to the VIP. The most important constraint was restrictions on the allowable payment rates. The NHT rate of $1,200 per km of fencing did not cover all the fencing costs. As a result, landholders had to contribute towards the completion of the fencing, through the purchasing and installation of gates. This was a problem particularly when the main constraint to the conservation effort was reported to be the cost.

Case 9. Offsets—NSW EPA South Creek Bubble Licence and Offset scheme.

Details	
Scheme name:	South Creek Bubble Licence and Offset scheme (Offsets)
Scheme type/motivator:	Savings in compliance cost
Scheme manager:	NSW Environment Protection Agency (EPA)
Scheme location:	South Creek, NSW
Case study location:	South Creek, NSW
Concept:	Offset schemes are based on the principle of maintaining a set level of biodiversity assets while allowing flexibility about how and where this is achieved in the landscape. There are no clear biodiversity offsets at present (though some are being discussed) so this case study examines the South Creek bubble licence and associated offset scheme to manage nitrogen and phosphorus entering the Hawkesbury River in western Sydney
Further information:	http://www.environment.nsw.gov.au/licensing/bubble.htm

What is the NSW EPA bubble licence and offset scheme?

Offsets are intended to ensure that a specific environmental goal is maintained. A goal may be keeping pollutant discharges below a specified level, or maintaining a specific quantity of habitat or other measure of biodiversity. Offsets allow flexibility in achieving goals by providing a process within which beneficial actions can be taken to 'counterbalance' or 'offset' the negative impacts of damaging activities. They are used to manage the impacts of concentrated damaging actions such as clearing and conversion of native vegetation to urban uses. The principle behind offsets is to allow the economic benefits from development (the damaging activity) at the same time as ensuring continued provision of valuable environmental services. In a biodiversity setting offsets allow one party to damage biodiversity so long as that biodiversity is repaired or otherwise provided for on another site.

The South Creek Bubble Licence and Offset scheme focuses on managing water quality in the Hawkesbury River. It incorporates offsets at two scales: between three sewage treatment plants (referred to as a 'bubble' around the group of plants); and subsequently between the sewage treatment plants and other nutrient sources. The bubble licence component was introduced by the NSW EPA in 1996 and allows a group of three sewage treatment plants, all owned by Sydney Water, to negotiate amongst themselves about how best to meet a *combined* target for their nutrient releases to South Creek and the Hawkesbury River. Within this group any particular sewage plant may increase or maintain its release of nutrients to the Hawkesbury River so long as the remaining two plants act to reduce, or offset their releases such that the overall target is met. The group of plants is said to be operating within a 'bubble' when considering their total releases of nutrients.[8]

The goal of the South Creek Bubble Licence was to reduce phosphorus and nitrogen entering the river by 83 per cent and a 50per cent respectively

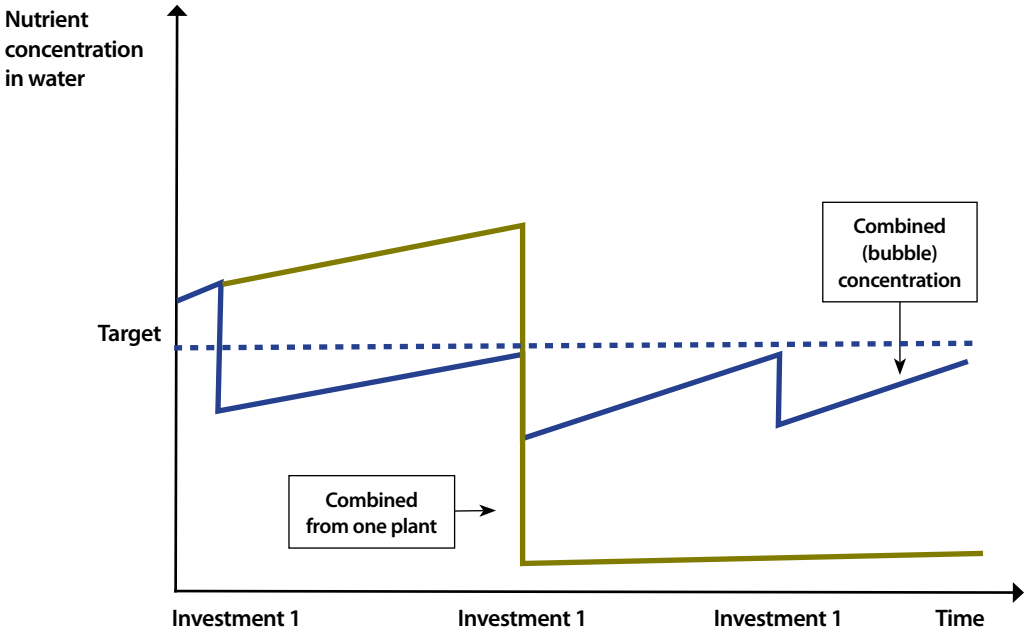
8 The scheme is referred to as a bubble because the firms within the 'bubble', usually a geographic region or group of plants owned by a single operator, are treated as a single entity for regulatory purposes. Regulation treats the plants as though they jointly operate within a bubble and only their combined impacts beyond the bubble are considered.

by 2004 when compared to a 'business as usual' scenario that took into account future urban development in Western Sydney.

The broader offsets scheme allows the bubble of sewage treatment plants to exceed their nutrient release target so long as counterbalancing actions are undertaken elsewhere in the South Creek catchment. These actions include capturing nutrients in fertiliser run-off from market gardens (through for example buffer strips), improved dairy management and other actions.

The rationale for implementing the offsets under the bubble licence and associated offset scheme was the much lower cost of achieving the target water quality standards in the Hawkesbury River. The bubble licence allows investment in improved sewage treatment to be staged in response to increased urban development in Western Sydney while effectively managing the total nutrients entering the Hawkesbury River. Under the bubble arrangement, individual sewage treatment plants may proportionately exceed the overall target so long as their combined contribution remains below targets (as shown in Figure 5). Traditional individual plant approaches would have required all plants to invest up front (investment one in Figure 5). Offsets between the plants within the bubble allow these investments to be spread through time while still achieving the overall target. The staged investment process allowing between plant offsets within the regulatory bubble has been at least $45 million dollars less expensive than traditional approaches.

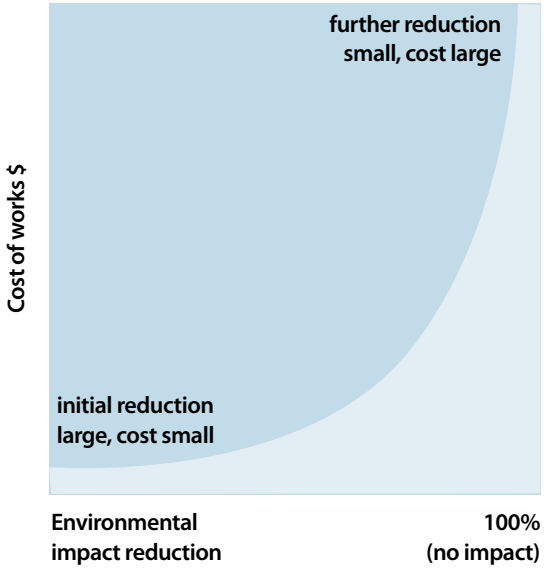
Figure 5: Hypothetical investment to achieve target



The cost of further reducing nutrients from the sewage treatment plants within the bubble will eventually become very high as is illustrated in Figure 6 (pg 52). When compared to alternative options for capturing nutrients entering South Creek and the Hawkesbury River. The cost of further reductions in phosphorous loads from sewage treatment plants (beyond the staged investment within the bubble) was estimated at $10,000/kg/year. This was compared against the costs of alternative offset actions including:

- $9/kg/year for managing dairy effluent
- $12/kg/year to manage market garden run off
- $14/kg/year to manage dairy stock access to water
- $17/kg/year to change fertiliser management on market gardens

Figure 6: Development offsets reduce the cost of compliance



Source: NSW EPA (2002)

The extreme cost-effectiveness differential between different nutrient sources meant that the NSW EPA always envisaged a broader offset arrangement that would allow sewage treatment plants to purchase offsets that reduced other nutrient sources (such as fertiliser in water run-off from market gardens). Instead of installing very costly and largely ineffective additional treatment technologies, sewage treatment plants can choose to pay market gardeners to install buffer strips along drainage lines and streams through their properties. Offsets recognise that it may be very costly for some sources to reduce nutrient discharges (in this case regulated sewage treatment plants), while the costs of actions elsewhere to reduce nutrient management may be much lower (in this case unregulated market garden impacts).

Key lessons and observations

To date few offsets have been undertaken as the offset component of the bubble licence scheme remains in pilot form. However, a number of lessons can be drawn from the design phase and pilot applications. As an overall observation, the costs of participation and compliance within the bubble licensing and offset scheme were low in the South Creek case because each sewage treatment plant, although licensed separately, was owned by Sydney Water.

Instruments involving trades generally need legislative backing

Offsets are designed to protect a desired outcome. The South Creek Bubble and offset Scheme is designed achieve and protect water quality in the Hawkesbury river from the threat of increased emissions from continued population growth in Western Sydney. Biodiversity offsets are designed to protect an overall level of biodiversity asset from similar threats (such as clearing for urban, agricultural or industrial development). Offset instruments generally need established legislative arrangements in order to set and enforce offset requirements. The South Creek offset scheme is managed under the NSW EPA licensing arrangements backed by legislation. The scheme was an add-on to the bubble licence which was developed for the group of three sewage treatment plants already licensed with the NSW EPA. As a result, the sewage treatment plants were already required to comply with the legislative arrangements. The compliance requirement created the demand for offsets to meet overall pollution management requirements. The Native Vegetation Management Acts within NSW and Victoria provide legislative framework that allow

offsets to counterbalance the impacts of some specified native vegetation clearing actions.

A good social and scientific understanding of potential stakeholders and the environmental targets is needed in the design of the instrument

A good understanding of the problem including reliable scientific information is important in the development and design of the instrument. The EPA offset and bubble scheme is a good example of the steps of problem identification, information collection and incentive design.

1. Problem identification and information collection:

- Through monitoring of water quality, the NSW EPA was aware of the degradation of water quality in South Creek and the Hawkesbury River and the future threats from population growth (see NSW EPA 1996 for more detail).
- Monitoring also identified where the degradation was worst and, therefore, the most likely activities contributing towards the problem.
- Prior to developing the bubble licence, extensive economic modelling was conducted to analyse the cost of achieving targets under different policies. From this analysis it was determined that an aggregate load based bubble licence that allowed offsets between individual plant contributions would be more cost effective than the previous approach of uniform and restrictive treatment plant targets for pollution concentrations.
- Scientific input was also required to change concentration based targets to load based licences.

2. Incorporate this information into policy design

- The EPA also had a very good understanding of the stakeholders sewerage treatment plant management needs through discussions surrounding licensing arrangements. This understanding influenced the design of the scheme. It was well known that the stakeholders would need time to make changes due to construction lead times and other planning requirements. Therefore, no change was required in the first two years. However, it was well known that achievement of nutrient management targets in the Hawkesbury River the success of the scheme would be reviewed after five years, with the potential for more stringent requirements if desired outcomes were not achieved.
- It was also highlighted that discharge management targets and goals need to be realistic. For the sewage treatment plants, the NSW EPA knew what additional treatment actions could be undertaken and their likely effectiveness. Progressive targets were set in line with the logical investment steps at each sewage treatment plant to encourage continued improvement in outcomes as requirements were tightened.
- The main reasons for moving beyond the bubble licence to the offsets approach was an understanding and desire to incorporate some of the many other diffuse nutrient sources within the catchment (such as run-off from market gardens). Including additional sources offered the potential to continue to achieve nutrient management goals in the Hawkesbury River at much lower cost than increasingly expensive and less effective sewage treatment options.

Case 10. Devolved grants—Murrumbidgee CMA wetland stewardship payments.

Details	
Scheme name:	Wetland stewardship payments
Scheme type/motivator:	Flat rate payment per kilometre of wetland fencing
Scheme manager:	Murrumbidgee Catchment Management Authority (MCMA)
Scheme location:	Murrumbidgee Catchment (NSW)
Case study location:	Murrumbidgee Catchment
Concept:	Provide fixed rate payments of up to 50% of the total construction cost (to landholders) to fence off floodplain wetlands on the Murrumbidgee River (between Gundagai and Hay). Landholders negotiate individual agreements, undertake works and are paid on provision of receipts once the fencing is completed. Payments do not cover any ongoing management of the fence or wetland.
Further information:	http://www.murrumbidgee.cma.nsw.gov.au/

What is the wetland stewardship payments scheme?

Mid-Murrumbidgee floodplain wetlands (between Gundagai and Hay) have been listed as wetlands of national importance. Previous research (funded by Land and Water Australia) identified inappropriate grazing management as a major threat to wetland health and a priority for improving wetland stewardship in the region.

Despite its name, the wetland stewardship payment scheme is designed to facilitate improved wetland management through fencing wetlands and changing grazing management rather than through ongoing stewardship payments. The incentive scheme operates as follows:

- Expressions of interest were invited via advertising in the local newspaper and through the National Farmers Federation;
- A project officer visited and assessed the wetland following which a fencing plan and management was agreed between the landholder and the MCMA;
- Landholders implemented the agreed fencing and other initial activities and forwarded their receipts for reimbursement by the MCMA; and
- Landholders received 50% reimbursement of their monetary costs (which generally only covered fencing materials with landholders providing labour and some structures such as straining posts).

Key lessons and observations

Flexibility in implementation

The ongoing drought across south-eastern Australia has severely restricted take-up of the Wetland Stewardship scheme. While the stewardship payment scheme began by targeting floodplain management between Gundagai and Hay, the lack of response within the targeted area has seen the stewardship payment scheme expanded to include non floodplain wetlands. A number of landholders have agreed to participate within the scheme and will undertake fencing when seasonal conditions improve. However, climatic conditions mean that no actual payments had been made at the time of this case study. Flexibility in location and timing have been clear elements in maximising the likelihood of scheme success.

The direct linkage of grazing research to the incentive scheme constrained the selection design and implementation

The design of the fencing incentive scheme implemented by the MCMA was guided by the findings from an earlier grazing impact study. Fencing type and location were left highly flexible within the broad parameters of the program because of the difficulty and site specificity of fencing on floodplains (which is likely to suffer regular damage from flood events). One difficulty within the scheme is that landholders may face ongoing costs associated with maintenance of fences in high risk locations as a result of the management agreements that lead to the payments for fencing.

Incentives should be commensurate with relevant costs incurred by landholders

Incentive theory indicates that landholders are unlikely to implement management actions that do not generate a benefit when all monetary and other benefits and costs are taken into account. Wetland biodiversity protection provides a good example of this principle. Here, additional labour costs combined with the lost grazing benefits in fenced wetlands are often significant and uncompensated by fencing assistance. Similarly, reduced or eliminated grazing in wetlands often results in weed problems that will need to be managed via alternative methods to grazing and which impose additional costs on landholders.

The lessons here are two fold. First, it is important to fully understand the problem when working out what actions you want to target the incentive towards. While fencing is an obvious and highly visible action to enable improved grazing management, other supportive actions may be equally important in achieving the desired outcomes. Second, the focus on once-off incentive payments for fencing infrastructure may compromise the ability of the project to act as a true stewardship program. This is because the program may not be perceived as offering true rewards to landholders for continuing good management of wetlands. Furthermore, the focus on rehabilitation via changing grazing management may have failed to reward landholders who already effectively managing their wetlands. It was noted that much longer than a three year funding time frame would be needed for an ongoing stewardship payment.

Good incentives take time to implement on-ground

- It often takes a considerable period of time to gain landholder attention and engagement in incentive schemes. In the Wetland Stewardship case, the time that it took to engage with landholders and then achieve on ground works was a limiting factor in what could be achieved within the time allowed by the funding body. Funding is often received within a three-year cycle. It generally takes a significant period of time to hire staff (if necessary), design the actual incentive, recruit and select amongst potential participants, and undertake on-ground works. It is unlikely more than one-year of payments could be made within a three year period. Therefore, an apparent stewardship payment scheme can become a simple grants program.
- Often the quickest landholders to take up and act were those with a significant amount of off farm income.
- Many farmers do not have much time to conduct what they consider to be low priority tasks such as fencing off wetlands. Hence, significant flexibility in implementation may be required, or higher payments made to allow contractors to be used (which may not be acceptable to some stakeholders because of desired standards or loss of control).

Previous engagement and good rapport with landholders can significantly help with the speed of uptake of incentives

- The time period from settling on the final incentive model to engaging with potential applicants can be lengthy if there are no established links with the target landholders.
- Face to face contact is important to engaging with landholders. This may include pro-active communication and visits to landholders rather than simply advertising for expressions of interest. This is particularly important if the desired management activities are highly targeted, such as those involving flood plain wetlands.
- Established relationships (such as Landcare coordinators) can be a significant asset if many on site visits are required. Landholders needed a lot of follow up to undertake highly targeted works. This is very time and resource costly. Further, the more spatially separated the proposed sites are (in this case over several hundred kilometres of river frontage) the more time and money cost that will be incurred in visiting these sites.

Some outcomes may be significantly affected by climate

- Landholder fencing action, even after agreement, was often slow. It was observed that this was probably due to landholders investing significant effort into farm management activities caused by the drought conditions.
- The drought and lack of recent floods may also have reduced the landholders' perceptions about the benefits from the wetland. Few wetlands in this region have filled during the last ten years which may have reduced landholder interest and desire to protect wetlands.
- After a limited response from the targeted wetland landholders, the scheme was expanded to allow entry of landholders with non-floodplain wetlands. It is important to consider the benefits from broadening schemes to ensure they continue to deliver benefits on incentive investments.

Other observations:

- **Learn from other schemes:** Observations of a similar Greening Australia (GA) project influenced the timing of payments. GA observed that while landholders tended to have the best intentions to do the work, sometimes that did not occur when payments were made up front. Therefore, in the wetland stewardship case payments were made after work was completed.
- **Be aware of the tradeoffs that are made in design:** Payment after completion may have increased the time that it took landholders to get around to conducting the agreed fencing. A better approach may be to pay a portion of costs up front and then remainder of payment after completion of works.
- Targeting and prioritisation remain constrained by the small amount of available information about wetlands in the Murrumbidgee catchment despite recent research into grazing impacts. Where inadequate information about values and threats to sites is available, individual site visits are essential to prioritisation of actions.

Appendix 1:

Criteria to assess if government intervention results in improved public welfare.

Young *et al* 1996	**Economic efficiency:** that no reassignment of property rights would achieve more biodiversity conservation without making someone worse off. **Dynamic and continuing incentive:** mechanism continues to encourage innovation and improvement beyond the policy target **Equity:** no group of people is disadvantaged **Dependability:** the mechanism will deliver the desired target **Precaution:** the instrument avoids irreversible consequences **Admin cost:** there are low information and admin costs and high transparency **Acceptability:** by community and politics
ABARE 2001	**Effectiveness:** how well does the instrument achieve its objectives **Efficiency:** do the benefits outweigh the costs. Costs include admin, monitoring and enforcement costs, information requirements **Flexibility:** can the policy change with price change etc. Is their flexibility in policy response? **Acceptability:** of policy to stakeholders **Distribution of impacts:** direction and magnitude of wealth effects
Whitten *et al* 2002	**Ecological efficiency:** does the incentive achieve the biodiversity management goals? **Economic efficiency:** what are the costs and benefits and how are these distributed **Social impact:** what are the equity and distributional impacts **Flexibility:** does the measure allow for changing community attitudes **Accountability:** how can taxpayers know that the incentive measure is being used effectively —measurability of outcomes? **Community involvement:** how involved is the community in design and implementation?
OCED 1999	**Three special inputs:** information, capacity building and involvement of the local community. And then the implementation steps of: 1. Identification of the problem 2. Design of the incentive measure 3. Building support and capacity for the measure 4. Managing, monitoring and enforcing the incentive measure
Stoneham *et al* 2000	**Dependability:** can irreversible loss be prevented if thresholds are approached **Cost effectiveness:** can aims be achieved at minimum economic cost where costs include administration, enforcement, negotiation and effects on consumer and producer surplus **Cost effectiveness:** can aims be achieved at minimum economic cost where costs include administration, enforcement, negotiation and effects on consumer and producer surplus **Ability to overcome market failure:** Stoneham specifically used the example of information asymmetry **Targetability:** can the mechanism be targeted enough if need be (similar to others criteria of effectiveness) **Transparency and evaluation:** Can results be identified and measurable **Community acceptability.**
Comerford 2004	**Establishing the background information:** Such as authority capacity, understanding the problem and the key people involved, where is the duty of care etc **Asking the right questions to inform instrument choice:** number of participants, scope and scale of the biophysical problem, does there need to be control over the process, influence of funding timeframes, heterogeneities in the landscape and the stakeholders, potential acceptability of the tool to the community. **Tailoring the tool:** what kind of communication package is needed, have the key community leaders been involved (champions), does the incentive complement other policy, have the legal and financial implications been identified and communicated, is their an understanding of the potential transaction costs?

Appendix 2:

Some things to think about in auction design.

What sort of bidding model should be used?	Use competitive bidding because results in truthful revelation of onsite costs of land use change
What should the auction objective be as revealed to the landholders?	Objective of price minimisation because competition facilitates cost effective outcomes
How should bidding be facilitated?	**Sealed Bid:** Because repeated open ascending and uniform price auctions are generally more susceptible to collusion than are repeated sealed bids. This method also has reduced overall running costs especially where participants are risk adverse (Stoneham *et al.* 2002)
How to evaluate bids?	**Price discrimination:** because where there is asymmetric information between bidders, the optimal auction system is one where the item on offer is assigned to the lowest bidder. Where heterogeneous items are on offer ranking outputs will improve auction efficiency over uniform price approach.
What is the contract after winning the bid	**Individual management agreements:** where there are non standard benefits (eg attributes vary between sites), individual management agreements developed with landholders will improve efficiency .
Should payments be upfront or paid over time?	Normally payments are a function of the bids only but where contracts extend over time, progress payments will improve auction performance. This is because progress auction payments could be perceived by landholders as a more reliable form of income than commodities and this could increase participation
Should you have one or multiple bidding rounds?	Single round bidding: When there is independent private value —each bidder knows the cost of implementing their contract and assumes that all bidders are bidding based on this same information. Therefore landholders would generally not change the value of their bid if they had multiple bidding rounds—save the admin cost!! But, if the assumption of independent private value is incorrect then the auction could be improved through sequential or multiple rounds—should consider the attributes of repeated sequential auction but trade off against tool simplicity for landholder
Do you need a reserve price?	Less important where there is a budget constraint. Should have a reserve price but it can be hard to establish one if you have no prior knowledge.
How much information should be revealed by the authority	Partial disclosure of information generally improves cost effectiveness of auction. Eg BushTender revealed what was valuable and what land management actions were valued but not how the bids were assessed and the relative value of biodiversity?

Source: Stoneham *et al.* 2002b

Further Reading

Australian Bureau of Agriculture and Resource Economics (ABARE), 2001. *Alternative policy approaches to natural resource management*. Background report to the Natural Resource Management Taskforce, ABARE, Canberra.

Binning, C. and Young, M., 1997. *Motivating people, using management agreements to conserve remnant vegetation*. Final report to LWRRDC and Environment Australia National R&D Program on rehabilitation, management and conservation of remnant vegetation., CSIRO Wildlife and Ecology, Canberra, Australia.

Binning, C. and Young, M., undated. *Native Vegetation Institutions, Policies and Incentives*, CSIRO, Canberra.

Comerford, E., 2004. *Choosing between incentive mechanisms for natural resource management. A practical guide for regional NRM bodies in Queensland.*, Queensland Department of Natural Resources and Mines, Brisbane, Queensland.

Environment Protection Authority of NSW 1996. *South Creek bubble licence: Reducing nutrients in the Hawkesbury Nepean*. Environmental Economics Series

Groves, C., Valutis, L., Vosick, D., Neely, B., Wheaton, K. Touval, J. and Runnels, B. 2000, Designing a Geography of Hope: A Practitioner's Handbook for Ecoregional Planning, The Nature Conservansy, Washington DC.

Hatfield Dodds, S., 2004. 'Improving incentives for biodiversity conservation: Policy options and issues for discussion', Canberra.

Johnston Shire Council 2005. State of the Environment State of the Shire Report.

Miles, C., Lockwood, M. and Walpole, S., 1998. *Incentive policies for remnant native vegetation conservation*, Albury, Australia.

Murtough, G., Arentino, B. and Matysek, A., 2002. *Creating Markets for Ecosystem Services, Ausinfo,* Canberra.

NSW EPA 2002. *Green offsets for sustainable development: Concept paper.* Paper developed by the NSW Department of Environment and Conservation found at http://www.epa.nsw.gov.au/resources/greenoffsets.pdf

OECD, 1999. *Handbook of incentive measures for biodiversity: Design and implementation,* Paris, France.

OECD, 2004. *Handbook of market creation for biodiversity: issues in implementation*, Paris, France.

Pannell, D., 2005. Thinking like an economist 21: Using incentives to buy land-use change in agriculture for environmental benefits, Web publication No 66 http://cyllene.uwa.edu.au/~dpannell/pd/pd0066.htm.

Productivity Commission 2004, *Impacts of Native Vegetation and Biodiversity Regulations*, Report no. 29, Melbourne.

Sheahan, M., 2000. *Arrangements and opportunities for native vegetation management in NSW*, NSW Department of Land and Water Conservation.

Stoneham, G., Crowe, M., Platt, S., Chaudhri, V., Soligo, J. and Strappazzon, L., 2000. Mechanisms for Biodiversity Conservation on Private Land, Melbourne.

Stoneham, G., Chaudhri, V., Ha, A. and Strappazzon, L., 2002a. 'Victoria's BushTender trial: A cost sharing approach to biodiversity', paper presented at the Inaugral sheep and wool industry conference, Hamilton, Victoria, Australia.

Stoneham, G., Chaudhri, V., Ha, A. and Strappazzon, L., 2002b. 'Auctions for conservation contracts: an empirial examination of Victoria's BushTender trial', Paper presented at the Australian Agricultural and Resource Economics Society, Canberra, Australia.

National Centre for Environmental Economics (2001) *The United States Experience with Economic Incentives for Protecting the Environment,* United States Environment Protection Agency EPA-240-R-01-001, US EPA, Washington DC.

Watzold, F. and Schwerdtner, K., 2005. 'Why be wasteful when preserving a valuable resource? A review article on the cost effectiveness of European biodiversity conservation policy.' *Biological Conservation* 123: 327-338.

Weimer, D. and Vining, A., 1992. P*olicy analysis concepts and practice,* Pearson Prentice Hall, New Jersey.

Whitten, S., Bennett, J., Moss, W., Handley, M. and Phillips, B., 2002. *Incentive measures for conserving freshwater ecosystems: Review and recommendations for Australian policy makers,* Report prepared for Environment Australia under the National Rivers Program.

Young, M., Gunningham, N., Elix, J., Lambert, J., Howard, B., Grabosky, P. and McCrone, E., 1996. *Reimbursing the future: An evaluation of motivational, price based, property right and regulatory incentives for the conservation of biodiversity,* Canberra.